LLOYD INSTITUTE OF MANAGEMENT & TECHNOLOGY (PHARM.)

Ladder Of Success

• EDUCATE • INNOVATE • EMPOWER

NBA Accredited

B. Pharm. from 2018

Promoting international quality standards for technical education in India

20 YEARS Excellence in Education

IBM Business Analytics Lab

DELHI STATE BRANCH

PHD CHAMBER OF COMMERCE AND INDUSTRY

INTERNATIONAL CONFERENCE

on

"Transformative Journeys: Harnessing AI and Innovation for Sustainable Development of Pharmaceutical and Healthcare Sector"

14th December 2024

SATURDAY

SOUVENIR-CUM-ABSTRACT BOOK

Organized by:

LLOYD INSTITUTE OF MANAGEMENT & TECHNOLOGY (PHARM.)

Plot No. 3 & 11, Knowledge Park-II, Greater Noida, Uttar Pradesh, India- 201306

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ABOUT LLOYD

Established in 2004, **Lloyd Institute of Management & Technology (Pharm.)** offers Diploma, Bachelor's, and Master's programs in Pharmacy, specializing in Pharmaceutics, Pharmaceutical Quality Assurance, and Pharmacology. Recognized for its quality education and student-centered approach, the Institute is approved by the Pharmacy Council of India (PCI) and affiliated to Dr. APJ Abdul Kalam Technical University (AKTU) and the Board of Technical Education, Uttar Pradesh.

Lloyd's **B.Pharm. program is accredited by the NBA** since 2018 and ranks in the **101-125 band in NIRF India Rankings-2024** for Pharmacy. The Institute was awarded "Best Pharmacy College in Uttar Pradesh-2021" by the Centre for Education Growth and Research (CEGR) for its outstanding contributions to education, skill development, and research. It has also achieved Diamond Band (Grade- A+) in Outcome-Based Education (OBE) and in Research Excellence Rankings in 2023 and was awarded Gold Band in Employability and Startup Ecosystem Excellence. In addition, Lloyd is recognized as **a Scientific and Industrial Research Organization (SIRO)** by the Department of Scientific and Industrial Research, Government of India, and is an **approved Research Centre** for AKTU.

The Institute emphasizes holistic education through initiatives like Community Pharmacy Division, Personality Development Program, Corporate Readiness Classes, and industry-based training. Lloyd offers hands-on learning experiences, including expert talks, industrial visits, and skill-development activities. A dedicated placement team ensures job opportunities for students, including an annual Job Fest that attracts participants from across India.

The Lloyd Group also provides programs in Engineering, Management, Law, and Education and regularly hosts national and international conferences to bridge academia and industry:

- **International Conference on "Transformation Through Technology and Transdisciplinary Education" (2023)**
- **International Conference on "Contemporary Issues in Management & Pharmaceutical Sciences" (2023)**
- **AICTE Sponsored International Conference "National Education Policy- Transformational Reforms in Higher Education (NEP-TRHE): Making a Global Impact" (2021)**
- **Pharmaspeak-2019- "Exploration of Effective Pedagogical Tools for Augmented Learning in Pharmacy Education: Matching Industry Requirements" (2019)**
- **Annual Convention of Association of Pharmaceutical Teachers of India- APTICON (2018)**
- **"Pharmaspeak"- Generic vs Branded drugs- A 360° Overview on Costs, Benefits and Efficacy (2017)**
- **National Conference on Industry Expectations from Academia (2016)**
- **Pharma Regulatory Affairs: Current Trends and Career Opportunities (2014)**

ABOUT CONFERENCE

AI in Healthcare and Pharmaceutical sector is at a tipping point, with research breakthroughs and innovative technologies, unlocking unprecedented opportunities that are reshaping both markets and modern medicine. With a rapidly evolving landscape, the integration of AI offers unprecedented opportunities to revolutionize drug discovery, patient care, personalized treatment, electronic health records and operational efficiency. AI in Healthcare and Pharmaceutical has the potential to transform the health and lives of our population. The conference titled **"Transformative Journeys: Harnessing AI and Innovation for Sustainable Development of the Pharmaceutical and Healthcare Sector"** aims to explore the convergence of AI, innovation, and sustainability in this critical industry.

This conference brings together researchers, and leaders from academia, industry, and policy-making bodies for exploring the critical intersection of AI, and innovation in the sustainable development of the pharmaceutical and healthcare sector. It will provide a dynamic platform to discuss the current and future trends shaping the pharmaceutical and healthcare sectors. It will focus on how AI-driven solutions can address global healthcare challenges, improve access to quality medicines, and contribute to the United Nations' Sustainable Development Goal (SDG 3: Good Health and Well-being). The conference will facilitate knowledge sharing among various stakeholders viz. research scholars, industry leaders, and policymakers, fostering collaborations to identify and address the challenges and opportunities posed by rapid technological advancements.

This conference represents a unique opportunity to understand the transformative potential of AI and innovation in shaping the future of healthcare and pharmaceuticals, ensuring a sustainable, efficient, and accessible healthcare ecosystem for all.

CONFERENCE OBJECTIVES

- To encourage dialogue and networking among researchers, industry experts, policymakers, and academicians.
- To explore the impact of AI on innovation and sustainability in the pharmaceutical and healthcare sectors.
- To promote collaboration among key stakeholders for achieving United Nations' Sustainable Development Goals (SDGs).
- To identify actionable insights and strategies for integrating AI into healthcare systems.
- To enable academicians to keep pace with changing times and adapt and incorporate novel techniques in their work culture.
- To sensitize and create awareness amongst the students of the AI-based latest transformations in the industry and make them future-ready.
- To discuss the negative effects of AI on pharmaceutical & healthcare sector, and sustainable development.

CONFERENCE OUTCOMES

- Explore the Intersection of AI and pharmaceutical and healthcare sectors for sustainable development.
- Acquire knowledge and seek collaborations with various stakeholders.
- Identify challenges and opportunities associated with the implementation of novel technologies.
- Foster a culture of innovation to provide solutions to common problems.
- Develop practical frameworks and strategies for integrating artificial intelligence.
- Enhance Digital Capabilities to ensure affordability and accessibility to quality medicinal products
- Address global trends and impacts.
- Encourage policy development.

MESSAGES

Anandiben Patel
Governor, Uttar Pradesh

सत्यमेव जयते

Raj Bhavan
Lucknow - 226 027

12 December, 2024

MESSAGE

As the Governor of the vibrant state of Uttar Pradesh, I am honored to learn about the International Conference entitled *"Transformative Journeys: Harnessing AI and Innovation for Sustainable Development of Pharmaceutical and Healthcare Sector"*, being organized at the Lloyd Institute of Management and Technology, Greater Noida, on 14th December 2024.

In this era of rapid technological advancements, the integration of artificial intelligence and innovative solutions is crucial in driving sustainable progress in the pharmaceutical and healthcare sectors. This conference provides an invaluable opportunity for experts, researchers, and industry leaders to come together, share knowledge, and explore how AI and innovation can shape a healthier and more sustainable future.

The conference's focus on harnessing these transformative technologies for the betterment of society aligns with the goals of fostering progress, collaboration, and transdisciplinary education. I am confident that the insights and discussions from this event will lead to groundbreaking solutions and impactful contributions to both the pharmaceutical and healthcare fields.

I wish the organizers, speakers, and participants great success in their endeavors. May this conference inspire innovative ideas and pave the way for sustainable development that will benefit not only Uttar Pradesh but the global community.

Anandi Patel

(Anandiben Patel)

प्रतापराव जाधव
PRATAPRAO JADHAV

सत्यमेव जयते

आज़ादी का अमृत काल

राज्य मंत्री (स्वतंत्र प्रभार)
आयुष मंत्रालय
व
राज्य मंत्री
स्वास्थ्य एवं परिवार कल्याण मंत्रालय
भारत सरकार

MINISTER OF STATE
(INDEPENDENT CHARGE) OF
MINISTRY OF AYUSH AND
MINISTER OF STATE OF
MINISTRY OF HEALTH & FAMILY WELFARE
GOVERNMENT OF INDIA

Message

It gives me immense pleasure to convey my best wishes for the grand success of the International Conference on *"Transformative Journeys: Harnessing AI and Innovation for Sustainable Development of Pharmaceutical and Healthcare Sector"*, being organized by the esteemed Lloyd Institute of Management and Technology, Greater Noida, on 14th December 2024.

This conference is a testament to the institute's commitment to fostering innovation and addressing critical global challenges in pharmaceutical and healthcare sectors. By focusing on the transformative potential of artificial intelligence and sustainable development, the event provides a unique platform for academicians, researchers, industry professionals, and thought leaders to exchange knowledge, explore new ideas, and drive impactful collaborations.

I am confident that this gathering of brilliant minds will yield valuable insights, contribute to the advancement of science and technology, and inspire actionable solutions for a brighter, healthier future.

Congratulations to the organizing team for this remarkable effort. May this event be a resounding success and a source of inspiration and collaboration for all participants.

Warm regards,

(Prataprao Jadhav)

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Residence : 23, Ashoka Road, New Delhi-110001, Tele. : 011-23740412, 23740413, 23345478
Camp office : Khasdar Jansampark Karyalay, Jijamata Krida Sankul, Buldhana, Maharashtra-443001
Telefax : 07262-247777, E-mail : prataprao.jadhav@sansad.nic.in

आशीष पटेल
मंत्री
प्राविधिक शिक्षा एवं उपभोक्ता मामले
उत्तर प्रदेश

अ. शा.प.सं. ...म.मं./..... वीआईपी/मंप्राशि0उ0मा0/24
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आवास : 0522 - 2235211
आवास : 1 - ए, माल एवेन्यू, लखनऊ

दिनांक : ...12/12/24.....

MESSAGE

I would like to extend my heartfelt best wishes for the success of the International Conference on "Transformative Journeys: Harnessing AI and Innovation for Sustainable Development in the Pharmaceutical and Healthcare Sector," organized by the Lloyd Institute of Management and Technology, Greater Noida. This conference promises to be a remarkable platform for exploring innovative solutions at the intersection of AI, technology, and sustainable development within the pharmaceutical and healthcare industries.

May this conference stimulate insightful discussions, foster creative collaborations, and play a pivotal role in shaping the future of education, research, and industry practices. I am confident that the exchange of knowledge and experiences will lead to meaningful outcomes and contribute to lasting, positive change in the sector.

I wish all the organizers, speakers, and participants a truly successful and inspiring event!

(Ashish Patel)

Prof. Vandana Arora Sethi
Chief Strategy Officer & Head of Growth,
Lloyd Institute of Management & Technology (Pharm.)

Dr. G.N. Singh
Advisor
to Hon'ble CM, UP &
Former-DCGI

Office : Room No. 501-502
Lal Bhadur Shastri Bhawan,
Lucknow
☎ 0522-2215514
email:advisorfsda@gmail.com

Date: 20th Nov. 2024

MESSAGE

I am pleased to learn that Lloyd Institute of Management and Technology is organizing the International Conference titled, *"Transformative Journeys: Harnessing AI and Innovation for Sustainable Development of Pharmaceutical and Healthcare Sector"*, on 14th December 2024, at Lloyd campus in Greater Noida, Uttar Pradesh, India.

This conference is a commendable initiative that highlights the institute's commitment to advancing research, innovation, and sustainable development. The chosen theme is both timely and crucial, addressing the integration of artificial intelligence and innovation to revolutionize the pharmaceutical and healthcare sectors.

Such events provide a vital platform for academicians, researchers, and industry leaders to exchange ideas, share knowledge, and collaborate toward solving the pressing challenges of our time. I am confident that this conference will foster meaningful discussions and generate valuable insights that contribute to a sustainable future.

My best wishes to the organizing team, participants, and speakers for a successful and impactful conference. May it serve as a source of inspiration and a catalyst for transformative progress in these critical fields.

(Dr G N Singh)

प्रो. टी. जी. सीताराम
अध्यक्ष
Prof. T. G. Sitharam
FNAE, DGE, FASCE, FICE (UK)
Ph.D. (Univ of Waterloo, Canada), D.Sc
Post Doc (Univ of Texas, @Austin USA)
Chairman

सत्यमेव जयते

अखिल भारतीय तकनीकी शिक्षा परिषद्
(भारत सरकार का एक सांविधिक निकाय)
(शिक्षा मंत्रालय, भारत सरकार)
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ALL INDIA COUNCIL FOR TECHNICAL EDUCATION
(A STATUTORY BODY OF THE GOVT. OF INDIA)
(Ministry of Education, Govt. of India)
Nelson Mandela Marg, Vasant Kunj, New Delhi-110070
Phone : 011-26131498
E-mail : chairman@aicte-india.org

MESSAGE

I am delighted to extend my warmest congratulations to Lloyd Institute of Management and Technology for organizing the International Conference on the theme *"Transformative Journeys: Harnessing AI and Innovation for Sustainable Development of Pharmaceutical and Healthcare Sector"* on 14th December 2024.

This conference is a testament to the institute's forward-thinking vision, as it addresses the integration of artificial intelligence, innovation, and sustainability within the pharmaceutical and healthcare sectors. In these rapidly evolving fields, AI-driven solutions hold the potential to revolutionize global healthcare systems, enhance accessibility to quality medicines, and contribute meaningfully to the United Nations Sustainable Development Goals.

I would also like to commend Lloyd Institute for its exemplary initiative in hosting the *Inventors Challenge 2024*. The event was a remarkable success and a true celebration of innovation and creativity. Such efforts not only inspire young minds but also align perfectly with the objectives of fostering a culture of research and innovation in education.

With esteemed partners such as IBM Career Education, the Indian Pharmaceutical Association-Delhi State Branch, and the PHD Chamber of Commerce and Industry, this conference is poised to provide an invaluable platform for knowledge sharing and collaboration. It will undoubtedly inspire groundbreaking ideas and strategies that address global challenges and pave the way for sustainable advancements in healthcare and pharmaceuticals.

On behalf of the All India Council for Technical Education (AICTE), I extend my best wishes for the grand success of the conference. I trust that this initiative will continue to elevate Lloyd Institute as a beacon of excellence in education and innovation, contributing to a better, healthier future for all.

T. G. Sitharam

(Prof. T. G. Sitharam)

प्रो० जय प्रकाश पाण्डेय
कुलपति
Prof. Jai Prakash Pandey
Vice Chancellor

डॉ० ए०पी०जे० अब्दुल कलाम प्राविधिक विश्वविद्यालय
उत्तर प्रदेश, लखनऊ
Dr. A.P.J. ABDUL KALAM TECHNICAL UNIVERSITY
Uttar Pradesh, Lucknow

Date: 23th Nov. 2024

MESSAGE

With great pleasure and enthusiasm, I extend my heartfelt congratulations and best wishes for the resounding success of the International Conference on ***"Transformative Journeys: Harnessing AI and Innovation for Sustainable Development of Pharmaceutical and Healthcare Sector"***, to be held on 14thDecember 2024, and hosted by the Lloyd Institute of Management and Technology.

As the Vice Chancellor of AKTU, I deeply appreciate the pivotal role of artificial intelligence and innovation in reshaping pharmaceutical sciences and healthcare. The theme of this conference resonates strongly with the principles of modern education and research, emphasizing the integration of cutting-edge technology and sustainable practices. I am confident that this event will contribute significantly to advancements across multiple domains and inspire transformative progress.

This conference provides a vital platform for bringing together experts, researchers, and visionaries from diverse disciplines to share their insights and engage in meaningful discussions. Such intellectual exchanges are crucial for reimagining how we integrate technology and education to address the complex challenges of our time. I am firmly convinced that the knowledge and innovative ideas presented here will profoundly influence educational institutions, research endeavors, and policy frameworks.This conference stands as a beacon of inspiration, fostering collaboration and driving progress on a global scale.

May this International Conference ignite new ideas, strengthen networks, and contribute to the global advancement of education, research, and technology for a sustainable future.

(Prof. Jai Prakash Pandey)
Vice Chancellor

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ASSOCIATION OF PHARMACEUTICAL TEACHERS OF INDIA

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Bangalore – 560035, Karnataka state, India

Email: aptienquiry@gmail.com **&** aptipresident1@gmail.com **Website:** http://www.aptiindia.org

MESSAGE

Dear Esteemed Colleagues and Participants,

Greetings...!

With great pleasure and enthusiasm, I extend my heartfelt congratulations and best wishes for the resounding success of the International Conference on "Transformative Journeys: Harnessing AI and Innovation for Sustainable Development of Pharmaceutical and Healthcare Sector", to be held on 14th December 2024, at Lloyd Institute of Management and Technology.

I deeply appreciate the pivotal role that artificial intelligence and innovation play in reshaping pharmaceutical sciences and healthcare. The theme of this conference resonates strongly with the core principles of modern education and research, emphasizing the integration of cutting-edge technology and sustainable practices. The conference will serve as a pivotal platform for teachers to enhance their skills by exposing them to cutting-edge advancements in AI and innovation, fostering interdisciplinary approaches, and equipping them to integrate these transformative tools into education and research effectively.

This conference offers an invaluable platform for bringing together experts, researchers, and thought leaders from diverse fields to share their expertise and engage in meaningful discussions. Such intellectual exchanges are essential for reimagining how we integrate technology and education to address the complex challenges facing us today. I firmly believe that the knowledge and innovative ideas shared here will have a profound impact on educational institutions, research initiatives, and policy frameworks.

May this International Conference spark new ideas, strengthen professional networks, and contribute to the global advancement of education, research, and technology for a sustainable future.

Best wishes and compliments,

Association of Pharmaceutical Teachers of India
Reg. No. 122
1966-1967
National

Prof. Milind J. Umekar
M.Pharm, Ph.D., MBA, Ph.D., FASc, FIPS
National President, Association of Pharmaceutical Teachers of India
Principal, Smt. Kishoritai Bhoyar College of Pharmacy, Kamptee, Nagpur, M.S.

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THE INDIAN PHARMACEUTICAL ASSOCIATION (DELHI STATE BRANCH)
(2020 – 2022)
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Date: 20th Nov. 2024

MESSAGE

It gives me immense pleasure to extend my best wishes for the grand success of the International Conference on *"Transformative Journeys: Harnessing AI and Innovation for Sustainable Development of Pharmaceutical and Healthcare Sector"*, scheduled to be held on 14th December 2024 at Lloyd Institute of Management and Technology, Greater Noida.

The conference theme highlights the transformative potential of artificial intelligence and innovation in addressing the critical challenges faced by the pharmaceutical and healthcare sectors. It reflects a forward-thinking approach that aligns with the global vision of sustainable development, emphasizing the integration of cutting-edge technology to enhance healthcare outcomes and promote environmental stewardship.

As the President of the Indian Pharmaceutical Association – Delhi State Branch (IPA-DSB), I truly appreciate the efforts of Lloyd Institute of Management and Technology in organizing such a significant event. This conference provides a unique platform for academicians, industry leaders, and researchers to exchange knowledge, foster collaborations, and explore pathways toward a healthier and more sustainable future.

I am confident that this initiative will leave a lasting impact by inspiring innovative ideas, catalyzing research, and strengthening the synergy between education, technology, and healthcare. My heartfelt congratulations to the organizers, speakers, and participants for their dedication to this noble cause.

Wishing this conference a resounding success and a meaningful legacy in the pharmaceutical and healthcare domains.

Warm regards,

Kalhan Bazaz
President,
IPA (Delhi State Branch)

Manohar Thairani
President,
Lloyd Group of Institutions

MESSAGE FROM
PRESIDENT

It is with great pleasure and excitement that I extend a warm welcome to all participants of the International Conference on *"Transformative Journeys: Harnessing AI and Innovation for Sustainable Development of Pharmaceutical and Healthcare Sector",* scheduled for 14th December 2024, at Lloyd Institute of Management and Technology, Greater Noida.

I am inspired by the convergence of brilliant minds and transformative ideas that this conference represents. The theme of this event underscores the critical role of artificial intelligence and innovation in driving sustainable advancements within the pharmaceutical and healthcare sectors.

This conference is a testament to the power of collaboration, offering a platform for leading researchers, Industry professionals, and academicians to exchange knowledge, share groundbreaking insights, and work collectively toward addressing global healthcare challenges. By emphasizing the importance of AI and sustainable development, it aligns with the need to integrate technology and innovation for long-term societal impact.

I am confident that the discussions and outcomes from this conference will inspire meaningful progress, foster impactful partnerships, and pave the way for revolutionary advancements in healthcare and pharmaceutical sciences.

My heartfelt congratulations to the organizing team for curating this impactful event, and my best wishes to all participants for a conference filled with enriching experiences and transformative takeaways.

Dr. Vandana Arora Sethi
Chief Strategy Officer &
Head of Growth,
Lloyd Group of Institutions

MESSAGE FROM

GROUP DIRECTOR

It is with immense pride and heartfelt joy that I welcome you all to the International Conference on "Transformative Journeys: Harnessing AI and Innovation for Sustainable Development of the Pharmaceutical and Healthcare Sector," scheduled to be held on 14th December 2024 at Lloyd Institute of Management and Technology, Greater Noida.

Having dedicated 19 years of my professional journey to Lloyd, it is profoundly fulfilling to see our institution host this landmark event. This conference is not just an academic gathering but a reflection of our unwavering commitment to excellence, innovation, and the pursuit of knowledge that transforms lives.

The theme of the conference highlights the transformative power of artificial intelligence and innovation in addressing global challenges and advancing sustainable practices in the pharmaceutical and healthcare sectors. It represents the culmination of our institution's ethos of fostering interdisciplinary collaboration and bridging the gap between research, education, and industry.

This event brings together visionaries, thought leaders, and innovators from across the globe to create a dynamic platform for meaningful dialogue and groundbreaking solutions. It is an opportunity for us to collectively reimagine the future of healthcare and pharmaceuticals, paving the way for a more sustainable, healthier world.

I am confident that the insights, collaborations, and innovative solutions emerging from this conference will have a far-reaching impact, inspiring progress and igniting new possibilities.

My sincere gratitude to my organizing team, distinguished speakers, and participants for their dedication to making this event a success. Together, let us create an unforgettable experience that adds a significant chapter to Lloyd's journey of excellence.

CHIEF GUEST

PROF. J. P. PANDEY

Hon'ble Vice Chancellor

Dr. A.P.J. Abdul Kalam Technical University,
Lucknow, Uttar Pradesh

Prof. J. P. Pandey, the Hon'ble Vice Chancellor of Dr. A.P.J. Abdul Kalam Technical University (AKTU), Lucknow, Uttar Pradesh, is a distinguished academic leader with extensive experience in technical education. Prior to his current role, he served as Vice-Chancellor of Madan Mohan Malviya Technical University (MMTU), where his visionary leadership earned the university an A-grade accreditation from NAAC—the first technical university in Uttar Pradesh to achieve this milestone. Prof. Pandey completed his B.Tech in Electrical Engineering from Ram Manohar Lohia University, Faizabad, in 1987, followed by a PhD from Uttar Pradesh Technical University. Prof. Pandey has a proven track record of fostering academic excellence and innovation.

As Controller of Examination at AKTU, he introduced transformative initiatives like digital evaluation and online question paper delivery systems. Committed to advancing technical education, he emphasizes timely result declarations and envisions a future where AKTU leads in cutting-edge fields such as artificial intelligence, machine learning, and drone technology. His dedication to integrating technology into education continues to shape AKTU's path toward becoming a hub of academic and research excellence.

EMINENT GUESTS & SPEAKERS

DR. RAJIV CHHIBBER

Vice President - External Affairs
Sahajanand Medical Technologies Ltd

Mr. Rajiv Chhibber is a Senior Corporate Affairs, Policy, Communications & Media Strategist with experience across Pharmaceuticals / Medical Devices Industry, Development Sector (Health, Environment, Climate Change, Energy and Sustainable Development) and Education Industry. At Sahajanand Medical Technologies Pvt. Ltd. (SMT), Mr. Rajiv is responsible for driving strategic priorities & business vision with the Central and State Governments, Regulatory Agencies, Industry Bodies, NGOs and Associations in addition to advising on policy matters, advocacy, managing complex reputational issues, outreach & stakeholder engagement for the adoption of portfolio products. Mr. Rajiv holds a Master's degree in Journalism and Mass Communication and a Bachelor's degree in English Literature from Delhi University. He has a post-graduate diploma in Newspaper and Feature writing (Montgomery College, University of Maryland, USA) and pursued a Public Health Leadership in professional course in NCDs from Emory University, Atlanta USA and a Communications Development Programme in Public Health Engagement by Wellcome Trust, UK at the London School of Hygiene and Tropical Medicine (LSHTM), UK. He was awarded an Honorary Doctorate from Aztec's University (UNESCO), Mexico in the year June 2019 the field of 'Global Public Health Communication and Policy'.

PROF. R. K. KHAR

Director
B. S. Anangpuria Institute of Pharmacy
Faridabad, Haryana

Prof. R.K. Khar is a distinguished academician and research scientist currently serving as the Director at B.S. Anangpuria Institute of Pharmacy. He earned his B.Pharm and M.Pharm degrees from Dr. Hari Singh Gour Vishwavidyalaya. His academic journey includes a Ph.D. fellowship under the Indo-Bulgaria cultural exchange programme. Prof. Khar dedicated 37 years to Jamia Hamdard as Dean and HOD of the Faculty of Pharmacy, Dean Students Welfare, Placement officer, and Proctor. His extensive academic contributions include supervising 72 Ph.D. and 110 M. Pharm thesis and publishing over 301 research papers in international and national journals. Prof. Khar holds 14 Indian and 2 US patents and has authored 10 textbooks and 2 reference chapters. Elected as a Fellow of the Indian Pharmaceutical Association, Prof. Khar received the "Teacher of the Year Award in 2002" from the Indian Pharmaceutical Teachers Association. Additionally, he has been honored with the Best Cited Paper Award in 2011 and 2012 by the European Journal of Pharmaceutics and Biopharmaceutics.

MR. RAJIV GULATI

Ex President-Ranbaxy, Ex CMD-Eli Lilly, Senior Advisor-Keuro, Advisor-Revayu Strategic Advisor-Eliph Nutrition & MergerDomo

Mr. Rajiv Gulati is a seasoned pharmaceutical and business leader with over 40 years of extensive experience in marketing, strategic planning, and business development. He has held prominent roles, including President at Ranbaxy and CMD at Eli Lilly India. Currently, he serves as a Senior Advisor at Keuro, Strategic Advisor at MergerDomo, and Advisor to organizations such as Eliph Nutrition and Revayu. An alumnus of the Indian Institute of Management Ahmedabad (MBA, Marketing and Behavioral Sciences), Mr. Gulati also holds an M.Pharm in Pharmaceutical Sciences from IIT-BHU and a B.Pharm from Delhi University. Throughout his illustrious career, he has contributed to various industries, serving as a Director at VST Industries Limited (an affiliate of British American Tobacco) and working with multiple global and domestic enterprises in leadership and advisory capacities. In addition to his corporate endeavors, Mr. Gulati has been instrumental in mentoring businesses and advising startups on growth strategies, mergers, and acquisitions. His rich experience and visionary leadership continue to impact the pharmaceutical and healthcare sectors significantly.

MR. RAMAN K. KHEPAR

Sr. Director- Global Marketing Jubilant Biosys Ltd

Mr. Raman Kumar Khepar is an accomplished international marketing professional with 26+ years of experience in the healthcare sector. He has a deep understanding of marketing, sales and digital marketing, prioritizing customer satisfaction to consistently achieve optimal outcomes. With a strategic and structured approach, Mr. Khepar offers data-driven solutions to overcome challenges. In his most recent role before joining Jubilant Biosys, Mr. Khepar served as the Associate Vice President and Head of Marketing for International Business at Cadila Pharmaceuticals in Gujarat. He had a successful stint with GSK (India and Global) where he held key leadership positions, including General Manager for Digital Strategy and Transformation at Europe Digital Hub – Poland and Senior Global Marketing Manager for Allergy at GSK's Centre of Excellence. He has donned significant roles at GSK India, including Sales and Marketing head for Nepal, Head Hospital Team (MMHT), GPM for Specialty Brands and various senior roles in sales.

Mr. Khepar completed his M.Sc. in Forensic Science from Punjabi University. He holds a PG Certification in Management from SP Jain Institute, Mumbai, Diploma in Marketing from AMA, Ahmedabad and certifications in Marketing Management and leadership from IIM Indore, IIM Lucknow. He has also obtained a certification in Digital Marketing from Google – UK.

DR. HIMANSHU KUMAR CHATURVEDI

Scientist-G & Head-Disease Modeling,
Indian Council of Medical Research (ICMR),
Dept. of Health Research,
Ministry of Health & Family Welfare,
Govt. of India

Dr. Himanshu K. Chaturvedi is a distinguished Scientist, currently working as Scientist G & Head Disease Modelling in ICMR HQ, New Delhi. Before that he was Acting Director of the National Institute for Research in Digital Health and Data Science (erstwhile National Institute of Medical Statistics), Indian Council of Medical Research, New Delhi. Major area of his research reflects deep understanding of Biostatistics/Epidemiology and its application in public health & clinical research. Estimation of risk factors of non-communicable diseases, Malaria burden estimation (National & States), Geo-spatial mapping of dengue in Delhi. Clinical trial design for Clinical research, Sampling design for large public health surveys (National&State), and study design for malaria/dengue surveillance to estimate burden are some of his lifetime learning experience to achieve study targets. He has published about 85 research articles in SCI journals such as Lancet, Nature, BMC Public Health, Malaria, PLOS One, BMC Open, etc. including technical reports, and also few book chapters. As Ph.D. Supervisor of GGSIP University, he has supervised four Ph.D. Research Scholars and three of them awarded Ph.D. degree in medical statistics/health science. He has been an expert member of many technical advisory committees of ICMR and MoHFW, WHO member of VARG (International) and many scientific committees of other Institutes. As an academician, he has contributed immensely as reviewer of many SCI journals, and also academic editor of an international journal such as PLOS One.

Dr. Rahul Amritraj is a visionary leader in healthcare innovation, renowned for his work in medical technology, clinical innovation, and strategic healthcare management. As the Head of the Centre for Medical Innovation at GIMS, he has established Uttar Pradesh's first and India's second public hospital-based medical incubation center, following AIIMS Delhi. Recognized as a Stanford University Biodesign Center, this incubator supports MedTech startups with access to clinical settings, disease-specific cohorts, clinical validation, and efficacy trials. Dr. Amritraj holds an interdisciplinary PhD focused on managing delays in oral cancer diagnosis, co-supervised by professors from Sharda University and AIIMS Delhi, and an MBA from FMS Delhi University. His academic background includes studies in dentistry, healthcare communication in social work, and a short course in healthcare informatics from PGIMER and the University of Oslo, Norway. He is also a resident doctor in the Department of Dentistry and Maxillofacial Surgery at GIMS, where he applies his clinical knowledge to drive healthcare innovation. During the COVID-19 pandemic, he served as the administrative head of Uttar Pradesh's top-ranked COVID Control Centre at GIMS, earning recognition from the Government of Uttar Pradesh. An advocate for integrating clinical insights with technology, Dr. Amritraj has delivered over 100 speaker sessions, holds four patents, and has spoken at major events like the World Cancer Congress and Punjab's Cancer Care Pathway Workshop.

DR. RAHUL AMRITRAJ

Head, Centre for Medical Innovation,
Government Institute of Medical
Sciences (GIMS), Uttar Pradesh

MR. ASIM KUMAR DUTTA

Sr. Packaging Consultant &
Ex Head-Packaging Development,
Jubilant Life Sciences

Mr. Asim Kumar Dutta is a seasoned packaging professional with over 30 years of diverse experience across the flexible packaging, FMCG, food, and pharmaceutical industries. He has held notable positions, including as the Head of Packaging Development at Jubilant Life Sciences, and currently serves as a Senior Packaging Consultant based in Delhi. Over his career, Mr. Dutta has provided consultancy to prominent organizations such as Inventia Healthcare Ltd. (Mumbai, India), SK+F (Dhaka, Bangladesh), ACME Laboratories Ltd. (Dhaka, Bangladesh), Beximco Pharmaceuticals Ltd. (Dhaka, Bangladesh), and Intertek Plc, where he served as a Technical Advisor for Food Safety Audits and Certifications. In addition to his industrial contributions, Mr. Dutta is actively involved in academia, sharing his expertise as a faculty member with reputed institutions including the Indian Institute of Packaging (IIP), an autonomous body under the Ministry of Commerce and Industry, the Delhi Institute of Pharmaceutical Sciences and Research (DIPSAR), and the National Institute of Pharmaceutical Education and Research (NIPER), Chandigarh. His extensive knowledge, combined with his impactful contributions, has made him a highly respected figure in both the packaging industry and academia.

MS. PARUL NAIN

Deputy General Manager,
Regulatory Medical Writing, Sun Pharmaceuticals Industries Limited

Parul, a postgraduate in Pharmacology (M.Pharm) from Delhi University and currently pursuing a Ph.D. in Pharmaceutical Sciences from Amity University, brings over 17 years of experience in regulatory medical writing. Her career spans roles in global pharmaceutical companies and Contract Research Organizations (CROs) such as CD Pharma, GVK Biosciences, and TCS. With expertise in authoring and reviewing regulatory medical writing documents across various therapeutic areas, Parul has also contributed to developing SOPs, job aids, and templates for medical writing processes. Her leadership experience includes managing and mentoring teams of medical writers. Parul's professional journey began with two years in clinical operations, followed by three years as a lecturer at Delhi University (DIPSAR), where she trained pharmacology students. Her comprehensive experience in clinical research, regulatory writing, and academia positions her as a well-rounded expert in the pharmaceutical domain. .

MR. SUDHANSHU SHARMA

Training Manager,
Abbott India Ltd.

Mr. Sudhanshu Sharma is a dynamic professional with over 21 years of experience in the pharmaceutical industry, specializing in sales, people development, and training. For the past nine years, he has excelled as a training manager, committed to lifelong learning and inspiring his colleagues through innovation, enthusiasm, and dedication. He envisions making sales training an integral part of business planning, execution, and development. Mr. Sharma has worked with leading national and multinational companies, driving excellence in sales and workforce development. His certifications include the FLDP Certification from IIM Ahmedabad, NLP Practitioner Certification, Abbott Global Module TBM Certifications (Prima, Magna & Maxima), Transactional Analysis, Post Graduate Diploma in Guidance and Counselling (PGDGC), and Level 1 & 2 Situational Leadership Training. A passionate trainer, Mr. Sharma is recognized for his ability to motivate and empower field colleagues, fostering growth and innovation in sales training and people development initiatives.

MS. SHIVI SABHARWAL

Co-Founder & CEO,
WellM

Shivi brings over 17 years of rich and diverse experience spanning the music, media, fashion, and human resource industries. As the co-founder of WellM, a venture close to her heart, she is dedicated to creating a nurturing ecosystem that supports mental and physical wellbeing. Her work with WellM reflects her deep commitment to helping individuals and organizations unlock their potential by fostering joy, resilience, and a healthier way of living.

A mother of two, a wife, and a professional who has seamlessly juggled multiple roles, Shivi has gained profound insights into the importance of balancing emotional and physical wellness. She channels these experiences into her work, encouraging others to prioritize self-care and cultivate meaningful connections in all aspects of life.

Shivi holds a postgraduate degree in Marketing from Lancaster University, UK. Her passion for promoting healthy living and work-life harmony fuels her mission to inspire and empower others to lead more fulfilling lives.

MR. VIPIN TYAGI

Co-Founder and Director,
Inmito Meditech Pvt. Ltd.,
New Delhi

Vipin Tyagi is a distinguished serial entrepreneur with over two decades of experience in medical technologies. During his illustrious career, he has worked with US and European medical device leaders such as BD, Medtronic and St Jude Medical Inc (Abbott) for their Neuromodulation therapies and established a successful business for them. He is an accomplished and award-winning entrepreneur who has co-founded and led Inmito Meditech in year 2010, a renowned name among the medical fraternity as a specialized neurological medical device organization delivering precise technological solutions for the South Asian market. Inmito is also actively associated with continuous medical education and cooperates with respective medical societies in creating awareness towards various neurological solutions.

DR. POOJA PHOGAT

Co-Founder and Co-CEO,
Krystelis India Private Limited

Pooja Phogat holds a PhD in Microbiology and brings over 20 years of pharmaceutical industry experience. For the last 18 years, Pooja has focused on building and delivering medical writing, clinical trial disclosure and data transparency services. This included Board-level leadership and providing regulatory consulting. As the Co-Founder and Co-CEO of Krystelis, Pooja oversees a company that provides medical writing, medical communications and clinical trial transparency services to global pharmaceutical companies. Pooja is a recognised thought leader in medical writing and clinical trial transparency and has presented at several national and international conferences. She actively participates in Drug Information Association (DIA) as the Chairperson of the DIA India Medical Writing Community. Additionally, she contributes to the DIA Clinical Trial Disclosure Community, the Plain Language Summary Working Group, and co-chairs the EU-Clinical Trial Regulation Working Group. Additionally, she co-chairs the European Medical Writers Association (EMWA) Corporate Communications sub-SIG group and is a member of the International Society for Medical Publication Professionals (ISMPP) Asia Pacific Collaborations Outreach Committee and Indian Society for Clinical research (ISCR). Pooja has authored several international publications in peer-reviewed journals and has been honored with several awards and fellowships at the national level.

MS. SHARMILA DAS

Data Science Consultant, Public Sector (AI & Analytics), IBM, Gurgaon

Sharmila Das is a seasoned AI and analytics professional with over 18 years of experience in data science, operations research, and advanced analytics across diverse industries. She holds an MS in Operations Research from the University of Delaware, USA, and an M.Sc. and B.Sc. in Mathematics from Delhi University, India. Currently serving as a Subject Matter Expert in Advanced Analytics at IBM Consulting, Sharmila specializes in cognitive and predictive analytics for public sector clients in financial services. Her prior experience includes leadership roles at Cognizant Technology Solutions and marketRx, where she managed offshore and onsite teams, developed innovative solutions, and built functional teams in areas such as marketing, digital, and predictive analytics. She has worked extensively with top pharmaceutical clients like Novartis, Johnson & Johnson, AstraZeneca, and Pfizer, delivering solutions in promotion mix modeling, targeting, sales force planning, and reporting. Sharmila's notable achievements include leading the operationalization of marketing response and targeting models for oncology using Symphony APLD data, establishing local analytics teams for e-commerce clients in internet marketing, and scaling HR analytics teams to generate significant business growth. An active contributor to academia, she has conducted workshops on Watson Analytics at the Data Science Congress in Mumbai and has been a visiting faculty member at premier institutions like Symbiosis, Reva University, and Aegis.

MS. MEENAL BHAT

Managing Director, Kraftland Consults Pvt. Ltd.

With over 20 years of experience in corporate strategy, strategic planning, and business analytics, Ms. Meenal Bhat has built an impressive career spanning the pharmaceutical, medical devices, and consumer health sectors. She has worked in consulting and industry roles with a diverse geographical focus, including Western and Eastern Europe, Africa, Southeast Asia, and the US. Meenal has held senior positions such as Managing Director at Kraftland Consults Pvt Ltd, Engagement Manager at SmartAnalyst, and Manager of Business Analytics at Johnson & Johnson Medical Asia Pacific. She has also contributed to Johnson & Johnson Medical India and consulted for Wyeth Pharmaceuticals. A Dean's List MBA graduate from AIM Manila and a Bachelor of Engineering from Pune University, she is also trained in minimally invasive surgical techniques. Meenal's expertise encompasses strategic planning, growth strategy, go-to-market strategy, portfolio management, market sizing, forecasting, market access, and customer segmentation. Her notable accomplishments include supporting business plans for leading Indian pharmaceutical companies, transforming sales and dealer operations for global medical device firms, and developing global strategies for biotech and health-tech innovators. She was instrumental in setting up Johnson & Johnson Medical's Asia Pacific Analytics Centre, introducing tools that became global standards, and receiving the prestigious OTW Award for her contributions.

DR. AASHIMA PUNYANI

Associate Manager
(Clinical FSP Operations),
IQVIA

Dr. Aashima Punyani is a seasoned professional with over 12 years of experience in clinical research and hospital administration. She demonstrates expertise in clinical trial monitoring, project management, and the creation of essential clinical project documents, including PMMs. Dr. Punyani excels in identifying site issues and implementing corrective and preventive actions to ensure seamless project execution. Her capabilities extend to functional management, backed by international experience in reviewing, analyzing, developing, and implementing clinical projects. She is adept at problem resolution and devising creative solutions for new and existing systems and processes, ensuring deliverables meet client requirements, quality standards, regulatory compliance, and project timelines. Known for her strong leadership qualities and organizational skills, Dr. Punyani is skilled at nurturing and strengthening teams while adapting to evolving priorities and roles. Her innovative approach to business dynamics and management practices sets her apart as a reliable and visionary leader in clinical research and healthcare administration.

DR. GAURAV TANEJA

National Lead (Pharma) -
Category Management,
Reliance Retail - Netmeds

Dr. Gaurav Taneja is an accomplished healthcare professional with over a decade of diverse experience spanning Category Management, Product Management, Clinical Pharmacology, and Clinical Outcomes Research. He holds a patent and has authored 11 international publications, reflecting his contributions to the healthcare and pharmaceutical sectors. Dr. Taneja has played a pivotal role in developing and managing one of the largest medical catalogs, encompassing pharmaceuticals and hospital supplies. His expertise extends to clinical process automation, where he successfully designed and implemented digital clinical outcomes studies for wound care and cardiology in U.S. healthcare facilities. He brings vast experience in designing, facilitating, and implementing large-scale EMR/EHR/HIS systems across 30 hospitals, along with RIMS, LIMS, and Practice Management systems. Additionally, Dr. Taneja has a strong track record in creating and managing databases for Clinical Decision Support Systems (CDSS) to optimize practice management. His career highlights include establishing clinical pharmacology and pharmacy protocols for large hospital chains and clinics, consulting on PhD and DNB research, and leading strategic initiatives in category management and digital healthcare platforms. Dr. Taneja has held leadership roles in reputed organizations such as Reliance Retail (Netmeds), Medikabazaar, Digital, and AIG Business Solution Pvt. Ltd.

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ICTJ-O-001

DESIGN, DEVELOPMENT & EVALUATION OF ANTI-DIABETIC MICROSPHERE BY IONOTROPIC GELATION METHOD USING NATURAL POLYMER

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ABSTRACT

The present work is performed for design, development and evaluation of anti-diabetic microsphere by ionotropic gelation method using natural polymer like glipizide, calcium chloride, sodium alginate, chitosan. A 3^2 full factorial design is fixed to elucidate the effect of variables via the amount of drug and amount of polymer. The evaluation parameter performed for glipizide microsphere are bulk density, tapped density, % carr's index, hausner's ratio, angle of repose, *in vitro* release, particle size, etc. The microspheres were found to be discrete, spherical with free flowing properties. The present study conclusively that microsphere could be prepared successfully and formulation F4 was shows satisfactory result. The prepared microspheres to maintain an effective of drug concentration in serum for long period of time and reducing gastric irritation. Hence, it is concluded that the microspheres are successfully prepared by ionotropic gelation method and has potential to deliver anti-diabetic drug in a controlled manner in a regular fashion over extended period of time can be used for a successful oral delivery of anti-diabetic drug for safe management of diabetics.

Keywords: Microsphere, Anti-diabetic, Chitosan, Evaluation parameters.

ICTJ-O-002

DEVELOPMENT AND CHARACTERIZATION OF CURCUMIN LOADED CHITOSAN NANOPARTICLES

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ABSTRACT

Nanomedicine and nanotechnology are revolutionizing healthcare, facilitating advanced diagnostics, medical devices, and therapeutic interventions at the nanoscale, thereby significantly enhancing patient outcomes. Among the avant-garde tools in nanomedicine are chitosan nanoparticles, which function as proficient nanocarriers. In contrast to synthetic pharmaceuticals, bioactive compounds like curcumin—a phytotherapeutic agent renowned for its anti-inflammatory and antioxidant attributes—present a more favorable safety profile, mitigating toxicity risks. Curcumin's therapeutic versatility spans wound healing, cardiovascular health, diabetes management, and neuroprotection in Alzheimer's disease. The convergence of nanotechnology with naturally derived compounds such as curcumin is garnering considerable interest for its potential to facilitate targeted and efficacious drug delivery. This research aimed to establish curcumin-loaded chitosan nanoparticles via the ionotropic gelation method. Characterization using UV-visible spectroscopy, Fourier-transform infrared (FTIR) spectroscopy, and zeta sizer analysis unveiled diameter of 272 nm, a zeta potential of 24 mV, and encapsulation efficiency between 75–80%. The release profiles and corroborative analytical data affirm the formulation's stability and efficacy, underscoring its potential to augment curcumin's bioavailability and therapeutic impact. These results highlight the promise of chitosan-based nanocarriers in delivering bioactive agents, advancing the paradigm of safe and efficient drug delivery modalities.

Keywords: Nanomedicine, Phytotherapeutic, Efficacy, Neuroprotection, Stability.

ICTJ-O-003

THE EVOLVING LANDSCAPE OF NUTRACEUTICAL REGULATION: REGULATORY INSIGHTS FROM KEY MARKETS

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ABSTRACT

This review explores the pharmaceutical relevance of nutraceuticals by examining regulatory frameworks in countries like the United States, European Union, Japan, Australia, and India. To analyse the current regulatory frameworks for nutraceuticals, identify challenges, and propose strategies for improving global harmonization and standardization to ensure consumer safety and product efficacy. The study involved a comprehensive review of regulatory documents, scientific literature, and policy guidelines from major regulatory bodies, including the FDA (USA), FSSAI (India), EFSA (EU), and others. Comparative analysis was performed to identify key differences, challenges, and opportunities for harmonization. The analysis revealed that regulatory approaches vary significantly. The United States adopts a lenient model under DSHEA (1994), with no pre-market approval, whereas the European Union enforces stringent regulations, treating some nutraceuticals as medicinal products. India categorizes nutraceuticals under FSSAI with defined labelling and safety requirements. The lack of global harmonization contributes to discrepancies in product quality, safety standards, and claims validation. Global harmonization of nutraceutical regulations is imperative for ensuring consumer protection and fostering innovation. Establishing unified standards can enhance market transparency, prevent misleading claims, and support the growth of the nutraceutical industry.

Keywords: Functional foods, World Trade Organization (WTO), Health claims, Quality, Consumers.

ICTJ-O-004

AN ANALYSIS OF THE MERITS AND DEMERITS OF USE OF ARTIFICIAL INTELLIGENCE IN PHARMACEUTICAL BUSINESS MANAGEMENT IN INDIA

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ABSTRACT

The objective of this paper was to study "An Analysis of the Merits and Demerits of Use of AI in Pharmaceutical Business Management in India". AI offers a very promising future for basic and competitive healthcare sector of India, per se, will certainly have several merits in Pharmaceutical Business Management including enhancing the diagnostics through accurate image analysis, personalizing the treatment plans based on individual patient data, and enabling the remote monitoring, especially beneficial in rural areas of the nation. However, the challenges will bring some demerits of ethical concerns in data privacy and algorithmic bias, high implementation costs, and potential job displacement etc., which will need careful consideration before inception to avoid rumours, propaganda and evangelism. The robust regulatory frameworks and public trust are pre-requisite to fully realize the benefits of AI in return on investment and sustainable development; and overcome the challenges. India can revolutionize its Pharmaceutical Business and healthcare system by leveraging huge AI's potential in improving the patient recovery and satisfaction. A structured questionnaire on pharmaceutical business, AI, transformation, sustainable development, and financial requirements was administered to all possible stake holders (n=100); analysed and interpreted without bias and concluded in outstanding outcomes.

Keywords: Artificial intelligence (AI), Pharmaceutical Business Management, Transformation, Sustainable development, Finance.

ICTJ-O-005

NOVEL TREATMENT OF DIABETIC NEUROPATHY (DN): A REVIEW

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ABSTRACT
Diabetic Neuropathy is a communal problem approximately to affect 30–50% of people with Diabetes Mellitus. Diabetic Neuropathy may be a varied set of clinical manifestations affecting the peripheral nervous system. Microvascular complications can also occur in diabetes related peripheral neuropathy and results in notable increase in morbidity, like as chronic pain, foot ulcerations and amputations, and mortality. Its treatment is principally Glycemic control but there are also some drugs which helps to cure or manage high neuropathic pain. There are FDA approved drugs like Duloxetine, Pregabalin and Tapentadol are very helpful in painful diabetic neuropathy. Other drugs include Gabapentin, Carbamazepine and other topical agents like Lidocaine, Capsaicin and Nitrates are helpful in diabetic neuropathic pain. There are some drugs also which are in trial phase like Cibinitide, Olodanrigan etc. In this article we have discussed previous and current advances in handling of diabetic neuropathy.
Keywords: Diabetic Neuropathy, FDA approved Drugs, Painful Diabetic Neuropathy.

ICTJ-O-006

EVALUATION OF GELS BASED ON NON-IONIC SURFACTANTS ENTRAPPED WITH DIPIVEFRIN HYDROCHLORIDE FOR THE TREATMENT OF OCULAR DISEASE

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ABSTRACT
The present study was aimed on developing and characterizing niosomal gels loaded with adrenergic agonist; dipivefrin HCl for prolonging precorneal residence time and improving bioavailability of drug for glaucoma treatment. Dipivefrin HCl niosomes were prepared using various non-ionic surfactants (span 20, span 60 and span 80) in the presence of cholesterol in different molar ratios by ether injection method. The selected formulations were incorporated into carbopol 934 and locust bean gum-based gels. TEM studies confirmed that niosomes formed were white and spherical in shape and have a definite internal aqueous space with uniform particle size. Formulation F4 composed of span 60 and cholesterol (1:1) gave the highest entrapment (92.16±0.25%) and slower release results after 8 hours (Q8h=61.05±2.87%) among other formulations. The in-vitro drug permeation studies showed that there was a slow and prolonged release of drug from niosomal gel formulations as compared to niosomes itself. Considering the in-vitro release, niosomal gel formulation G2 were the best among the studied formulations. No sign of redness, inflammation, swelling or increased tear production was observed by Draize test. The IOP lowering activity of selected formulation was detected and compared with marketed Pilopine HS® gel. G2 formulation showed relative bioavailability 2.64 times more than bioavailability of marketed Pilopine HS® gel.
Keywords: Niosomes, Dipivefrin HCl, Niosomal gel, Draize test, IOP, Antiglaucomatic activity.

ICTJ-O-007

TARGETED DRUG DELIVERY IN IMMUNOTHERAPY: THE ROLE OF ANTIBODY-DRUG CONJUGATES

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ABSTRACT

This presentation delves into the intricacies of ADC design and development, shedding light on their mechanism of action. ADCs utilize receptor-mediated internalization to selectively deliver cytotoxic payloads to target cells, followed by controlled intracellular drug release to maximize therapeutic impact while minimizing systemic toxicity. Advances in linker technology and payload optimization have played a pivotal role in enhancing the stability, efficacy, and therapeutic index of ADCs. Robust linkers ensure that the cytotoxic drug remains stable in circulation but releases efficiently within the target cells. Examples such as brentuximab vedotin and trastuzumab emtansine underscore the clinical efficacy of ADCs, particularly in oncology, where they have significantly improved outcomes in diseases like Hodgkin's lymphoma and HER2-positive breast cancer. Despite their promise, ADCs face challenges, including immunogenicity, off-target toxicities, and complex manufacturing processes. Addressing these hurdles requires interdisciplinary collaboration and ongoing innovation. Here we highlights the potential of ADCs to redefine therapeutic strategies in immunotherapy, not only in oncology but also in infectious diseases and autoimmune disorders. By leveraging their precision-targeting capabilities, ADCs are poised to set new benchmarks in personalized medicine, paving the way for more effective and safer treatment options.

Keywords: Antibody-drug conjugates, Targeted drug delivery, Immunotherapy, Monoclonal antibodies, Linker technology.

ICTJ-O-008

IMPROVING SOLUBILITY AND BIOAVAILABILITY OF BOSENTAN VIA ULTRASOUND-ASSISTED MELT SONOCRYSTALLIZATION

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ABSTRACT

The goal of this work was to use the melt sonocrystallization (MSC) approach to improve the poor aqueous soluble BCS class II medication bosentan's solubility, dissolution rate, and bioavailability. Melt sonocrystallization is a newer technique of solubility enhancement of low water soluble drug. Melt sonocrystallized powder agglomerate of bosentan was prepared using probe sonicator. Effect of sonication time on solubility and dissolution rate of drug was studied. The obtained powder agglomerates (MSC bosentan) underwent an in vitro dissolutio study, drug content analysis, and solubility evaluation. Characterization of powder agglomerates was performed by Fourier transformed infrared spectroscopy (FT-IR), Differential scanning calorimetry (DSC), X-ray powder diffraction (XRPD) and Scanning electron microscopy (SEM). Solubility and In vitro dissolution study suggests that as time of sonication increases the solubility and dissolution rate also increases. The saturation solubility study showed increased solubility of bosentan from 10.880 ± 0.010 to 28.632 ± 0.06 in distilled water. DSC, XRD and SEM study confirmed the reduction in crystallinity of bosentan. Relative degree of crystallinity (RDC) ware calculated and found to be 0.54 which further confirmed the amorphous conversion of crystalline drug with significant reduction in particle size. Thus it was concluded that melt sonocrystallization is an effective and solvent free technique used for enhancement of solubility of poor water soluble drugs.

Keywords: Bosentan, Melt sonocrystallization, BCS class II, powder agglomerates, DSC, SEM.

ICTJ-O-009

THE RISE OF ARTIFICIAL INTELLIGENCE IN HEALTHCARE SYSTEM AND PHARMACEUTICAL INDUSTRY

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ABSTRACT

Innovation in pharmaceuticals and healthcare is a cornerstone of improving patient outcomes, enhancing disease management, and transforming the global healthcare landscape. Recent advancements have accelerated due to technological integration, regulatory support, and increased research investments. Our current health care system's performance can be defined by its rules, policies, regulations, enabling technologies, operating models, customs, and patient and provider preferences; together, these elements comprise the frontier of what is possible. They also serve as the constraints to what can be achieved Precision medicine and illness diagnosis are two areas where artificial intelligence (AI) has demonstrated great promise. But there are also significant worries about the possible abuse of patient data and the possibility of replacing entry-level medical personnel. When it comes to managing the complex and varied nature of big data in medicine, it presents a number of difficulties. AI has several advantages for the healthcare industry, its employees, and the patients that deal with it on a daily basis. Health care providers can use the technology to create customised treatment plans and diagnose diseases more rapidly and precisely than they could on their own, while doctors can anticipate decreased operating expenses as a result of better decision-making and more effective automated services. More effective health services may result in better health outcomes and reduced expenses for patients.

Keywords: Artificial intelligence, Technological integration, Healthcare, Pharmaceutical industry.

ICTJ-O-010

CORRELATION OF FUNCTIONAL CAPACITY AND DISEASE SEVERITY INDICES WITH QUALITY OF LIFE IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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ABSTRACT

Chronic Obstructive Pulmonary Disease (COPD) reduces exercise capacity which in turn restricts patient's ability to carry out daily activities and affects Quality Of Life (QOL). Siminute walk test is a simple measure to assess functional capacity which can be an indirect measure of quality of life. There is a paucity of literature on correlation of six minute walked distance (6MWD) with quality of life in Indian scenario hence need for present study. This was a tertiary care hospital based Observational study with an aim to find correlation between functional capacity and QOL in patients with COPD. Spirometry-confirmed COPD GOLD category I-IV patients of 5 years or more disease duration, in the age group of 50-70 years, either gender were included. The study factors were six minute walked distance and QOL questionnaires (SGRQ-C, SF 12, and CAT). The data was analysed using Pearson's correlation. A total of 30 subjects were enrolled and moderate correlation was observed between 6MWD and QoL scores SF-12 and CAT, (r=0.442 and -0.410) respectively, with a p value < 0.05. The disease severity as assessed by mMRC dyspnoea scale and BODE score showed moderate correlation with 6MWD (r=-0.559 and -0.537respectively, with a p value <0.002). A moderate correlation exists between functional capacity and QOL in patients with varying degree of COPD. The 6 MWT may be good test to reflect the health-related QOL in COPD patients.

Keywords: Functional capacity, Six minute walked distance, Quality of Life, Chronic Obstructive, Pulmonary Disease.

ICTJ-O-011

INVESTIGATING PUBLIC UNDERSTANDING AND USAGE OF PROBIOTICS FOR DIGESTIVE HEALTH

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ABSTRACT

This study aims to assess the public's knowledge, perceptions, and usage of probiotics, focusing on their understanding of benefits, safety, and effectiveness in managing digestive health conditions. A cross-sectional survey was conducted among 500 participants from diverse demographic backgrounds using a structured questionnaire. The survey explored participants' awareness of probiotics, sources of information, frequency of use, preferred forms (e.g., supplements, fermented foods), perceived health benefits, and barriers to usage. Findings indicate that while 70% of participants were familiar with probiotics, only 45% demonstrated accurate understanding of their benefits and appropriate use. Younger adults were more likely to use probiotics, often influenced by social media and advertising, while older participants relied on healthcare recommendations. Key barriers identified were high costs, lack of clear information, and skepticism about product claims. The study highlights the need for public education campaigns to promote accurate understanding of probiotics, focusing on evidence-based benefits and appropriate usage. Healthcare professionals and trusted platforms play a critical role in dispelling myths and guiding informed choices. These findings provide valuable insights for policymakers and industry stakeholders to improve accessibility and responsible use of probiotics for digestive health.

Keywords: Probiotics, Digestive health, Safety, Cross-sectional survey, Awareness

ICTJ-O-012

ASSESSING CONSUMER KNOWLEDGE ABOUT MEMORY-ENHANCING AND STRESS-RELIEVING NUTRACEUTICALS

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ABSTRACT

This study aims to assess consumer understanding of memory-enhancing and stress-relieving nutraceuticals, focusing on awareness, perceptions, and usage patterns. A cross-sectional survey was conducted with 400 participants from diverse demographics using a structured questionnaire. The survey examined their familiarity with these nutraceuticals, sources of information, frequency of use, perceived benefits, and barriers to adoption. Results reveal that while 60% of participants were aware of these nutraceuticals, only 35% had a clear understanding of their mechanisms and clinical evidence. Younger consumers showed greater usage, often influenced by social media and online reviews, while older participants relied more on healthcare provider recommendations. Misconceptions about "natural" equating to "risk-free" were prevalent across all age groups. The findings underscore the need for targeted educational efforts to enhance consumer awareness and promote informed decision-making. Collaboration between healthcare professionals, policymakers, and the nutraceutical industry is essential to ensure product transparency, affordability, and responsible usage. This study provides valuable insights into consumer behavior and lays the groundwork for strategies to bridge knowledge gaps in memory-enhancing and stress-relieving nutraceuticals.

Keywords: Nutraceuticals, Stress relief, Perceptions, Social media influence.

ICTJ-O-013

INNOVATIVE FORMULATION AND DEVELOPMENT OF NANOGELS WITH CLOVE OIL AND TANNIC ACID FOR ORAL ANTIMICROBIAL DELIVERY

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ABSTRACT

This study aims to develop and characterize nanogels loaded with clove oil and tannic acid for oral antimicrobial delivery. Nanogels, as promising drug delivery systems, offer several advantages including sustained release, enhanced bioavailability, and targeted delivery. The nanogel formulation process involved the careful selection of polymers and optimization of various parameters such as particle size, zeta potential, and encapsulation efficiency. Characterization of the developed nanogel was conducted using dynamic light scattering (DLS), scanning electron microscopy (SEM), and Fourier-transform infrared spectroscopy (FTIR). *In vitro* antimicrobial assays were performed to evaluate the efficacy of the clove oil and tannic acid-loaded nanogels against common oral pathogens. The results demonstrated significant inhibition of microbial growth, indicating the potential of this nanogels as an effective oral antimicrobial delivery system. Nanogels based materials have high drug loading capacity, biocompatibility, and biodegradability which are the key points to design a drug delivery system effectively. The study concluded that the developed nanogels represent a promising approach for the oral delivery of clove oil and tannic acid. The nanogels offer several advantages, including sustained release, enhanced antimicrobial activity, and reduced cytotoxicity.

Keywords: Antimicrobial Therapy, Nanogel, Tannic acid, Periodontal diseases, Clove oil.

ICTJ-O-014

A SURVEY ON THE KNOWLEDGE AND USE OF NUTRACEUTICAL PRODUCTS AMONG YOUNG ADULTS, MIDDLE-AGED, AND ELDERLY POPULATIONS

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ABSTRACT

This study examines the knowledge, awareness, and use of nutraceuticals among young adults (18–35 years), middle-aged adults (36–55 years), and elderly individuals (56+ years). A cross-sectional survey of 300 participants (100 per group) assessed demographics, awareness, preferences, and barriers to usage. Results indicated notable differences among age groups. Middle-aged adults showed the highest awareness (75%) and usage, motivated by health concerns such as hypertension and joint issues. Young adults displayed moderate awareness (60%), using nutraceuticals for fitness, energy, and wellness, influenced heavily by social media. The elderly group had the lowest awareness (45%), relying on healthcare providers and focusing on products like calcium and vitamin D for bone health. Barriers include high costs, limited reliable information, and concerns about safety and efficacy, particularly among young and elderly participants. The study highlighted the need for targeted educational campaigns to improve awareness and encourage informed usage. Findings provide actionable insights for policymakers, healthcare providers, and the nutraceutical industry to develop age-specific strategies, enhancing accessibility, affordability, and trust in nutraceutical products, ultimately fostering better health outcomes across all demographic groups.

Keywords: Nutraceuticals, Awareness, Elderly Health, Educational Campaigns, Public Health.

ICTJ-O-015

A SURVEY TO ASSESS THE UNDERSTANDING OF NUTRACEUTICAL CONCEPTS AMONG PHARMACY UNDERGRADUATES

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ABSTRACT

A cross-sectional survey was conducted among 250 pharmacy undergraduates across various academic years in a university setting. Using a structured questionnaire, the study evaluated their familiarity with key nutraceutical concepts, including definitions, classifications, therapeutic benefits, safety concerns, and regulatory frameworks. The survey also examined their awareness of evidence-based applications and the role of nutraceuticals in preventive healthcare. Preliminary findings reveal varying levels of understanding across academic years, with senior students demonstrating greater awareness of therapeutic applications and regulatory aspects. Most participants expressed interest in gaining deeper insights into nutraceuticals, citing the increasing demand for these products in healthcare settings. The study underscores the importance of integrating nutraceutical education into pharmacy curricula to equip students with the skills needed to provide evidence-based recommendations. Targeted educational initiatives and practical training are recommended to address existing knowledge gaps and foster confidence in advocating for responsible nutraceutical use. These findings provide a basis for enhancing pharmacy education and preparing graduates to meet the evolving demands of healthcare.

Keywords: Nutraceuticals, Pharmacy undergraduates, Nutraceutical concepts, Therapeutic benefits

ICTJ-O-016

HARNESSING AI AND INNOVATION FOR SUSTAINABLE DEVELOPMENT OF PHARMACEUTICAL AND HEALTHCARE SYSTEM

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ABSTRACT

The advancement of Artificial Intelligence (AI) holds transformative potential for the sustainable development of the pharmaceutical and healthcare systems. By harnessing AI, healthcare providers and pharmaceutical companies can significantly improve patient care, streamline drug discovery, and optimize clinical decision-making. This not only accelerates the development of new treatments but also enhances the precision of personalized medicine, ensuring more effective and targeted therapies. AI is revolutionizing drug discovery by predicting molecular structures, optimizing clinical trial designs, and simulating drug interactions. These capabilities significantly reduce the time and costs associated with bringing new drugs to market. AI systems improve diagnostic accuracy and treatment recommendations by analyzing medical images, genomic data, and patient histories Sustainable development is further promoted as AI facilitates remote patient monitoring, telemedicine, and personalized healthcare, making services more accessible to underserved populations. However, to fully realize AI's potential in sustainable healthcare, it is essential to address ethical considerations, data privacy issues, and ensure equitable access to AI-driven innovations. Collaborative efforts between stakeholders, including governments, tech companies, and healthcare providers, will be crucial for maximizing AI's role in achieving long-term sustainable health outcomes.

Keywords: Machine learning, Deep learning, Natural language processing, Telemedicine, Remote patient monitoring, Clinical trials, Drug discovery.

ICTJ-O-017

SURVEYING DOCTORS' WILLINGNESS TO INCORPORATE NUTRACEUTICALS INTO THERAPEUTIC REGIMENS

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ABSTRACT

This study examines healthcare professionals' attitudes, knowledge, and openness toward adopting nutraceuticals. Using a structured questionnaire distributed across specialties, the research explores factors influencing perceptions, including awareness of scientific evidence, efficacy, safety concerns, regulatory frameworks, and patient demand. It also identifies barriers such as skepticism about clinical benefits, limited training in nutrition-focused therapeutics, and concerns over product quality and standardization. Preliminary findings reveal diverse opinions. Many doctors express interest in nutraceuticals as adjuncts to traditional treatments, contingent on robust clinical evidence. Others remain cautious due to issues like standardization and risks associated with patient self-medication. The study emphasizes the need for targeted education and clearer regulatory policies to bolster confidence in their use. This research bridges the gap between emerging nutritional science and medical practice, highlighting nutraceuticals' potential to enhance therapeutic options. By understanding doctors' perspectives, it aims to foster a collaborative healthcare environment and guide policymakers, institutions, and industry stakeholders in addressing challenges, promoting informed adoption, and responsibly integrating evidence-based nutraceuticals into patient care.

Keywords: Complementary medicine, Therapeutic regimens, Standardization, Medical practice.

ICTJ-O-018

POTENTIAL OF NITROFURANTOIN CYCLODEXTRIN NANOSPONGE COMPLEX: ENHANCE SOLUBILITY AND MASKING BITTER TASTE

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ABSTRACT

The aim of this study was the development of Nitrofurantoin (NFN) loaded b-cyclodextrin (β –CD) based nanosponges (NS) for bitter taste masking, improving solubility, dissolution rate and oral bioavailability. NFN loaded NS were fabricated by reacting β-CD with the cross-linker diphenyl carbonate at different ratios (1:1, 1:2, 1:4, 1:6, and 1:8 respectively). Pure NFN showed nearly 100 mcg/ml solubility in distilled water while at 1:8 (β-CD: DPC) ratio the soliubility was found to be 250 mcg/ml i.e. nearly 2.5 fold enhancement in solubility was observed. The SEM of the NFN loaded NS (1:8 β-CD: DPC ratio) showed highly spherical surface morphology. For formulation containing a 1:8 ratio of β-CD to DPC, the average particle size was measured at 324.78 ± 10.45 nm, with a low polydispersity index of 0.196 ± 0.054. The zeta potential was found to be -20.59 ± 0.4 mV, indicating sufficient electrostatic repulsion to maintain particle dispersion. As compared to pure NFN, NFN loaded NS showed faster release in pH 7.2 phosphate buffer. *In vitro* studies revealed slow release of NFN from pure NFN over a period of 2 h. The plain NFN suspension was found to have a strong bitter taste, with an average score of 3.95 ± 0.57, while the NFN nanosponges (1:8 ratio) had a mean bitterness score of only 0.10 ± 0.00. These findings suggest that the NFN (1:8 ratio) has the potential to completely mask the bitter taste of NFN.

Keywords: Nitrofurantoin, Solubility, Taste mask, Nanosponge, Cyclodextrin.

ICTJ-O-019

STEM CELLS – AN ADVANCED STRATEGICAL STUDY ON REGENERATIVE MEDICINE

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ABSTRACT
Stem cells are regenerative cells that differentiate into specialized types. Stem cells have been envisioned to become an unlimited cell for regenerative medicine. As this Cells lies beyond direct application of the disease. They might also find out the previous history of cells types for screening platform, which might facilitate the development of more efficient & safer drugs. Stem cell transplant , particularly hematopoietic stem cell transplant (HSCT) are well – established treatment for certain types of cancers , primarily those affecting the blood & bone marrow, such as leukemia, lymphoma and multiple myeloma. Stem cells have the ability to differentiate into various specialized cells types which makes unique & promising tool for replenishing damaged tissues & organs. Skin stem cells are used to heal severe burns, limbal stem cells can restore the damaged cornea. Pluripotent Cells *i.e.*, embryonic stem cells (ESC) or induced Pluripotent stem cell (iPSC) differentiate into cells of 3- embryonic lineages. Pluripotent stem cells, especially the patient – specific iPSC have a tremendous therapeutic potential, but their clinical application will require overcoming numerous drawbacks. Therefore, the use of adult stem cells which are multipotent or unipotent can be at present a more achievable strategy. Despite these challenges, the field of regenerative medicine is rapidly advancing & stem cells research holds the promise for successful treatment of wide ranging diseases.

Keywords: Stem cell, Regenerative medicine, Pluripotent cell, Hematopoietic, Bone marrow.

ICTJ-O-020

REVOLUTIONIZING PHARMACOVIGILANCE: ARTIFICIAL INTELLIGENCE'S ROLE IN DRUG SAFETY AND PREDICTIVE TOXICOLOGY

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ABSTRACT
Adverse drug reactions (ADRs) pose a serious problem for the medical field as they affect patient safety and drive up expenses. Early detection of ADRs and drug-induced toxicity is vital for assessing a medicine's safety. Artificial Intelligence (AI) and machine learning (ML) have transformed this process, making risk management, signal identification, and adverse event detection more accurate and efficient in pharmacovigilance. By evaluating enormous datasets, including as genetic information, electronic medical records, and drug interactions, AI has the potential to completely transform ADR prediction and prevention. AI may forecast individual susceptibility to ADRs and spot trends using sophisticated ML techniques. This greatly improves patient outcomes and lowers the incidence of ADRs by enabling early risk detection, customized medication regimens, and real-time monitoring. PV can benefit greatly from generative AI as it can improve pharmaceutical safety, speed up the discovery of adverse events, and improve patient outcomes. Maintaining human control, protecting data privacy, and addressing ethical issues are essential to ensuring its effective usage.

Keywords: Pharmacovigilance, Artificial Intelligence, Adverse Drug Reactions, Drug Induced Toxicity, Pharmaceutical Safety.

ICTJ-O-021

POTENTIAL EFFECT OF BIHERBAL EXTRACT: AN INTEGRATED APPROACH TO CURE WOUNDS ON DIABETIC RAT (*RATTUS NORVEGICUS*)

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ABSTRACT

Biherbal plant extracts have been tested in this study for their therapeutic potential in wound healing in a rat model for 21 days where specific pathogen-free male wistar rats ,weight- 250 to 350 g; age- 8 to 10 week will be taken. Biherbal plant extraction which are widely acknowledged for their antioxidative and anti-inflammatory qualities, Topically, these were applied to the 'excisional wounds' and 'burn wound' that were made on the dorsal side of diabetic rats induced by Toxin. Measurements of the reduction in area, evaluation of tissue samples for antioxidant enzyme activity and histopathological were used to evaluate the degree of wound healing. The biherbal extract groups having effective wound closure rate capability, as demonstrated in the results. By day 14, the wound had significantly decreased in size and by day 21, it had completely healed. A lesser degree of oxidative stress associated with diabetes was indicated by the presence of higher antioxidant enzyme levels, like superoxide dismutase and catalase. These findings suggest that biherbal preparations may have the potential to enhance wound healing mechanisms in diabetes; by improving cellular repair processes and minimize oxidation these herbal medicines can help prevent diabetic wound complications.

Keywords: Biherbal Extraction, Wound healing, Diabetic Rat.

ICTJ-O-022

SIMULATION-BASED EVALUATION OF NOMILIN'S POTENTIAL AS A PARP-1 INHIBITOR IN TRIPLE-NEGATIVE BREAST CANCE

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ABSTRACT

We present our findings on Nomilin, a glucoside-derived limonoid from citrus fruits, as a promising natural anticancer agent with a high binding affinity for PARP1, a key protein involved in DNA repair and tumor progression. Molecular docking studies revealed that Nomilin exhibits a high binding affinity (-12.3 kcal/mol) with the PARP1 protein (PDB ID: 4DQY), surpassing the reference drug Talazoparib (-10.6 kcal/mol). This suggests Nomilin's superior ability to target critical pathways involved in tumor survival and metastasis. The stability and quality of the molecular docking studies were validated through Normal Mode Analysis (NMA), further supporting its potential as a therapeutic agent. These findings highlight Nomilin's promise in developing targeted treatments for cancer, particularly TNBC. Density Functional theory (DFT) analysis further supported the strength of the molecular connections by revealing information about the electronic and interaction energies of the ligand- protein complex. Good absorption, distribution, metabolism and excretion profiles were found by SwissADME predictions to assess the pharmacokinetic characteristics of Nomilin. These results highlight the potential of Nomilin as a natural agent targeting PARP1 for treating TNBC and acting as a potent anticancer compound. Utilizing environmentally friendly phytochemicals in precision oncology offers a promising strategy for developing safer and more effective cancer therapies.

Keywords: Nomilin, PPAR-1, Triple Negative Breast Cancer, Molecular Docking, NMA, DFT.

ICTJ-O-023

UFASOMES-BASED THERAPIES FOR CANCER DISEASE

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ABSTRACT

Ufasomes, vesicles formed from unsaturated fatty acids and their ionized forms, have emerged as promising drug delivery systems due to their biocompatibility, stability, and unique structural features. These closed lipid bilayers operate within a narrow pH range (7–9), which is essential for maintaining their integrity. Their fatty acid molecules align with hydrocarbon tails facing inward and carboxyl groups interacting with water, enabling efficient drug encapsulation and controlled release. We have highlighted the ufasome potential in cancer therapy, where targeted drug delivery is critical for efficacy and a reduction in systemic side effects. Ufasomes encapsulate both hydrophilic and hydrophobic drugs, such as doxorubicin and paclitaxel, with high efficiency. Functionalization with ligands, such as folic acid or antibodies, allows site-specific targeting by binding to overexpressed tumor cell receptors. Additionally, their ability to respond to stimuli such as the acidic tumor microenvironment or enzymatic activity ensures that drug release is precisely and effectively carried out. These nano-vesicles, ufasomes, are shown by preclinical research to improve drug bioavailability, bypass multidrug resistance (MDR), and enhance therapeutic outcome. Nevertheless, issues such as long-term storage stability, scalability for large-scale production, and clinical validation remain open. Despite these limitations, recent developments in their stability, dynamic behavior, and microscopic structure reveal them to be promising efficient nanocarriers. Ufasomes signify a major breakthrough in the field of oncology-a safer and more effective therapeutic agent than conventional chemotherapy. Their further research is critically required to optimize their properties with translational findings into promising clinical applications.

Keywords: Ufasomes, Drug delivery systems, Cancer therapy, Targeted drug delivery.

ICTJ-O-024

DEVELOPMENT AND CHARACTERIZATION OF CHRYSIN LOADED CHITOSAN NANOPARTICLES

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ABSTRACT

Nanotechnology has indeed gathered significant attention across various fields due to its transformative potential. By manipulating materials at the nanometer scale (1-100 nm), nanotechnology enables the creation of nanoparticles that exhibit unique properties compared to their bulk counterparts. These advantages have broad applications, particularly in science, technology, industry, and health. Nanoparticles require far less material than traditional bulk materials to achieve similar or superior effects, making processes more efficient and cost effective. Chytosin loaded nanoparticles were developed and its characterization was carried out by UV–vis spectroscopy, scanning electron microscopy (SEM), Transmission electron microscopy (TEM), DSC, zetasizer and zeta potential . The size of developed nanoparticle was found to be 197.3 nm and the particles were spherical in shape.

Keywords: Chrysin, Chitosan, Nanoparticles.

ICTJ-O-025

DECIPHERING RESVERATROL AND FERULIC ACID AS SYNERGISTIC ANTI-CANCER CHEMOTYPES USING TARGET NETWORK INTERPLAY STUDIES

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ABSTRACT

To elucidate underlying pharmacological mechanisms of a novel combination agents, Resveratrol and Ferulic acid (RFA) has been demonstrated for its effectiveness for cancer. The RFA used to excavate to predict the potential predicted genes using SuperPred, and SwissTargetPredictions. The intrinsic cancer genes were obtained from Therapeutic Target Database, DrugBank, UniProt, MalaCards, DisGeNET, GeneCards, and OMIM databases. Further, the network concerning the interactions between potential targets of RFA with the well-known cancer genes by using protein-protein interaction in String-db. The topological parameters (DNMC, Degree, Closeness, and Betweenness centrality) were calculated to excavate the core targets utilizing Cytoscape. Based on the degree-based, RELA, MAPT, TUBB3, AHR, ESR2, CYP3A4, CA6, and DYRK1A genes obtained amongst which the RFA demonstrated to have higher affinity towards RELA, TUBB3, CA6 and DYRK1A genes. The shared target proteins underscored the precise RFA and cancer network roles with the affirmation enrichment *P*-value of <0.025. The implications for the cancer pathways were profound with enrichment (*P*<0.01). The best pivotal eight proteins were docked harnessing Schrodinger Suite. Robust interactions were noticed with docking studies, authenticated using molecular dynamics, and MMGBSA. Rigorous testament is imperative through *in vitro* and *in vivo* anticipated in near future.

Keywords: Resveratrol, Ferulic acid, Anticancer, Network pharmacology, Protein-protein interaction.

ICTJ-O-026

A COMPARATIVE ANALYSIS OF ANTIOXIDANT ACTIVITY *OF PAVONIA ODORATA* STEM, *CRATAEVA NURVALA* LEAVES AND *SCHINUS POLYGAMA* LEAVES EXTRACTS: UNVEILING ANTIOXIDANT EXCELLENCE

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ABSTRACT
This study aimed to assess the antioxidant potential of six plant extracts [Ethanolic extracts of *Crataeva nurvala* (ECN), Ethanolic extracts of *Pavonia odorata* (EPO), Ethanolic extracts of *Schinus polygama* (ESP), Aqueous extract of *Crataeva nurvala* (ACN), Aqueous extract of *Pavonia odorata* (APO), Aqueous extract of *Schinus polygama* (ASP)] in comparison to Ascorbic acid (standard) using four widely accepted assays: DPPH (2,2-Diphenyl-1-picrylhydrazyl), FRAP (Ferric Reducing Antioxidant Power), NO (Nitric Oxide), and SRSA (Superoxide radical scavenging activity). The assays measured the free radical scavenging capacity of the extracts, helping to highlight their therapeutic potential as natural antioxidants. The results showed that ESP exhibited the strongest antioxidant activity across multiple assays, particularly in the SRSA, NO, and FRAP assays, where it either matched or outperformed the standard. APO also demonstrated significant antioxidant potential, especially in the NO and SRSA assays, while EPO exhibited moderate activity. Conversely, ECN, ACN, and ASP showed progressively weaker antioxidant properties. The findings suggest that ESP is the most promising extract for antioxidant applications, followed by APO and EPO, offering valuable insights for the development of natural antioxidant remedies and supplements.
Keywords: Antioxidant activity, DPPH assay, FRAP assay, NO assay, SRSA assay.

ICTJ-O-027

APPLICATION OF ARTIFICIAL INTELLIGENCE IN COMBATING HIGH ANTIMICROBIAL RESISISTANCE RATES

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ABSTRACT
Artificial intelligence (AI), a branch of computer science that deals with creating intelligent systems including clinical diagnosis, are greatly useful and are increasingly being applied to various aspects of AMR management. Furthermore, the availability of huge amounts of data from multiple sources has made it more effective to use these artificial intelligence techniques to identify interesting insights into AMR genes such as new genes, mutations, drug identification and conditions favourable to spread. AI-powered diagnostics are revolutionizing the identification of infectious agents and their susceptibility to antibiotics by enabling targeted interventions to prevent its spread. A multidisciplinary approach that integrates AI with other emerging technologies, such as synthetic biology and nanomedicine, could pave the way for effective prevention and mitigation of antimicrobial resistance, preserving the efficacy of antibiotics for future generations with efficient public health initiatives and responsible antibiotic stewardship. In this review, we aim to update our current knowledge on the basic principles of AI along with areas having potential to apply AI for combating AMR.
Keywords: Artificial Intelligence, Anti-microbial Resistance, Deep learning, Machine Learning, Nanomedicine.

ICTJ-O-028

HARNESSING THE ROLE OF FUNCTIONALIZED LIPOSOMES IN TARGETED THERAPY FOR BREAST CANCER

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ABSTRACT

Despite various groundbreaking advancements in the management of breast cancer, it continues to be the foremost cause of deaths among women globally. Traditionally, treated by the conventional treatment modalities that often result in several serious side effects along with multidrug resistance development; there is a dire end need for the development of novel treatment approaches. Liposomes which are small, spherical vesicles composed of lipid bilayers, can encapsulate both hydrophilic and hydrophobic substances represent one such drug delivery systems. These structures are widely used in drug delivery, biotechnology, and cosmetics due to their ability to improve the solubility, stability, and bioavailability of various compounds. These can be composed of natural or synthetic lipids and by encapsulating drugs these systems enhance their therapeutic efficacy while reducing side effects. Furthermore, they protect sensitive drugs from degradation, improve pharmacokinetics, and can target specific tissues or cells using surface modified moieties. The active targeting of cells *via* liposomes has emerged as a revolutionary strategy that enhances the specificity and efficiency of treatment. By functionalizing the liposome surface with targeting moieties such as ligands, antibodies, aptamers, peptides, or small molecules, liposomes can selectively bind to overexpressed receptors on target cells, such as cancerous or inflamed tissues subsequently causing effective destruction of the breast cancer cells thereby it opens a new treatment avenue for combating breast cancer. Here, we have focused on the various recent studies of surface modified liposomes highlighting their enhanced treatment efficacy in breast cancer management.

Keywords: Functionalized Liposomes, Breast cancer, Targeting, Antibody, Aptamers.

ICTJ-O-029

TRANSFORMING PHARMACY PRACTICE: THE AI REVOLUTION IN PATIENT CARE

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ABSTRACT

Artificial intelligence (AI) has grown significantly in the pharmaceutical industry and changed several facets of pharmacy jobs. Potential prospects to improve clinical pharmacy services in hospital or community settings are presented by artificial intelligence (AI). By evaluating enormous volumes of molecular data and forecasting drug-target interactions, artificial intelligence (AI) is transforming the drug research and development processes, resulting in more effective and economical drug development. Additionally, by detecting possible drug interactions, guaranteeing patient safety, and improving pharmaceutical prescriptions and dosages, AI-powered solutions help pharmacists manage their medications. But it is crucial to recognize that AI should not be seen as a replacement for human skill, but rather as a tool to enhance it. More developments in pharmacy practice are expected as AI develops further, opening the door to better patient outcomes and care. By gathering information from a variety of sources, such as online databases and libraries, this study aims to provide a broad overview of the application of AI in pharmacy procedures and its implications for health and wellbeing. According to the information gathered, the primary objectives are to prevent toxic or dangerous side effects from an excessive dosage and therapeutic failures brought on by noncompliance or erroneous drug prescription dosage.

Keywords: Artificial intelligence, drug-target interactions, patient safety.

ICTJ-O-030

ADVANCES IN COLON DRUG DELIVERY SYSTEMS: THE ROLE OF NATURAL POLYSACCHARIDES AS BIOCOMPATIBLE CARRIERS

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ABSTRACT

Colon drug delivery systems (CDDS) have emerged as a vital approach for targeting therapeutics to the colon, providing effective treatment for diseases such as Crohn's disease, ulcerative colitis, irritable bowel syndrome, and colorectal cancer. Polysaccharides like pectin, chitosan, alginate, xanthan gum, and guar gum possess distinct properties that enable them to resist degradation in the acidic and enzymatic environment of the upper gastrointestinal tract while undergoing selective breakdown by colonic microbiota. This presentation delves into the application of natural polysaccharides in CDDS, focusing on their superiority over synthetic polymers. Key formulation approaches, such as polysaccharide-coated tablets, hydrogels, and microspheres, are discussed alongside mechanisms that ensure precise, site-specific drug release. Despite their potential, challenges such as variability in degradation rates and stability during storage persist, driving research into advanced solutions. Innovations such as polysaccharide-based nanocarriers and combination delivery systems hold promise for overcoming these limitations. Natural polysaccharides offer a sustainable and efficient platform for colon-targeted drug delivery, addressing therapeutic needs while meeting the demand for biocompatible solutions. This study emphasizes the importance of ongoing research and development to fully harness the capabilities of polysaccharide-based CDDS.

Keywords: Colon drug delivery, Natural polysaccharides, Biodegradability, Biocompatibility, Pectin.

ICTJ-O-031

TRANSFORMING GENETICS-THE ROLE OF ARTIFICIAL INTELLIGENCE IN GENOMIC RESEARCH

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ABSTRACT

Artificial intelligence (AI) is a broad term include technologies designed to create machines capable of performing tasks that typically require human intelligence. AI systems recognize trends, proactively solve problems, and anticipate future scenarios. It relies on algorithms, data collection, and computational power, utilizing learning algorithms and graphics processing units (GPUs). In genomic research, various software tools are utilized. For example, BLAST is employed for rapid searches of gene sequence databases. Genome Threader is a tool that predicts gene structures, while Bioconductor is an open-source software project focused on analyzing and interpreting genomic data. It analyzes genetic data to provide insights into disease risk and treatment responses. In the healthcare field, AI is bringing about revolutionary changes. The Role of Artificial Intelligence in Genomics. Machine Learning Algorithms: These algorithms analyze vast amounts of genetic data to identify patterns and relationships that may not be immediately apparent. They can improve the accuracy of predictions related to disease susceptibility, treatment responses. Deep Learning Networks: A subset of machine learning, deep learning networks utilize layered structures called neural networks. These networks are particularly effective in handling complex datasets, such as genomic sequences, CNNs are specifically designed for processing grid-like data such as images, but they have also been adapted for genomic data analysis. By harnessing these AI techniques, researchers can enhance their understanding of genetic information, leading to breakthroughs in personalized medicine, and targeted therapies. The integration of AI in genomics is set to revolutionize how we approach healthcare and medical research.

Keywords: Artificial intelligence, Healthcare sector, Genomic research, Genomic.

ICTJ-O-032

ARTIFICIAL INTELLIGENCE IN THE SUSTAINABLE DEVELOPMENT OF NANOCARRIER DRUG DELIVERY SYSTEMS FOR CANCER TREATMENT

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ABSTRACT
Drug delivery systems based on nanocarriers have become a game-changer in the treatment of cancer because they provide effective and tailored medication administration while reducing systemic toxicity. However, there are obstacles to their growth, such as choosing the right materials, maximizing formulation parameters, and guaranteeing production sustainability. By incorporating computational methods like machine learning (ML), deep learning, and predictive modeling into the design and development process, artificial intelligence (AI) offers a potent remedy for these problems. The sustainable development of nanocarrier drug delivery systems for the treatment of cancer is examined in this work. The best nanocarrier compositions, such as lipids, biodegradable polymers, and hybrid materials, may be found using AI-driven algorithms to guarantee environmental sustainability and biocompatibility. In order to improve treatment efficacy, predictive models help adjust crucial factors like release kinetics, drug encapsulation efficiency, and particle size. Additionally, AI makes it easier to virtually test targeted ligands, increasing the nanocarriers' selectivity for tumor cells while lowering off-target effects. AI frameworks that incorporate sustainability measures guarantee resource-efficient manufacturing and reduce their negative effects on the environment. This abstract demonstrates how AI and nanotechnology are combining to create next-generation medication delivery systems, which have the potential to transform cancer treatment and advance environmental sustainability.
Keywords: Artificial Intelligence, Nanocarriers, Sustainable Development, Cancer treatment.

ICTJ-O-033

NOVEL SWEAT ABSORBING WIPES

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ABSTRACT
Palm sweating wipes are specialized hygiene products meticulously designed to alleviate the discomfort and inconvenience associated with sweaty palms, a condition medically known as hyperhidrosis. Individuals who suffer from hyperhidrosis often experience excessive perspiration that can lead to social anxiety and discomfort in everyday situations. These innovative palm sweating wipes typically incorporate absorbent materials, such as bamboo fabric, which effectively soak up excess moisture from the palms, ensuring that hands feel dry, fresh, and comfortable throughout the day. The overarching methodology can be named: *"Functionalized Fiber Engineering for Advanced Sweat-Absorbing Wipes." This term encapsulates the chemical, physical, and functional enhancements applied to bamboo fibers for hyperhidrosis applications. In addition to their moisture-absorbing properties, these wipes are formulated with gentle cleansing agents that help maintain skin health by removing impurities without causing irritation. Many palm sweating wipes are infused with soothing ingredients like aloe vera and chamomile, which work synergistically to condition the skin and provide relief from the irritation or discomfort that can occur with prolonged exposure to moisture. Convenience is a key feature of these wipes, making them an ideal solution for on-the-go use. Whether at work, at social events, or during physical activities, individuals can effortlessly manage sweaty palms, enhancing their confidence and comfort. Overall, palm sweating wipes offer a practical and effective solution for those experiencing excessive sweating in their hands, helping to combat dampness, slippery grip, and the social discomfort that often accompanies this condition.
Keywords: Palm-Sweating, Wipes, Hyperhidrosis, Excessive Sweating.

ICTJ-O-034

ROLE OF AI IN REVOLUTIONIZATION IN CLINICAL RESEARCH STUDY OF PHARMACEUTICAL AND NUTRACEUTICAL DEVELOPMENT

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ABSTRACT

Nutraceuticals have taken the spotlight during the past two decades as evidenced by the exponential publications on them. Coronavirus disease 2019 has caused global disruption and a significant loss of life. A growing demand exists for nutraceuticals, which seem to reside in the grey area between pharmaceuticals and food. In the current scenario people are deeply concerned about their health because of lifestyles have changed drastically due to increase in working hours and various psychological pressures, which have led to an increased incidence of various life- threatening diseases. Nutraceuticals are alternate beneficial compounds which provide additional health benefits apart from normal nutritional values. Because of their putative safety, nutraceuticals have sparked tremendous interest. Nutraceuticals are nutritional supplements that are used to improve health, postpone aging. With the growing implementation with the AI and virtual environment there is a better scope for the production of highest quality of Nutraceuticals and current study will help us to understand how can we develop Pharmaceuticals and Nutraceuticals by the help of AI used in Clinical research study.

Keywords: Nutraceuticals, Clinical Research, Guidelines, Impact of AI, Advanced Technologies.

ICTJ-O-035

CHEMICO-BIOLOGICAL INVESTIGATION OF BLUMEA LACERA (BURM. F.) DC. (FAMILY: ASTERACEAE) AREIAL PARTS UNVEILS NOVEL INSIGHTS INTO ITS ANTIOXIDANT AND ANTIDIABETIC POTENTIAL

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ABSTRACT

Traditional medicinal plants and herbs often serve as promising sources for drug discovery, particularly in combating various diseases. *Blumea lacera* (Burm.f.) DC., a medicinal herb native to Southeast Asia, is recognized for its significant therapeutic properties across multiple traditional medicinal systems. This study aims to establish a comprehensive phytochemical profile of *Blumea lacera* and assess its antioxidant properties. Extensive analyses were conducted, including phytochemical screening, to determine the plant's quality attributes and support its potential applications in formulations. GC-MS technique was employed to study extract molecular data. The antioxidant activity of aqueous and ethanolic extracts *Blumea lacera* was evaluated by using both the ferric reducing antioxidant power (FRAP) assay and the 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging method. Findings revealed that *Blumea lacera* contains valuable bioactive compounds, including phenols, alkaloids, and flavonoids, likely contributing to its bioactivity. Additionally, the extracts demonstrated ascorbic acid-like radical scavenging activity. These results indicate that *Blumea lacera* holds promise as a reliable source of bioactive compounds providing evidence for antidiabetic action, positioning it as a potential candidate for the development of future green pharmaceuticals.

Keywords: Blumea Lacera, Antioxidant, Antidiabetic, Phytochemical Screening.

ICTJ-O-036

ROLE OF AI IN ENSURING COMPLIANCE WITH REGULATORY STANDARDS

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ABSTRACT

Artificial intelligence has emerged as a transformative technology in addressing these challenges, enabling pharmaceutical companies to achieve and maintain regulatory compliance more efficiently and effectively. AI-powered systems can automate the monitoring and documentation of processes, ensuring adherence to Good Manufacturing Practices and Good Laboratory Practices. By leveraging natural language processing, these systems can analyze regulatory guidelines and automatically flag potential areas of non-compliance. Machine learning algorithms can predict and prevent deviations by analyzing historical data, identifying trends, and suggesting corrective actions in real time. In quality assurance, AI enhances compliance by integrating with Process Analytical Technology (PAT) for real-time monitoring and control, ensuring that products consistently meet predefined standards. Moreover, AI-driven tools streamline audit preparation by organizing and analyzing large volumes of data, reducing the likelihood of human errors. A significant advantage of AI is its ability to adapt to evolving regulatory frameworks across different regions, providing pharmaceutical companies with a dynamic compliance tool. This presentation explores the role of AI in transforming compliance processes in the pharmaceutical industry, highlighting its benefits, challenges, and future potential in ensuring regulatory alignment and safeguarding public health.

Keywords: Artificial intelligence, Natural language processing, Process analytical technology.

ICTJ-O-037

VALIDATION AND DEVELOPMENT OF UV-SPECTROPHOTOMETRIC METHOD FOR ESTIMATION OF POSACONAZOLE IN BULK AND ORAL SOLID DOSAGE FORM

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ABSTRACT

The objective of study is to develop and validate a suitable and reliable UV/VIS spectroscopy method for posaconazole in bulk and oral solid formulations. Various chemical including ethanol, methanol, ACN, and water were analyzed. The method utilizes measurement of absorbance at the absorption maxima of Posaconazole by Ultraviolet spectrophotometry. Calibration curve was prepared by using concentration range of 3 to 15 microgram per ml (µg/ml) for Posaconazole. Posaconazole showed absorption maxima at 262 nm. Calibration curve was suitable linear in collaborate the concentration limit of 3 to 15 microgram per ml (µg/ml) for Posaconazole with the correlation coefficient of 0.997. The percentage recoveries result for posaconazole was found 99.5 – 101.0 %. Accuracy of given method was confirmed by carry out accuracy studies which showed the results within the range. Precision of given method was confirmed by performing in time of limits inter day and another day precision. Robustness of given method was conforming by change in temperature and absorption maxima. Method was quantitatively evaluated in terms of accuracy, linearity, precision, robustness, ruggedness, and recovery. The method was convenient, simple and reliable for the estimation of posaconazole from bulk and oral solid formulations.

Keywords: UV/VIS spectroscopy, Methanol, Acetonitrile, fungal infection, Immunocompromised.

ICTJ-O-038

IN SILICO TOXICITY INVESTIGATION OF POLYHERBAL GEL USING PROTOX 3

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ABSTRACT

This study aimed to develop and predict the toxicity of polyherbal gel formulation for oral ulcerative lesions in domestic animals using Protox 3. The selected plants, including *Centella asiatica*, *Curcuma longa*, *Azadirachta indica*, *Ocimum tenuiflorum* and *Glycyrrhiza glabra*, were authenticated and extracted using ethanol and methanol. The polyherbal gel formulation was prepared with optimized concentrations of Carbopol 934, HPMC, propylene glycol-400, ethanol, methyl paraben, sodium benzoate, triethanolamine, and water. GC-MS analysis revealed the presence of 79 compounds, out of which 20 major compounds were found to responsible for antioxidant, antiviral, analgesic and antibacterial activities. These were subjected to toxicity analysis using Protox 3. The predictive results for the toxicity of these therapeutic compounds, Pimelic acid obtained the lower LD50 value (900 mg/kg) as highest toxicity of class IV, i.e., prescribed as harmful after swallowing ranged between 300 < LD50 ≤ 2000, and rest compounds were V i.e., harmful or may be harmful if swallowing ranged between >2000 and ≤5000. Piperidine and Turmeronol A showed hepatotoxic, but few were immunotoxic and most of these compounds exhibited ecotoxicity. In the case of NR signaling pathways and SR pathways, three compounds were active on different parameters. The present results are suitable for further experimental research on toxicity mechanisms with these therapeutic compounds with a narrow range. This predictive study is suggested for future experimental assays to validate the present results of these therapeutic compounds.

Keywords: Polyherbal gel, GC-MS, Protox 3, Antioxidant.

ICTJ-O-039

ROLE OF AI IN HEALTH INFORMATICS AND DATA ANALYTICS

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ABSTRACT

This review highlights how crucial it is to incorporate data analytics techniques into the field of health informatics. Health informatics is transforming because of artificial intelligence (AI), which enables experts to swiftly and precisely examine complicated datasets. Predictive analytics for data analysis, illness prediction, and tailored medicine are powered by AI. AI is capable of analysing vast volumes of data to find trends, anomalies, and patterns. AI may also be used to detect health hazards and forecast health outcomes. AI has applications in electronic health records, robotic surgery, patient care, illness diagnosis, customized treatment planning, and decision support for medical professionals. AI is about creating technology that can improve patient care in a variety of healthcare contexts, not only automating jobs. Data collection and preparation, data exploration and visualization, insight development, data quality, natural language processing, and natural language production are all steps in the data analysis process that AI may automate and streamline. However, for AI to be used in healthcare responsibly and efficiently, issues with bias, data privacy, and the requirement for human knowledge must be resolved.

Keywords: Complex datasets, Healthcare, Data analysis process, Health informatics, Artificial Intelligence.

ICTJ-O-040

MARINE ALGAE AS A SOURCE OF MUCOSAL BARRIER ENHANCER IN GASTRIC DISORDER

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ABSTRACT

Marine algae are one of the promising sources of bioactive compounds that may be applied for the treatment of gastrointestinal disorders such as gastric ulcers. Gastric ulcers may cause by the use of NSAIDs, stress, and *Helicobacter pylori*, although they cause disruption of the mucosal barrier, which then leads to oxidative stress, inflammation, and acid damage to the gastric epithelium. The mucosal barrier protects the stomach lining by matching aggressive factors (acid, pepsin) with defensive mechanisms (mucus, bicarbonate, and epithelial repair). Marine algae, particularly brown and red types, contain polysaccharides (fucoidans, alginates, carrageenan), polyphenols (phlorotannins), and carotenoids with antioxidant, anti-inflammatory, and cytoprotective effects. Bioactive compounds enhance the mucosal layer through enhanced mucus secretion, decreased oxidative stress, normalization of pro-inflammatory cytokines, and regeneration of epithelial cells. Algae extracts have been proven to effectively combat gastric damage induced by NSAIDs through free radical scavenging and inhibition of gastric acid secretions. This review points out the possibility of using marine algae as a natural and inexpensive alternative for gastric disorders. These compounds from algae may bring about new therapies for safer, more sustainable gastric defense and ulcer prevention.

Keywords: Marine algae, Bioactive compounds, Gastric ulcers, Oxidative stress, Polysaccharides, Antioxidant, Anti-inflammatory.

ICTJ-O-041

ASSESMENT OF GROUNDWATER QUALITY OF GABHANA TEHSIL DISTRICT ALIGARH UTTAR PRADESH WITH SPECIAL REFERENCE TO PHYSIOCHEMICAL PARAMETERS.

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ABSTRACT

The main objective of the above study is to perceive the interconnection between groundwater standard and water borne ailment and its effect on the health of human beings. For above motive, the present study assess biochemical characteristic of ground water for distinct site of Gabhana Tehsil in the Aligarh District U.P; India. Approx 14 samples will be pile up from distinct site of Gabhana Tehsil, in pre-monsoon and post monsoon season. To find the potential health risk and waterborne diseases vulnerability, the parameters selected for the study are Physico-chemical and toxic parameter. Prescribed by BIS under IS of drinking water specification IS 10500:2012. Physicochemical parameter will be analyzed by IS: 3025 using titrimetric method, ion concentration will be analyzed by using spectrophotometer UV-Vis, and Heavy metals by ICP-MS Technique. The outcome which will be procured from the research data of ground water quality will assess in conferring with the prescribed standard limit by Bureau of Indian Standard under specification of drinking water i.e. IS 10500:2012. On the basis of that we will find out the quality of water suitable for drinking and irrigation purpose in these areas.

Keywords: Groundwater, Physicochemical properties, Human health, Aligarh city.

ICTJ-O-042

ARTIFICIAL INTELLIGENCE-BASED PERSONALIZED MEDICINE

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ABSTRACT

This paper explores the transformative role of artificial intelligence (AI) in advancing personalized medicine, emphasizing its application in diagnosis, prognosis, and treatment tailored to individual patients. AI's ability to analyse vast datasets and uncover intricate patterns surpasses traditional methods, offering ground-breaking insights. For instance, DNA sequencing and molecular pathology imaging are now instrumental in drug development and chemical synthesis, driven by AI advancements. The paper highlights current and emerging applications of deep learning and machine learning in precision medicine. Notably, AI facilitates the identification of novel regulatory markers and drug targets through multimodal omics data analysis. These advancements are poised to refine therapeutic strategies and enhance patient outcomes. Recommendations for future research include expanding the inclusion of underrepresented populations, such as AI/AN (American Indian/Alaska Native) communities, in pharmacogenomics to better understand genetic variations influencing drug response. The development of more precise and efficient AI algorithms is also emphasized, focusing on predicting drug efficacy, identifying response biomarkers, and fostering collaboration between AI experts and healthcare professionals to accelerate personalized treatment advancements.AI-based tools also show promise in identifying innovative structures for interventions, whether pharmacological or mechanical. These technologies can streamline the selection of synthesized chemicals and optimize all phases of personalized medicine development (T0-T4), from initial research to clinical implementation. By integrating AI into the core processes of precision medicine, this paper underscores its potential to revolutionize healthcare, ensuring more effective and tailored treatment options for diverse patient populations.

Keywords: Artificial intelligence, Deep learning, Machine learning, Personalized medicine.

ICTJ-O-043

MODELING LIVER DISEASE: THIOACETAMIDE-INDUCED HEPATOTOXICITY IN PRECLINICAL RESEARCH

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ABSTRACT

Thioacetamide is biotransformed by cytochrome P450 enzymes predominantly CYP2E1 into electrophilic and highly toxic intermediate metabolites including thioacetamide-S-oxide which cause oxidative stress, lipid peroxidation and mitochondrial dysfunction. These processes lead to hepatocyte necrosis, Kupffer cell activation and production of pro-inflammatory cytokine activities including TNF-α, IL-6 and TGF- β1 resembling human liver disease pathogenesis. The TAA model is rather divergent concerning flexible study of either short-term or long-term liver injury. Acute hepatotoxicity is caused by single bolus administration of the toxin whereas chronic exposure results in hepatic fibrosis due to extracellular matrix deposition, activation of hepatic stellate cell (HSC) and progressive liver dysfunction. Hepatic biochemical tests including ALT, AST, ALP and bilirubin rise commonly and are in proportion with the degree of liver involvement. This kind of model is widely applied to analyze hepatoprotective agents, antioxidant defense, anti-inflammatory and antifibrotic treatments. Though the TAA model mimics many aspects of human liver disease, concerns such as systemic toxicity and interspecies difference are hard to overcome in experimentation. However, there are still limitations in TAA-induced liver injury; it still constitutes a major focus in the research of liver diseases and in the development of therapeutic interventions and understanding of disease processes.

Keywords: Liver disease, Hepatoprotective agents, Antioxidant defense, Anti-inflammatory.

ICTJ-O-044

EVALUATE THE ANTIANXIETY ACTIVITY OF *FRAGARIA ANANASSA PEELS* ETHANOLIC AND AQUEOUS EXTRACT IN MICE

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ABSTRACT

Fragaria ananassa may be known for their sweet taste and juicy consistency, but their health benefits extend far beyond that. Peels of *Fragaria ananassa* consist of Anthocyanins, procyanidins, ellagitannins, ellagic acid and flavonol derivatives. Swiss albino mice (18–25 g) of either sex were randomly divided into five groups of six animals each. Dried powder of *Fragaria ananassa peels* was boiled with distilled water, cooled, filtered, placed on a hotplate for complete evaporation, finally weighed and stored. The control group, test group, and standard drugs group received saline, *Fragaria ananassa* extract (50, 100, and 200 mg/kg), diazepam (3 mg/kg), respectively, by oral feeding. The antianxiety effect was assessed by elevated plus maze (EPM) in mice. In EPM test *Fragaria ananassa* increases the number of entries in open arms compared to control. The time spent in open arms also increased in all the doses. The current study demonstrates statistically significant dose-dependent antianxiety activity of *Fragaria ananassa* peel extract. It was concluded that ethanolic and aqueous extracts of *Fragaria ananassa* peels having antianxiety activity. Ethanolic extract of *Fragaria ananassa* peels showing more significant activity over the aqueous extract.

Keywords: Antianxiety effect, *Fragaria ananassa*, Diazepam, Elevated plus maze & Psychopharmacology

ICTJ-O-045

ROLE OF AI IN PHARMACEUTICAL MANUFACTURING: QUALITY CONTROL AND AUTOMATION

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ABSTRACT

The incorporation of artificial intelligence (AI) into pharmaceutical manufacturing is rapidly altering the business, particularly in quality control (QC) and automation. AI increases operational efficiency, improves product quality, and minimizes errors by automating operations that were previously handled manually, assuring consistency and regulatory compliance. AI applications in quality control, such as predictive analytics, real-time monitoring, computer vision for inspection, and stability testing, allow for proactive issue detection, automated inspection, and optimized testing processes, resulting in high-quality pharmaceutical products. AI-powered solutions automate production processes, optimize supply chains, integrate it for smart manufacturing, and aid in formulation creation, streamlining manufacturing, and minimizing labor-intensive jobs. The primary benefits of artificial intelligence (AI) include better efficiency, lower costs, improved accuracy, and a shorter time to market. However, difficulties like data protection, regulatory compliance, and interaction with existing systems must be solved. As AI technologies improve, they are likely to play a larger role in determining the future of pharmaceutical manufacturing, making it more efficient, adaptable, and compatible with demanding industry standards.

Keywords: Artificial Intelligence, Quality Control, Automation.

ICTJ-O-046

BREAKING BOUNDARIES: THE IMPACT OF ARTIFICIAL INTELLIGENCE ON PHARMACEUTICAL ADVANCEMENTS

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ABSTRACT

The integration of artificial intelligence (AI) into the pharmaceutical industry is revolutionizing drug discovery, development, and production. This paper explores the transformative impact of AI in accelerating research timelines, reducing costs, and enhancing precision in the development of new therapies. By leveraging machine learning algorithms and data analytics, AI enables the identification of novel drug candidates, optimization of clinical trials, and prediction of patient responses with unprecedented accuracy. Additionally, AI aids in repurposing existing drugs and personalizing treatment approaches, addressing the growing demand for efficient and tailored healthcare solutions. However, the adoption of AI also introduces challenges, including ethical considerations, data privacy issues, and the need for interdisciplinary collaboration. This study highlights the potential and limitations of AI in reshaping the pharmaceutical landscape, emphasizing its role in breaking traditional boundaries to deliver innovative and accessible healthcare solutions globally.

Keywords: Artificial intelligence, Pharmaceutical industry, Drug discovery, Machine learning, Clinical trials.

ICTJ-O-047

AI-POWERED DIAGNOSIS: ENHANCING ACCURACY AND EFFICIENCY IN HEALTHCARE

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ABSTRACT

The integration of artificial intelligence in healthcare has garnered substantial interest, driven by its potential to revolutionize diagnostic processes and disease detection. By harnessing sophisticated algorithms and machine learning paradigms, AI systems can facilitate informed decision-making among healthcare professionals and provide tailored treatment recommendations. This paradigm shift toward AI-enhanced healthcare could alleviate the burden on healthcare systems, mitigate medical errors, and enhance patient outcomes. However, deploying AI in healthcare poses notable challenges. Developing reliable and unbiased AI models necessitates access to diverse and comprehensive datasets. Ensuring the quality and representativeness of training data is crucial for avoiding biases and inequities in AI-assisted decision-making. Sophisticated models, such as convolutional neural networks (CNN) and recurrent neural networks (RNN), have demonstrated remarkable success in medical fields, including image analysis, natural language interpretation, and time-series data analysis. AI algorithms can process and interpret various medical data, including imaging scans, electronic health records, and genetic data. Artificial intelligence is transforming disease diagnosis by leveraging cutting-edge algorithms and machine learning frameworks. These advanced models, including deep learning neural networks, are trained on large datasets to identify patterns and characteristics associated with specific diseases. Machine learning integrated into these AI-driven tools supports personalized treatment planning with evidence-based recommendations and assesses patient risk factors to guide proactive monitoring and preventive care strategies.

Keywords: Artificial intelligence, CNN and RNN Models, Image Analysis, AI driven tools.

ICTJ-O-048

PLANT DERIVED PRODUCT AS A SMART DRUG: A REVIEW

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ABSTRACT

Smart drug, Nootropics, Cognition enhancers are well known drugs or suppleents which increase the cognition function. They improve cognition function like creativity, memory formation, making decision, motivation and attention. Many researches were focused on establishing a new potential cognition enhancer which is derived from plants. Impact of smart drug or cognition enhancers has been studied widely. Smart drug affects the brain performance through numerous mechanisms or pathways like dopaminergic pathway, cholinergic pathway etc. It has been reported impact of smart drug in many memories associated disorders such as Alzheimer's disease, Parkinsonism's disease etc. The above pathway of cognition impairment is getting disturbed in these diseases. Thus current researches establishing smart drug are designed effectively, targeting to hit these targets, by using plant oriented products to minimizing the possibility of side effect of the drug. Naturally oriented smart drug like *Ginkgo biloba* has been widely studied to support the beneficial effects of the compounds. Present review is focused on various natural oriented smart drugs which improve the cognition function.

Keywords: Smart drug, Plant product, Nootropics, Cholinergic system.

ICTJ-O-049

ROLE OF 3D PRINTING IN PERSONALIZED DRUG DELIVERY SYSTEMS

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ABSTRACT

3D printing is changing the way we think about medicine. It allows drugs to be customized specifically for each patient, based on factors like age, weight, and genetic makeup. This helps create the right dosage for better treatment results. One major benefit of 3D printing is that it can combine multiple medications into one, making it easier for patients, especially those with chronic conditions, to take their medicines. It also helps control how the drug is released in the body, making treatments more effective and reducing side effects. For patients who have trouble swallowing pills, like children or elderly individuals, 3D printing can create medicines that are easier to take. It also cuts down on waste and storage, making the production process more cost-effective and environmentally friendly. However, there are still challenges, such as regulatory approvals, high initial costs, and technical difficulties. But with new advancements in AI and material sciences, these hurdles are expected to be overcome. As 3D printing continues to develop, it will help create treatments that are better suited to each individual patient's needs.

Keywords: 3-D Printing, Personalized medicine, Artificial intelligence, Cost-effective.

ICTJ-O-050

A REVIEW ON LEVERAGING ARTIFICIAL INTELLIGENCE AND INNOVATION TO PROMOTE SUSTAINABLE DEVELOPMENT IN THE PHARMACEUTICAL AND HEALTHCARE INDUSTRIES

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ABSTRACT

The healthcare and pharmaceutical sectors are currently undergoing a major transformation, harnessing artificial intelligence and innovative strategies to confront contemporary challenges and foster sustainability. AI technologies, including machine learning and predictive analytics, are revolutionizing the processes of drug discovery, patient care, and operational efficiency, leading to lower costs and faster market access. AI-enabled personalized medicine improves treatment effectiveness by customizing therapies to the unique needs of each patient. Additionally, regenerative medicine, telehealth, and blockchain technology are essential components of sustainable development. Regenerative practices enhance resource utilization, telehealth increases access to healthcare services, and blockchain ensures greater transparency and security in supply chains. This transformation also underscores the significance of stakeholder engagement and ethical considerations, promoting collaboration among companies, healthcare providers, regulators, and communities to achieve equitable and inclusive progress. Ultimately, the integration of AI and innovative practices provides a valuable opportunity to enhance health outcomes while advancing sustainability and equity in healthcare, driving systemic change for a more resilient and sustainable future.

Keywords: Artificial Intelligence, sustainable development, pharmaceutical sector, healthcare innovation.

ICTJ-O-051

INTEGRATING ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING INTO DRUG DEVELOPMENT AND DISCOVERY EFFORTS- A MINI REVIEW

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ABSTRACT

The incorporation of Artificial Intelligence (AI) and Machine Learning (ML) into the realms of drug design and discovery signifies a pivotal change in the pharmaceutical industry. Traditional approaches, which are often marked by protracted timelines and significant expenses, are being augmented by AI/ML algorithms that expedite the discovery of promising drug candidates while enhancing their efficacy and safety profiles. These advanced technologies leverage extensive datasets, including genomic, proteomic, and chemical data, to forecast molecular interactions, evaluate biological activity, and refine the optimization process. Methods such as deep learning, reinforcement learning, and natural language processing are essential in creating new compounds, repurposing existing medications, and pinpointing disease biomarkers. Additionally, AI-driven simulations facilitate in silico experiments, minimizing the need for extensive laboratory testing. This evolution not only boosts the efficiency of the drug development process but also enhances the probability of success in clinical trials. As the pharmaceutical sector increasingly adopts these innovations, the prospects for personalized medicine and targeted therapies expand, leading to groundbreaking treatments for complex health issues.

Keywords: Artificial Intelligence, Machine Learning, Drug Design, Drug Discovery.

ICTJ-O-052

BLOOMING HOPE: UNVEILING THE ANTIDEPRESSANT POWER OF *SARACA ASOCA* FLAVONOIDS

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ABSTRACT

Major depressive disorder is a heterogeneous disease that primarily contributes to global disability. In this condition individuals often experience additional symptoms including disturbances in sleep patterns and psychomotor functions, experiences of guilt, diminished self-worth, inclination towards self-harm, as well as dysfunctions in autonomic and gastrointestinal processes. Several medicinal plants possess properties that can be utilized in the treatment of depressive disorders. *Saraca asoca* (Roxb.) De Wilde commonly known as Sita Ashoka is a perennial plant and consists of several phytoconstituent of therapeutic interest. The present study involved the extraction using soxhlet extraction process, phytochemical screening ,isolation by column chromatography, characterization by melting point, TLC, FT-IR, 1-H & 13-C NMR and MASS spectroscopy and pharmacological evaluation for the antidepressant effect of flavonoid isolated from *Saraca asoca* (Roxb.), De. wild leaves and bark by behavioural parameter (tail Suspension Test (TST), forced swim Test (FST), locomotion activity), neurochemical (brain glutamate level, brain nitrite level) and histopathological analysis of liver and kidney. After characterization of the compound it has found that the compound obtained from leaves is Peonidin-3-O-β-galactopyranoside (PGAL) is show significant results in behavioural, neurochemical and histopathological parameters for antidepressant activity.

Keywords: *Saraca asoca,* Flavonoid, Antidepressant, Dispersible tablet, Tail suspension test, Forced swim test

ICTJ-O-053

A REVIEW ON TRANSFORMING HEALTHCARE DELIVERY: THE IMPACT OF TELEMEDICINE AND DIGITAL HEALTH PLATFORMS

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ABSTRACT

Telemedicine and digital health platforms have revolutionized the healthcare landscape by enhancing access, efficiency, and patient engagement. This paper explores the evolution of telemedicine, examining its historical context and rapid growth, especially during the COVID-19 pandemic. It highlights key technologies, such as video consultations, remote monitoring, and mobile health applications, which have facilitated real-time health management and increased patient-provider interactions. The discussion emphasizes the benefits of these innovations, including reduced travel time, lower healthcare costs, and improved health outcomes. Additionally, challenges such as regulatory hurdles, cybersecurity risks, and disparities in technology access are addressed, suggesting strategies for overcoming these obstacles to maximize the potential of telemedicine. The paper concludes by underscoring the importance of integrating telemedicine into traditional healthcare systems, advocating for continued investments in technology and training to ensure a sustainable and equitable healthcare future.

Keywords: Telemedicine, Digital Health, Healthcare Delivery, Remote Monitoring.

ICTJ-O-054

IMPORTANCE OF TABLET NATURAL BINDER

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ABSTRACT

Natural binders play a very important role in tablet formulation, being non-toxic, eco-friendly, and cost-effective compared to synthetic binders. These natural binders, which are extracted from gums, mucilages, and plant extracts, provide cohesiveness and improve the mechanical strength of tablets, thereby providing stability and controlled drug release. The most notable examples are mucilage from *Artocarpus heterophyllus*, seeds of *Bauhinia racemosa,* and gum from *Mangifera indica* which show excellent binding properties and compatibility with drugs. For example: *Artocarpus heterophyllus* mucilage yields stable tablets with uniform drug distribution and hardness. Similarly, Bauhinia racemosa mucilage gives optimal disintegration and dissolution rates at an 8% concentration. In a similar way, Mangifera indica gum has the same potency as acacia gum, which is strong and gives a consistent drug release profile. Natural binders offer several significant advantages, such as biodegradability, availability, and multifunctionality: they can serve as both fillers and disintegrants. However, there are some issues, such as moisture sensitivity and batch variability, which could be overcome through purification and formulation adjustments.In-depth research shows innovations such as superior-binding and rheological properties for *Grewia optiva* gum and promising bioadhesive and sustained-release capabilities by *Cedrela odorata* gum. Investigating Okra gum (hydrophilic polymer) finds potential in controlled drug delivery systems. Natural binders are part of the move towards eco-friendly pharmaceutical technologies, combining affordability and effectiveness. Continued exploration of these substances aligns with the industry's focus on sustainable and patient-centric solutions.

Keywords: Binders, Natural, Excipients, Tablet making, Natural materials, Bonding strength.

ICTJ-O-055

THE INTEGRATION OF ARTIFICIAL INTELLIGENCE AND ROBOTICS IN PHARMACY: A COMPREHENSIVE REVIEW

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ABSTRACT

The integration of artificial intelligence (AI) and robotics in pharmacy is revolutionizing the field, enhancing efficiency, accuracy, and patient care. This review explores the current applications, benefits, challenges, and future directions of AI and robotics in pharmacy. Additionally, it highlights key organizations and research institutions at the forefront of these technological developments, showcasing their groundbreaking work in implementing advanced robotic solutions in healthcare settings. By providing a detailed examination of the current landscape of robotic technologies in healthcare and exploring avenues for future advancements, this review seeks to offer readers a thorough understanding of the transformative potential of robotics and AI in shaping the healthcare industry. Striking a balance between leveraging technologies and maintaining the human element, as well as investing in research and development while establishing regulatory frameworks within ethical boundaries, will be crucial in defining the future of robotics and AI. Ultimately, the integration of these systems into pharmacy and medicine promises to yield significant benefits for both patients and healthcare providers alike.

Keywords: Artificial intelligence, Robotics, Pharmacy, Healthcare, Research.

ICTJ-O-056

TARGETED DRUG DELIVERY SYSTEM: A PRECISION APPROACH TO THERAPY

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ABSTRACT

The advances in drug delivery strategies have been phenomenal throughout the past few decades. The discovery of new drug has keenly matched by development to ensure effective delivery. Optimizing drug dosage regimens based on understanding the disease condition developing patient-friendly system to address compliance and other innovative approaches is the order of the day. Targeted drug delivery system, represent major breakthrough in the field of medicine offering a more precise, efficient and effective approach to drug delivery. These drug delivery systems heavily relies on nanodrug, liposome, micelles, quantum dots and dendrimers etc. which further present manifold opportunities. These systems represents optimal strategy for tackling challenges associated with traditional drug delivery. It ensures high drug localization at the site of action and hence improved therapy for limiting drug toxicity in other organs. Additionally, these systems result in reduced side effects, localization of drug, dose reduction, and enhanced patient compliance. With continued research and development, this technology is expected to play an increasing important role in the treatment of a wide range of disease. We have focused on the various targeted drug delivery systems and their role in combating diseases for their effective management.

Keywords: Targeted drug delivery, micelles, liposomes, drug delivery, precision medicine

ICTJ-O-057

IN SILICO STUDIES AND MOLECULAR DOCKING OF SMALLER CHAIN PEPTIDES FOR TUBERCULOSIS AGAINST DPRE-1

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ABSTRACT

This research focuses on computational studies that helps to identify compounds as potential inhibitors against DprE-1 (PDB code: 5W0C) which plays an important role in cell wall biosynthesis. DprE1 is a target for anti-TB drugs because it's a critical enzyme in the production of arabinogalactan and lipoarabinomannan, which are essential for cell wall biosynthesis. Molecular docking study was performed for twenty metabolites, five compounds were selected with binding energy more than -9.05 kcal/mol. This studies also includes the drug-likeness and toxicity of the top candidate were predicted using Swiss ADME and Pro Tox-II online servers. All top hits show desirable drug-likeness properties, but toxicity pattern analysis discloses the toxic effect of certain peptides, resulting in the elimination of the screening pipeline. Further molecular interaction study of the remaining five ligands, with DprE-1, was performed using Biovia Discovery studio and UCSF Chimera. The biological activity of five ligands was predicted by using the PASS way 2 online server. Concluding the results of docking score and other studies CGPM, PVGAT, VLTPL, MAVPG, and PGAV have the potential to be inhibit DprE-1 and can be explored further for use against Tuberculosis.

Keywords: Tuberculosis, Peptides, DprE-1, Docking, *In-silico*.

ICTJ-O-058

NANOTECHNOLOGY AND NANOMEDICINE: REVOLUTIONIZING HEALTHCARE THROUGH INNOVATION AND AI

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ABSTRACT

Nanomedicine is especially transforming cancer treatment. Nanoparticles can now deliver chemotherapy directly to cancer cells, reducing harmful side effects and improving treatment effectiveness. The use of artificial intelligence (AI) is increasing up these innovations by helping design better nanoparticles, improving the accuracy of drug delivery, and predicting the patient response of treatment. This collaboration between AI and nanotechnology has also led to cutting-edge diagnostic tools that leads to detect the diseases in their earliest stages. Other advancements include the development of tiny nanobots for less invasive surgeries and smart materials that monitor the body's functions in real time. However, there are challenges to overcome, such as ethical concerns, high costs, and ensuring the safety of these technologies. Regulations and more research are needed to address these issues. Looking to the future, nanomedicine combined with AI, robotics, and biotechnology promises personalized treatments and real-time health tracking. While there are hurdles to clear, the potential benefits of nanotechnology far outweigh the challenges, offering a future where diseases can be prevented, diagnosed, and treated in precise manner.

Keywords: Nanotechnology, Nanomedicine, Artificial intelligence, Targeted drug delivery, Personalized medicine.

ICTJ-O-059

ANTIFUNGAL DRUG-LOADED NANO-VESICULAR FORMULATION FOR THE TREATMENT OF VAGINAL CANDIDIASIS

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ABSTRACT

The research aims to design, optimize, and formulate a new nanocarrier-mediated drug delivery system to address unmet clinical requirements in the treatment of vaginal candidiasis. The use of a vaginal delivery method allows for dosage lowering and non-invasive administration. Depending on the study's premise and rationale, our findings suggest that nano-vesicular gel for vaginal administration may be a potential option for delivering voriconazole-loaded nanovesicles to attain sustained release via the vaginal route. The stable drug-phospholipid complex was developed using the solvent evaporation method. Then nanovesicles by rehydration technique had an average particle size and PDI of 92.6±0.479 nm and 0.149±0.001, respectively, with a drug content of 99.3%. *Ex-vivo* skin release of VCZ-EL-NVs-Gel demonstrated around 50% drug release up to 24 hours and 100% release up to 72 hours.

Keywords: Antifungal, Phospholipid, *Ex-vivo* release, vaginal delivery.

ICTJ-O-060

ARTIFICIAL INTELLIGENCE (AI) IN DIAGNOSIS AND THERAPY

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ABSTRACT

Artificial Intelligence (AI) is revolutionizing healthcare by transforming diagnostics, therapy, and patient care. Its ability to process large datasets, identify patterns, and make precise predictions is reshaping medical practices and improving patient outcomes. In diagnostics, AI excels in analyzing medical imaging like X-rays, CT scans, and MRIs, detecting abnormalities such as tumors and fractures with remarkable accuracy. AI-driven tools often identify conditions at earlier stages than traditional methods, enabling timely interventions and better prognoses. Additionally, AI plays a crucial role in genomics, analyzing genetic data to predict disease risks and develop personalized prevention strategies. This shift toward precision medicine allows treatments to be tailored to individual genetic profiles, moving away from a one-size-fits-all approach. In therapy, AI aids in personalized medicine by designing customized treatment plans based on a patient's genetic and medical history. It also accelerates drug discovery, reducing development costs and time while enabling the creation of novel therapies. Robotic systems powered by AI assist in surgeries, improving precision and minimizing recovery times. Moreover, AI-driven tools support patient care through virtual assistants and monitoring systems, enabling real-time condition tracking and early detection of complications. Despite its advantages, AI adoption in healthcare faces challenges like data privacy concerns, algorithmic biases, and the need for human oversight. Addressing these issues and investing in infrastructure and training are essential. As AI continues to advance, it holds immense potential to enhance diagnostic accuracy, optimize therapies, and improve healthcare delivery globally.

Keywords: Alzheimer, Cancer disease, Chronic disease, Heart disease, Tuberculosis.

ICTJ-O-061

BOTANICAL, PHYTOCHEMICAL AND PHARMACOLOGICAL ASPECTS OF DIOSCOREA VILLOSA: A TRADITIONAL HERB

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ABSTRACT

This review addresses the botanical, phytochemical, and pharmacological characteristics of this versatile herb. *Dioscorea villosa* botanically falls under the Dioscoreaceae family, is a temperate-region-dwelling plant characterized by its tuberous roots and heart-shaped leaves. Traditionally, it was used in traditional medicine for the treatment of disorders related to menstruation, rheumatism, and other disorders related to the digestive system. *Dioscorea villosa* is phytochemically rich in steroidal saponins, especially diosgenin, a precursor in the synthesis of steroid hormones. Other bioactive constituents are flavonoids, alkaloids, and tannins, which contribute to its pharmacological activities. It shows anti-inflammatory, antispasmodic, and estrogenic effects, and therefore is valuable in gynaecological and hormonal therapies. Its antioxidant and hepatoprotective properties have attracted considerable research interest. This review emphasizes the integration of traditional knowledge with contemporary pharmacological insights to highlight the therapeutic potential of *Dioscorea villosa*. However, further in-depth studies are warranted to elucidate its mechanisms of action, ensure safety, and validate its efficacy in modern medical applications. Thus, *Dioscorea villosa* remains a promising candidate in the search for natural therapeutics.

Keywords: Dioscorea villosa, Phytochemistry, Pharmacological properties, Diosgenin, Traditional medicine.

ICTJ-O-062

HARNESSING THE POWER OF COMPUTER AIDED DRUG DISCOVERY FOR COVID-19 DRUG DEVELOPMENT

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ABSTRACT

Effective therapeutics for treating COVID-19 patients are urgently needed with advances in computer technology. The advent of computer-aided drug design (CADD) presents the chance to develop novel drugs rapidly and effectively, whereas the conventional drug development procedure typically takes several years. Computational methods have become very useful in biomedical research and drug discovery. Application of this technique has largely reduced the costs and simplified the process. Intensive studies on SARS-COV-2 proteins have been carried out and 3D structures of the major SARS-COV-2 proteins have been resolved and deposited in the protein data bank. These structures provide the basics of drug discovery and design using structure-based computation such as molecular docking, molecular dynamics, QSAR models, and machine learning. Potential drugs that target critical viral components such as spike protein, main protease (M pro), and RNA-dependent RNA polymerase. Computer-aided drug discovery has also played an important role in repurposing existing treatments. CADD also offers significant advantages like modelling complex biological systems. Ensure clinical relevance and address viral mutation remain. This abstract highlights how CADD has helped transform COVID-19 drug discovery and promises to shape the future and find a cure for treatments for emerging diseases.

Keywords: SARS-COV-2, COVID-19, Proteins, Computer Aided Drug Discovery (CADD)

ICTJ-O-063

MENTAL HEALTH COMPANION APPLICATION

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ABSTRACT

The Mental Health Companion App leverages technologies such as AI-driven chatbots, guided meditation, and mood tracking to provide personalized support. Its unique selling proposition lies in offering real-time, evidence-based interventions that empower users to manage their mental health effectively while reducing stigma and improving accessibility to professional help. The app utilizes Artificial Intelligence (AI) to analyse user data and provide tailored recommendations, enhancing the personalization of mental health interventions. Key Technologies Used: AI and Machine Learning: For personalized content delivery and predictive analytics based on user behaviour and mood patterns; Data Privacy and Security Measures: To protect user information and ensure compliance with regulations like GDPR. Unique Selling Proposition (USP): Personalized Support: The app adapts to individual user needs, providing customized interventions that resonate with their specific mental health challenges; Accessibility: Offers low-threshold access to mental health resources, making it easier for young people to seek help without stigma; Community Engagement: Facilitates peer communication and support, fostering a sense of belonging and shared experiences among users; Integration with Professional Services: User-Centric Design: Developed with input from young people and mental health experts, ensuring that the app meets the actual needs and preferences of its users. This combination of advanced technology and user-focused design positions the Mental Health Companion App as a leading tool in promoting mental well-being among youth.

Keywords: AI-driven chatbots, Guided meditation, Mood tracking, Personalized support, Real-time interventions.

ICTJ-O-064

THERMOASSEMBLED BCL2 –siRNA MICELLEPLEX: AN APPROACH TO TARGET BRAIN CANCER

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ABSTRACT

This research lays the groundwork for enhance stability and high siRNA loading, specifically aimed at targeting oncogenic pathways of glioblastoma (GBM) in UG87MG. TIRP-Bcl2 self-assemble micelles with a nano diameter of 75.8 ± 5.7 nm, effectively encapsulating Bcl2 siRNA while ensuring remarkable colloidal stability at 4 °C for up to 8 months, alongside controlled release profiles that extend over 180 hours. The presence of dual ionisable head groups enhances siRNA loading, while the unique flower structural orientation of the reverse pluronic significantly accelerate siRNA stability. The thermoassemble characteristic of TIRP-Bcl2 allows for a flexible yet rigid response to mild hyperthermia, promoting deep tissue penetration and siRNA release within the tumor microenvironment. This responsive mechanism enhances intracellular uptake and gene silencing effectiveness in cancer cells. With its reduced particle size and reverse pluronic structure, TIRP enables efficient siRNA transport across the blood-brain barrier, presenting promising opportunities for glioblastoma treatment. This study paves the way for further investigation and clinical application of this advanced Nano carrier system for various cancer types.

Keywords: Thermosassemble, Ionisable Reverse Pluronic, Bcl2 siRNA, Glioblastoma.

ICTJ-O-065

HARNESSING ARTIFICIAL INTELLIGENCE (AI) FOR ADVANCEMENTS IN BREAST CANCER DIAGNOSIS AND TREATMENT

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ABSTRACT
AI-powered imaging tools, such as Google's mammography models and Lunit INSIGHT, have demonstrated diagnostic precision comparable to expert radiologists, reducing false positives and negatives. These tools, integrated with clinical workflows, have improved cancer detection rates by identifying subtle abnormalities in mammograms. Additionally, AI is transforming pathology by aiding in the analysis of biopsy samples, offering insights into tumor grading and biomarker expression. On the therapeutic front, AI facilitates the development of personalized treatment plans through platforms like IBM Watson for Oncology, which leverages extensive clinical databases to recommend evidence-based therapies. Furthermore, AI-driven drug discovery platforms, such as Atomwise and Benevolent AI, accelerate the identification of novel compounds targeting aggressive breast cancer subtypes. In drug delivery, AI aids in optimizing nanoparticle formulations for targeted therapies, improving efficacy while minimizing systemic toxicity. By integrating AI with conventional approaches, we move closer to precision oncology, promising improved patient outcomes and reduced healthcare disparities. Future prospects and ethical considerations for AI deployment in oncology.

Keywords: Breast cancer, Artificial Intelligence (AI), Breast Cancer Diagnosis, Personalized Therapy, Precision Oncology, AI-Driven Drug Discovery

ICTJ-O-066

UNLOCKING THE POTENTIAL OF AZAPIRONES: MECHANISMS, INTERACTIONS, AND THEIR ROLE IN ANXIETY AND DEPRESSION THERAPY

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ABSTRACT
Azapirones are a distinct class of anxiolytic and antidepressant agents that act as partial agonists at 5-HT1A receptors, targeting serotonergic pathways rather than the GABA system like benzodiazepines. This unique mechanism reduces the risks of sedation and dependence, offering therapeutic advantages. This study examines the pharmacodynamic and pharmacokinetic properties of azapirones, highlighting their clinical significance and interaction potential. Azapirones modulate serotonergic neurotransmission by acting on pre- and postsynaptic 5-HT1A receptors, providing anxiolytic and antidepressant effects with minimal withdrawal risks. They are broken down by the CYP3A4 enzyme, making interactions with other medications a vital factor to consider. CYP3A4 inhibitors such as ketoconazole and erythromycin can elevate plasma levels, increasing side effects such as dizziness and nausea, while inducers such as rifampin and carbamazepine can reduce their efficacy. Co-administration with serotonergic agents like SSRIs raises the risk of serotonin syndrome, necessitating cautious use. These characteristics make azapirones particularly valuable for treating anxiety and depression in patients at risk for dependence, though careful management of drug interactions is essential to optimize therapeutic outcomes and minimize adverse effects.

Keywords: Azapirones, 5-HT1A receptor agonists, Mechanism, Drug interactions, Psychopharmacology.

ICTJ-O-067

BIOMIMETIC MICRONEEDLES FOR TRANSDERMAL DRUG DELIVERY

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ABSTRACT

Biomimetic microneedles introduce an innovative, revolutionary change in the biomedical engineering area by mimicking insect stingers for enhanced drug delivery and diagnostics and therapeutic applications. These biologically inspired structures mimic the sharpness of insect stingers or the adhesion mechanisms of quills in a porcupine by penetrating painlessly the skin or biological barriers. They are created from biocompatible materials such as polymers, metals, or ceramics. These structures can be further functionalized with coatings or drugs for potential target uses. They allow improvements to transdermal drug delivery, sampling of interstitial fluids, and localized therapeutic interventions to address issues like patient compliance and dosage accuracy. Recent breakthroughs in 3D printing, lithography, and material science have enabled the development of dissolvable, biodegradable, and self-powered microneedles tailored for personalized medicine. This review discusses the design principles, fabrication techniques, and emerging applications of biomimetic microneedles, highlighting their potential to revolutionize healthcare delivery systems.

Keywords: Biomimetic, Microneedles, biomedical engineering, transdermal drug delivery.

ICTJ-O-068

ADVANCES IN 3D PRINTED SOLUTIONS FOR BIOMEDICAL AND PHARMACEUTICAL APPLICATIONS

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ABSTRACT

3D printing is a computer-aided design method that creates 3D items as digital blueprints using the fascinating discovery of layer-by-layer prototyping. This allows pharmaceutical dosage forms to be assembled with surprising ease, elegance, and time savings. The first 3D-printed drug, the Spritam tablet, was approved by the Food and Drug Administration (FDA) in 2015. Since then, the 3D printing method using computer-aided design (CAD) and other contemporary software tools has become a viable option for the production of various dosages for drug delivery systems, organ printing, surgical instruments, etc. components with more precision, intricate compositions, and geometries may be manufactured using 3D printing's layer-by-layer manufacturing technique, which also increases the components' effectiveness and protection in the medical domain. This emerging market, also referred to as "pharmaceutical 3D printing" or "3D printed medications", has the power to fundamentally alter the production and distribution of pharmaceuticals. The production of medical devices, customized medicine, and drug discovery have all been transformed by the introduction of 3D printing technology into the biomedical and pharmaceutical industries. An outline of the noteworthy developments and possible uses of 3D printing technology in various fields will be covered in this study.

Keywords: 3D printing, 3D printing technology, Pharmaceutical, Biomedical, Significant advancement.

ICTJ-O-069

EXPLORING THE ROLE OF MARINE ALGAE IN PSORIASIS MANAGEMENT: A FOCUS ON PRECLINICAL EVIDENCE

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ABSTRACT

The paper addresses the preclinical evidence about the role of marine algae in the treatment of psoriasis. Polyphenols, sulfated polysaccharides, and other bioactive fatty acids from marine algae exhibited properties like an inhibitory effect on the pro-inflammatory cytokines responsible for promoting inflammation, suppressing oxidative stress, and manipulating cell-signaling pathways that take place during the pathogenesis of psoriasis. Studies using animal models and in vitro assays have demonstrated that extracts of algae like Turbinaria ornata, Ulva lactuca, and Sargassum muticum reduce skin inflammation, erythema, and scaling, thus improving psoriasis-like symptoms. Though promising preclinical results were noted with marine algae in relation to therapeutic potential, transition into clinical application was constrained by gaps in pharmacokinetic data, toxicity profiles, and standardized extraction methods. The review underlines the urgent necessity of rigorous clinical trials coupled with advanced formulation techniques in the successful harnessing of full marine algae potential in managing psoriasis. Marine algae are indeed sustainable and cost-effective and hold a future for new dermatological therapeutics.

Keywords: Psoriasis, Pro-inflammatory Cytokines, Sustainable dermatological therapeutics, Marine algae, Bioactive compounds, Oxidative stress.

ICTJ-O-070

ROLE OF AI IN CHEMINFORMATICS AND DRUG REPURPOSING

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ABSTRACT

The application of AI and machine learning (ML) enables the identification of possible hit compounds, optimization of synthesis routes, and prediction of drug efficacy and toxicity. Cheminformatics, which blends the concepts of computer science and chemistry, is used to extract chemical information and search compound databases. In chemoinformatics, AI's integration into molecular design, activity prediction, impurity prediction, and structure elucidation from analytical data plays a crucial role. AI also helps predict compounds' inhibitory activity by mining biomedical literature, revealing hidden connections between existing drugs and new therapeutic targets, thereby helping in drug repurposing. AI gives rapid response to emerging health threats such as COVID-19 by analyzing drug structures and characteristics. These fields leverage computational power to analyze vast datasets, predict drug interactions, and identify potential new uses for existing drugs. AI's role in cheminformatics and drug repurposing is not without challenges. Issues such as data quality, generalizability, and ethical considerations must be addressed to harness AI's potential in these fields fully. Despite these hurdles, AI continues to offer promising advancements, streamlining drug discovery and repurposing processes and paving the way for more efficient and cost-effective therapeutic solutions.

Keywords: Chemoinformatics, Drug Repurposing, Artificial Intelligence, Machine learning, Polypharmacology.

ICTJ-O-071

DESIGN, SYNTHESIS, IN SILICO STUDIES AND PHARMACOLOGICAL EVALUATION OF NOVEL BENZOTHIAZOLE HETEROCYCLE BEARING DERIVATIVES AS POTENT PI3Kα INHIBITORS

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ABSTRACT

A new series of benzothiazole heterocycle bearing derivatives were designed by molecular hybridization and screened using in-silico approach. The most potential compounds post high throughput virtual screening is selected and a library of ten compounds are generated. All the 10 compounds are synthesized from the library and evaluated for their anticancer activity against selected breast cancer cell lines MCF-7 and MDA-MB-231 cancer cell lines. All synthesized derivatives when evaluated for cytotoxicity activity demonstrated moderate to high anticancer activity against the tested cell lines. The compound in the series displayed excellent inhibitory potency with an IC_{50} value in the range of 6.34-18.30 μM against the MCF7 and 9.84-23.75 μM against MDA-MB-231 cell line compared to the standard drug HS-173 (IC_{50} = 10.25 μM) respectively. PI3K enzyme activity assays demonstrated that compound BC1 is highly selective against PI3Kα, with an IC_{50} value of 1.03 nM, which is further validated with in silico studies. The molecular docking and molecular dynamics simulation studies performed were found in agreement with the PI3Kα inhibitory activity assessments performed experimentally.

Keywords: Benzothiazole, Molecular Docking, Molecular Dynamics, ADME, PI3Kα.

ICTJ-O-072

DEVELOPMENT AND EVALUATION OF ACECLOFENAC LOADED NANOETHOSOMES IN GEL BASE FOR TRANSDERMAL DELIVERY

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ABSTRACT

The aim of present work was to develop and evaluate aceclofenac loaded nanoethosome in gel base for transdermal delivery, Transdermal drug delivery system defined as self contained, dosage forms which when applied delivers drug, through skin at controlled rate to the systemic circulation. Nanoethosomes are nanosized lipid based vesicular carriers having high concentration of ethanol used for deeper skin permeation of bioactive molecules. Six formulations were prepared by cold method by using various penetration enhancers, soya lecithin, span80, Tween80, sodium deoxycholate, phosphate buffer as a excipients. Formulation containing sodium deoxycholate was optimized due to its high percentage drug content and entrapment efficiency. Optimized formulation was evaluated for particle size, zeta potential and transmission electron microscopy. Nanoethosomal gel has shown good homogeneity. viscosity of optimized and control gel was found to be 7521 and 6520cps, spreadability was found to be 18.5 g cm/sec and for control gel was found to be 21.2 g cm/sec. Consistency of optimized and control gel was found to be 12&8 cm. Data for *in-vitro* drug release fitted in Higuchi model, R^2 value obtained was 0.992. Skin irritation study indicated compatibility of nanoethosomal gel with skin. Stability study indicated that the formulated products was stable in nature at various temperatures. The result concluded that nanoethosomal gel of aceclofenac may be effective in improving bioavailability of drug and used in the treatment of arthritics and osteoarthritis.

Keywords: Nanoethosome, Aceclofenac, Transdermal, Phospholipid, vesicle, Penetration enhancer.

ICTJ-O-073

TRADITIONAL SCIENTIFIC KNOWLEDGE (TSK) AND PHYTOPHARMACEUTICALS

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ABSTRACT

These aim to explore the interface between tsk and phytopharmaceuticals, emphasizing their complimentary roles in modern healthcare. despite advancement in pharmaceutical research ,TSK continues to offer valuable insight into the utilization of natural resource for healing indigenous communities possess profound knowledge about local flora and their medicinal properties .which often serve as the foundation for phytopharmaceutical development. Additionally , TSK provide a holistic understanding of health and well-being , encompassing spiritual ,social , and environmental dimension. Phytopharmaceutical leverage scientific methodologies to validate the efficacy, safety, and mechanism of action of plant of plant - derived compounds. Through rigorous research and clinical trials, these natural remedies are integrated into mainstream medicine offering alternative adjunctive therapies for various condition. Furthermore phytopharmaceuticals hold promise for addressing global health challenges, including antimicrobial resistance and chronic diseases, while minimizing adverse effect associated with synthetic drug. However, the convergence of TSK and phytopharmaceuticals also raises ethical, cultural, and regulatory consideration. Collaborative approaches that respect indigenous knowledge system, promote equitable partnership, and ensure informed consent are imperative for ethical research and development practice.

Keywords: Phytopharmaceuticals, Scientific methodologies.

ICTJ-O-074

RESVERATROL: A MULTIFACETED PHYTOCHEMICAL WITH THERAPEUTIC POTENTIAL

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ABSTRACT

Resveratrol is a natural compound commonly found in grapes, red wine, peanuts, and berries. Its discovery was inspired by the "French Paradox", which links the low rates of coronary heart disease in France to moderate red wine consumption, despite a high-fat diet. Resveratrol can also be synthetically produced and exists in two forms: cis and trans, with the trans-isomer being the most active biologically. This compound is used for its wide range of health benefits like antioxidant, anti-inflammatory and anticancer effects. It's role includes activating SIRT1 proteins to assist the cell in combating stress and sustaining mitochondrial function, inhibiting NF-κB to bring down inflammation and modulating cell death. However, metabolic processes restrict the bioavailability of resveratrol and only 0.5% of an ingested dose actually reaches circulation.

Keywords: Resveratrol, antioxidant, anti-inflammation, anticancer, bioavailability.

ICTJ-O-075

SIMULTANEOUS DENSITOMETRY ESTIMATION OF METFORMIN HYDROCHLORIDE, TENELIGLIPTIN HYDRO BROMIDE HYDRATE AND PIOGLITAZONE HYDROCHLORIDE IN TABLET DOSAGE FORM

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ABSTRACT

A linear, specific, accurate, precise, and robust High Performance Thin Layer Chromatography (HPTLC) method was developed to separate and quantitatively estimate the formulation of Teneligliptin Hydro Bromide Hydrate, Pioglitazone Hydrochloride, and Metformin Hydrochloride. The mobile phase used was a combination of n-Butanol, 1,4 Dioxane, Glacial acetic acid, and n-Hexane in the ratio of 4:2:2:2 (%v/v/v/v). The stationary phase for this method was Recoated TLC plates Silica gel 60 F254. Detection of the combined dosage form was carried out at 242 nm. The Rf values for Metformin Hydrochloride, Teneligliptin Hydro Bromide Hydrate, and Pioglitazone Hydrochloride were found to be 0.20, 0.55, and 0.90, respectively. The validation parameters strictly followed ICH guidelines. Linearity was obtained in the concentration range of 1000-3000 ng/spot for Metformin Hydrochloride, 40-120 ng/spot for Teneligliptin Hydro Bromide Hydrate, and 30-60 ng/spot for Pioglitazone Hydrochloride, with correlation coefficients of 0.9964, 0.9969, and 0.9967, respectively. The percentage recoveries for Metformin Hydrochloride, Teneligliptin Hydro Bromide Hydrate, and Pioglitazone Hydrochloride were found to be 100.42%, 100.031%, and 100.973%, respectively.

Keywords: High performance thin layer chromatography, Metformin Hydrochloride, Teneligliptin Hydro Bromide Hydrate, Pioglitazone Hydrochloride.

ICTJ-O-076

ROLE OF PHARMACOGENOMICS IN PERSONALIZED MEDICINE

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ABSTRACT

It connects pharmaceutical innovation with clinical practice, enabling the creation of customized medicines and helping physicians select the optimal drug and dosage for each patient. This personalized approach significantly reduces adverse drug reactions, minimizes toxicity, lowers healthcare costs, and improves therapeutic outcomes. Advances in genomics have expanded pharmacogenetics, which originally focused on single gene-drug interactions, into the broader and more integrative field of pharmacogenomics. Genetic variations in enzymes, transporters, and receptors now serve as critical biomarkers for tailored therapies. The primary aim of pharmacogenomics is to assist healthcare professionals in diagnosing conditions and prescribing the appropriate drug and dosage tailored to an individual's genetic profile. Its main objective is to identify and catalog the genetic and epigenetic variations that influence drug response. Currently, pharmacogenomics data, testing, and drug labeling are available for only a limited number of drugs.

Keywords: Pharmacogenomics, Personalised Medicine, Genomics, Pharmacogenomics, Precision medicine.

ICTJ-O-077

ROLE OF HERBS IN SKIN CARE

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ABSTRACT

This abstract explores the diverse roles that herbs play in skin care, highlighting their benefits, mechanisms of action, and applications in modern formulations. Key herbs such as aloe vera, chamomile, lavender, and tea tree oil are examined for their anti-inflammatory, antimicrobial, and antioxidant properties, which contribute to skin health and rejuvenation. The integration of herbal extracts in skin care products not only enhances their effectiveness but also promotes a holistic approach to beauty, aligning with the increasing consumer demand for natural and sustainable ingredients. Furthermore, the synergy between herbal compounds and contemporary dermatological practices is discussed, emphasizing the potential for innovative skin care solutions that harness the power of nature. This abstract underscores the importance of research and development in the field of herbal skin care, advocating for continued exploration of plant-based ingredients to improve skin health and address various dermatological concerns. The growing interest in herbal skin care reflects a broader trend towards sustainability and wellness, encouraging manufacturers to prioritize eco-friendly practices while delivering effective solutions for consumers.

Keywords: Herbs, Cosmetic, Herbal cosmetic, Use of herbs in skin care, Advantages,

ICTJ-O-078

NEURAL STEM CELL THERAPY FOR BRAIN DISEASE

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ABSTRACT

Brain diseases like Brain tumours, Cerebrovascular disease, neurodegenerative disorders and traumatic brain injuries are the major disorders that affect human health. The absence of effective treatments, combined with the brain's limited ability to regenerate neurons, disrupts the production of essential growth factors. This disruption can lead to inadequate blood flow and oxygenation, causing irreparable harm to neurons and neural tissue following nerve damage. The resulting damage to the central nervous system is notoriously challenging to repair. Fortunately, Neural Stem Cells, a unique type of regenerative cell found exclusively in the central nervous system, hold promise for addressing this complex issue. They have ability to differentiate into neurons, astrocytes & oligodendrocytes with improve the cellular microenvironment. But NSCs therapy have several limitations & challenges that associated with the limited availability, heterogeneity, tumorogenic potential and immunogenicity. NSCs transplantation is the usefull method for various neurodegenerative disorders based on their regenerative potential. This study helps to summarize the characteristics of NSCs and their advantages with effects of NSCs in the treatment of brain diseases with the limitations of NSCs transplantation that need to be the addressed for the treatment of brain disease in future.

Keywords: Neural stem cell, Brain disease, Animal experiment, Clinical trials, Cellular therapy.

ICTJ-O-079

NUTRACEUTICALS: AN INNOVATIVE APPROACH IN TREATMENT AND MANAGEMENT OF CARDIOVASCULAR DISEASES

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ABSTRACT

The present cross-sectional survey reviews knowledge, sources of information, perceived benefits, and barriers about the use and usage of nutraceuticals in CVD prevention and management. Moderate awareness was indicated through results, many of which stated nutraceutical recognition of its cardiovascular benefits. The commonly known nutraceuticals included omega-3 fatty acids, plant sterols, and antioxidants such as vitamins C and E. The key information sources for them were healthcare providers, internet resources, and social media. The major gap remained in understanding their specific mechanisms of action. More frequently used in patients with a history of CVD or at high risk for developing it, the most commonly used products were omega-3 fatty acid supplements, followed by fiber supplements and coenzyme Q10. The most frequently cited barriers to wider use included cost, lack of standard dosing, and concerns about efficacy. There is a need for better educational initiatives that would enlighten the public on nutraceuticals and their role in cardiovascular health. In conclusion, though awareness and use of nutraceuticals for cardiovascular health have increased, the effective integration of nutraceuticals into CVD prevention and management strategies requires evidence-based guidelines and targeted education.

Keywords: Cardiovascular Diseases, Omega-3 fatty acids, Antioxidant, Fibre supplement

ICTJ-O-080

INTEGRATION OF ARTIFICIAL INTELLIGENCE IN HERBAL DRUG TECHNOLOGY: A PROMISING FRONTIER IN HEALTHCARE

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ABSTRACT

Integration of artificial intelligence (AI) in herbal drug technology provides new approaches for enhancing the efficiency, accuracy, and safety of herbal medicine by accelerating the process of identifying, isolating, and characterizing the bioactive chemicals, and understanding complex herbal interactions to optimize prescription planning, and improving manufacturing processes. AI models, such as graph convolutional networks, enhance herb recommendation systems by incorporating complex symptom-herb correlations through data-driven rapid screening of extensive chemical libraries, molecular interaction prediction, and drug–target interaction, optimization decision-making, predictive analytics, diagnosis accuracy, and personalized treatment plans for improved clinical applications. AI-powered methods such as machine learning, network pharmacology, and bioinformatics are used to explore the mechanisms of action of conventional medicines to revolutionize healthcare. Although both fields have distinct origins and philosophies but have common objectives of improving patient outcomes, enhancing the quality of care, and promoting wellness. AI integration in herbal drug technology offers numerous benefits but poses challenges such as regulatory aspects, data privacy, data quality, ethical dilemmas, and cultural value preservation. AI integration in drug research has a great deal of promise for producing novel treatments for incurable illnesses.

Keywords: Artificial intelligence, Network pharmacology, Herbal drug technology, Machine learning.

ICTJ-O-081

PHYTOMEDICINES: HERBAL NANOMEDICINES IN THE TREATMENT OF DIABETES

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ABSTRACT

Herbal nanomedicines present an exciting new avenue towards the management of diabetes; they offer the opportunity of harnessing together the potential of herbal medicine and that of nanotechnology. Through nanotechnology, bioavailability, stability, and site-specific delivery of phytochemicals increase, thus optimizing their efficacy in therapy. Among several of the phytochemicals belonging to plant origin, flavonoids, alkaloids, and terpenoids hold promising activity against diabetes mellitus. Nano-particle formulations of these drugs can have very high solubility with extended release. Hence, this can significantly enhance glycemic control with very minimal side effects. Nano-formulations of curcumin, quercetin, and berberine, in several preclinical studies, exhibited enhancement of glucose uptake along with improved insulin sensitivity in pancreatic β cells. In addition, nanocarriers such as liposomes, niosomes, and polymeric nanoparticles allow these bioactive compounds to target specific tissues, hence reducing systemic exposure and toxicity. This fusion of herbal medicine with nanotechnology, overcoming the limitations of conventional antidiabetic drugs, is cost-effective and environmentally friendly. Promising results were obtained; further clinical studies are required to evaluate the efficacy and safety of such nanomedicines on human subjects. Overall, herb-based nanomedicines could perhaps be the new and promising way to treat diabetes, which may usher in improvement in outcome and quality of life for diabetic patients.

Keywords: Diabetes mellitus, hyperglycemia, nanomedicines, curcumin, nanocarriers,

ICTJ-O-082

RATIONALE INVESTIGATION OF SMALLER CHAIN PEPTIDES AGAINST GLCNAC-1-P TRANSFERASE PROTEIN TARGET FOR *TUBERCULOSIS*: IN SILICO STUDY AND COMPUTATIONAL ANALYSIS

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ABSTRACT

The chosen target for the study is UDP-N-acetyl glucosamine-1-phosphate transferase which is cell wall synthesis inhibitor mainly targeting Arabinogalactan. Additionally, Molecular docking of twenty-one (21) molecules were carried out by Swiss DOCK online tool against chosen target (PDB code: 1JV1) along with UCSF Chimera and BIOVIA Discovery Studio Visualizer for detailed investigation of 3D-interactions. The designed molecules were filtered using various software such as Swiss ADME, Passway-2 Drug, Molinspiration and Protox-III based on molecular descriptors for instance Lipinski rule, toxicity, biological activity, docking score. It was identified that HCAP with binding affinity ΔG= -9.0 kcal/mol, PGPC with binding affinity ΔG = -7.8 kcal/mol, HPMTL with binding affinity ΔG=-7.8 and TCCTTA with binding affinity ΔG= -8.1 kcal/mol were the most promising peptide leads as potent inhibitors of GlcNAc-1-P transferase in comparison to standard drug Isoniazid whose ΔG value was found to be -6.22 kcal/mol among the tested smaller chain peptides through docking strategy. Based on the promising pharmacokinetic properties and binding affinity, the lead molecule can show satisfactory activities for the treatment of multidrug-resistant tuberculosis.

Keywords: Tuberculosis, Molecular Docking, GlcNAc-1-P transferase, peptide, Multidrug resistance

ICTJ-O-083

ASSESSING THE INFLUENCE OF SOCIAL MEDIA PLATFORMS ON THE ADOPTION OF NUTRACEUTICAL

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ABSTRACT

This study examines the role of social media in shaping consumer awareness, perceptions, and decisions related to nutraceuticals through a mixed-method approach comprising surveys and focus group discussions. Key findings reveal that engaging social media content, influencer endorsements, and user-generated content significantly boost consumer interest and adoption rates, particularly among younger audiences. The study highlights the role of platforms like Instagram, Facebook, and Twitter as spaces for sharing experiences and testimonials, which further shape consumer choices. Moreover, the research investigates how algorithms on these platforms curate content aligned with users' preferences, reinforcing their beliefs and purchasing decisions. While social media facilitates the dissemination of scientific knowledge, bridging the gap between technical information and consumer understanding, it also raises concerns about misinformation and ethical issues in health communication. The abstract underscores the need for regulatory measures to ensure the accuracy and reliability of health-related content shared on these platforms. By exploring the intersection of social media influence and public health marketing, this study provides valuable insights into leveraging digital platforms to promote healthier lifestyles.

Keywords: Social media influence, Nutraceutical adoption, Digital platforms.

ICTJ-O-084

NANOTECHNOLOGY AND NANOMEDICINE IN DRUG DELIVERY TECHNOLOGIES

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ABSTRACT

Nanotechnology and nanomedicine are emerging technology fields that hold immense potential for revolutionizing drug delivery systems and improving therapeutic responses. Nanotechnology refers to the manipulation and utilisation of materials and devices at nano-scale, typically between 1 and 100nm, to create materials with unique chemical, and biological properties. These systems offer significant improvements over conventional drug delivery methods by enabling targeted, controlled, and sustained release of therapeutic agents. Nanotechnology is unique in that it represents not just centred area, but a vast variety of disciplines ranging from basic material science to personal care. One of the key advantages is the ability to engineer nanoparticles that can overcome the barriers such as (non- specific distribution, difficulty in crossing biological membranes such as blood brain barrier) faced by traditional drugs. Nanoparticles, carbon nano-tubes, liposomes, silica -based nanoparticles, micelles and dendrimers are commonly used in drug delivery platforms to enhance bioavailability, stability, and release profiles of drugs. The effect of these particles is modified by adding polymers inducing surface charges, choosing the right size. Modifications can help the researchers to target specific cells or tissues, this targeted approach reduces toxicity and improves patient safety. The important technological advancements uses of nanoparticles are high stability, high carrier capacity, feasibility of variable routes of administration (oral and inhalation), incorporation of both lipophilic and hydrophilic substances.

Keywords: Nanotechnology, Nanomedicines, Carbon nanotubes, Silica based nanoparticles.

ICTJ-O-085

ROBOTICS IN MEDICAL PROCEDURES AND HEALTHCARE

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ABSTRACT

This article investigates the current tomorrow role of robotics in medicine, and the potential applications in surgical operations, patient care, rehabilitation, and administrative work. Through analysis of existing studies and different technologies and their developments, the study of the way in which robotic systems improve the precision of surgical procedures, recovery times, and, in essence, patient outcomes is demonstrated. In addition, the discussion of issues and ethical implications of robotics use in medical practice is presented, such as impact on the workforce and acceptability by patients. The results highlight the need for an interactive development process among technology developers, health care workers, and policy makers to fully exploit the potential benefits of robotics and to safely mitigate associated risks. With the increase of development in the medical world, the operation of robots will further undergo and usher in a new era of innovative medical service, with adherence to patient-oriented care. As development in the medical world is on an increase, operations of the robots will continue to go through, bringing in new innovation medical services, always following a patient-oriented care policy. This has also seen, with growth of the sector, developments in the use of AI-driven robotic friends that will give care to frail and the elderly as well as the use of nanorobots in delivering targeted drugs. With right usage of medical robotics, the medical field can lead the way toward a fair, effective, and technologically advanced generation.

Keywords: robotics, surgical procedures, innovative medical services, nanorobots, targeted drugs.

ICTJ-O-086

ADVANCING WOUND HEALING RESEARCH: EXPERIMENTAL MODELS AND ASSESSMENT METHODS

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ABSTRACT

Experimental models and methods to assess cutaneous wound healing are pivotal in advancing our understanding of these processes and developing innovative therapeutic approaches. The current review highlights the various *in vitro* and *in vivo* models used to study wound healing, including monolayer cell cultures, organotypic skin models, and animal models such as mice, rats, rabbits, and pigs. Each model presents unique advantages and limitations in mimicking human wound healing. The wounds can be induced by many techniques, with excision or incision being the most common. In addition, the assessment techniques discussed in this review include molecular and biochemical assays, imaging techniques, and histological examination. The work aims to update the current knowledge and provide comprehensive insights into wound healing mechanisms, enabling the evaluation of novel treatments. Understanding and refining these experimental models and assessment methods are crucial to help researchers during the design and execution of their wound healing studies, ultimately improving patient outcomes in wound management.

Keywords: Wound, Cutaneous wound healing, Experimental models, Wound assessment methods.

ICTJ-O-087

UNDERSTANDING RESISTANT MECHANISM AND EFFECTIVE NATURAL THERAPEUTICS AGAINST CANDIDA INFECTIONS

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ABSTRACT

Candida albicans (C. albicans), the most prevalent and severe pathogenic fungus, has been discovered as a nosocomial pathogen. Quorum sensing is one mechanism for establishing resistance. QS is a biological process that allows microorganisms to modulate gene expression in response to changes in cell density using chemical communication pathways. *C. albicans'* pathogenicity is evidenced by a variety of processes, including the formation of biofilms, the manufacture of deactivated enzymes, the ability to alter phenotypes, and the ability to rapidly transition from the blastophore phase to the hyphal state. Patients with persistent infections in which drugs easily take over host cells but are unable to penetrate QS-mediated biofilms exacerbate the antibiotic resistance problem in *C. albicans* infections. Instead of placing abrupt selective pressure on developing bacteria, the anti-virulence drug decreases pathogenicity without eradicating the target strain. This study discusses the current status of scientific research on the quorum sensing process in fungi, as well as natural chemicals that have been identified as quorum sensing inhibitors that are thought to impair the fungal population's morphogenic shift. A variety of naturally occurring compounds, notably *C. albicans*, are highlighted as potentially beneficial materials with excellent anti-QS properties when utilized as isolated primary components.

Keywords: *Candida albicans*, resistance, signalling pathways, biofilms, natural remedies.

ICTJ-O-088

Development and Evaluation of Effervescent Controlled-Release Granules for Enhanced Delivery of Zolmitriptan

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ABSTRACT

Effervescent controlled-release granules of zolmitriptan were developed to enhance the drug's therapeutic efficacy by prolonging its release and improving its bioavailability. Zolmitriptan, a selective serotonin receptor agonist, is widely used in the acute treatment of migraines but is limited by its short half-life and the need for frequent dosing. The formulation was designed using effervescent agents such as sodium bicarbonate and citric acid to achieve controlled release while enhancing gastric retention through carbon dioxide generation. The granules were prepared via a wet granulation technique and characterized for physicochemical properties, effervescence time, drug release profile, and stability. In vitro drug release studies demonstrated a biphasic release pattern, with an initial burst for rapid onset followed by sustained release over 12 hours. The formulation showed improved dissolution rates compared to conventional zolmitriptan tablets. Stability studies confirmed the formulation's robustness under accelerated conditions. These findings suggest that effervescent controlled-release granules are a promising approach for enhancing zolmitriptan's therapeutic profile, offering better patient compliance and effective migraine management.

Keywords: Zolmitriptan, effervescent granules, controlled release, migraine management, sustained release.

ICTJ-O-089

DEVELOPMENT AND EVALUATION INVASOMES OF ACECLOFENAC

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ABSTRACT

Aceclofenac, a nonsteroidal anti-inflammatory drug (NSAID), has limited topical application due to its poor water solubility and skin permeability. This study focuses on the development and evaluation of aceclofenac-loaded invasomes, a novel vesicular drug delivery system comprising phospholipids, ethanol, and terpenes. The formulated invasomes demonstrated improved entrapment efficiency, reduced particle size, and stable zeta potential, ensuring effective drug encapsulation and stability. Ex vivo permeation studies revealed significantly enhanced skin penetration and drug retention compared to conventional formulations. Additionally, the invasome formulation provided a sustained release profile and reduced systemic exposure, emphasizing its potential for localized anti-inflammatory therapy. These results underscore the promise of aceclofenac-loaded invasomes for improving dermal drug delivery and minimizing systemic side effects in the treatment of inflammatory conditions.

Keywords: Aceclofenac, Invasomes, Topical drug delivery, Anti-inflammatory therapy, Skin penetration.

ICTJ-O-090

STUDYING CONSUMER USAGE TRENDS OF NUTRACEUTICALS FOR WEIGHT LOSS AND OBESITY MANAGEMENT

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ABSTRACT

This study investigates consumer usage trends of nutraceuticals in weight loss and obesity management, addressing the global rise in obesity and related health issues. Nutraceuticals, including dietary supplements (e.g., caffeine, green tea extract), functional foods (e.g., nuts, seeds), and herbal products (e.g., ginger, turmeric), are emerging as effective alternatives to traditional weight management methods, offering natural and holistic health benefits. Despite their growing popularity, many remain unaware of nutraceuticals' potential. This research assesses consumer awareness and promotes education on their role in weight management. Data will be collected from 100 participants across five groups: infants, adults, individuals with diseases, older adults, and pregnant women. Nutraceuticals aid in obesity management by boosting metabolism, supporting fat burning, reducing appetite, and improving overall health. They also reduce risks of conditions like cardiovascular disease, type 2 diabetes, and mental health disorders. With one in 1,000 global deaths attributed to obesity-related illnesses, the urgency for effective solutions is clear. The study aims to identify factors influencing consumer preferences, such as product efficacy and safety, while highlighting the importance of integrating nutraceuticals into weight management routines. Findings suggest that these products are gaining traction due to the demand for natural health solutions. Additionally, the research seeks to raise awareness and encourage healthier lifestyles through informed nutraceutical use.

Keywords: Weight loss, Obesity management, Type 2 diabetes.

ICTJ-O-091

FORMULATION AND FVALUATION OF EFFERVESCENT GRANULES FROM POLYHERBAL DRINK WITH ANTIOXIDANT HERBS

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ABSTRACT

The market for safe, natural antioxidants has grown significantly in the last few years. Their acknowledged ability to improve general health and treat oxidative stress-related illnesses such as heart disease, cancer and various neurological disorders is what is causing this increase. Utilizing natural compound-derived antioxidants holds significant importance as therapeutic solutions for mitigating oxidative stress-related illnesses. Current study presents an innovative approach to exploit the synergistic antioxidant potential of a carefully formulated herbal extracts in the form of effervescent granules. Polyherbal drink from *Hibiscus rosa* and other antioxidant herbs were converted into effervescent granules. Antioxidant rich constituents from black seeds, hibiscus flower, fenugreek seed, clove bud, ginger rhizome, fennel seed, cardamom seeds, cinnamon bark, turmeric rhizome and beetroot were extracted. These extracts were combined in precise ratios to create polyherbal effervescent granules for not only optimizing the synergistic effects of individual antioxidants but also prepare a more stable, ready to drink, easily transportable and easily available formulation. Effervescent granules were prepared by wet granulation method.in general, this research contributes to the development of innovative, natural, and potent antioxidant formulations, offering a promising avenue for health-conscious individuals seeking practical ways to improve their well-being and counteract the detrimental effects of oxidative stress.

Keywords: Polyherbal, Antioxidant, *Hibiscus rosa*, Synergism, Effervescent granules, Oxidative Stress.

ICTJ-O-092

EMERGING THERAPIES IN CARDIOMYOPATHY: PERSONALIZED MEDICINE APPROACHES

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ABSTRACT

Cardiomyopathy is a heart condition related to the abnormal blood flow, which inhibits the heart's ability to pump blood effectively throughout the body. This condition leads to the dysfunction in the heart muscles, potentially leading to heart failure. In its early stages, cardiomyopathy is typically asymptomatic, with patients experiencing symptoms as the disease progresses. Common symptoms include shortness of breath, fatigue, chest pain, cough, orthopnea, edema etc. There are various causes of cardiomyopathy that includes coronary artery disease, infections that infect heart muscle, heart inflammation, diabetes, high cholesterol, etc. If the condition worsens, patients may face additional complications such as cardiac arrest, stroke, or irregular heartbeats. Diagnostics can be done through various tests and physical examination that includes electrocardiography (ECG) and echocardiography testing. In advanced cases, treatment may involve staged therapies for heart failure and, in some instances, heart transplantation. Genetic testing is emerging as a valuable tool in screening families for hereditary forms of the disease. Various medications used in regulating blood flow are ACE inhibitors, beta blockers, diuretics etc. The recent cases of cardiomyopathy show that it can affect people of all ages and backgrounds.

Keywords: Cardiomyopathy; Symptoms; Causes; Diagnosis; Medications; Therapies.

ICTJ-O-093

NANOSPONGES: A VERSATILE NOVEL DRUG DELIVERY SYSTEM

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ABSTRACT

A novel and adaptable drug delivery method, Nanosponges have the potential to solve problems in contemporary therapy. The porous nature of these Nano scale, sponge-like carriers enables the encapsulation and controlled release of a variety of medications, including proteins, peptides, and hydrophobic and hydrophilic compounds. They are extremely versatile for a range of therapeutic applications due to their special capacity to enhance the solubility, stability, and bioavailability of medications. By enabling targeted delivery, functionalization of nanosponges lowers systemic side effects and improves therapeutic efficacy. Their potential for continuous drug release, biocompatibility, and capacity to penetrate biological barriers further emphasize their value in the treatment of illnesses such infections, inflammation, and cancer. This abstract highlights the importance of nanosponges as a cutting-edge technology in developing drug delivery systems for precision medicine by reviewing their design, functional characteristics, and many applications. Nanosponges have the potential to transform precision medicine by providing safer and more efficient therapeutic interventions with continued developments.

Keywords: Nanosponges, Cross-linking agents, Controlled released.

ICTJ-O-094

QUINAZOLINONE DERIVATIVES WITH SALICYLIC ACID AND ISONICOTINIC HYDRAZIDES: A NEW STRATEGY AGAINST BACTERIAL INFECTIONS

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ABSTRACT

The rise in bacterial resistance has driven the urgent need for new, effective antibacterial agents. Quinazolinone derivatives, known for their diverse biological activities, have shown promising potential in antimicrobial drug development. In this study, we explore novel hybrid molecules combining quinazolinone with salicylic acid hydrazide and isonicotinic hydrazide moieties, aiming to enhance antibacterial efficacy. Salicylic acid hydrazide and isonicotinic hydrazide are widely recognized for their own antimicrobial properties and ability to inhibit bacterial cell growth. By incorporating these hydrazide functionalities into the quinazolinone framework, we designed a series of compounds intended to exploit multiple bacterial targets, potentially reducing the risk of resistance. The synthesized derivatives will be evaluated for their antibacterial activity against a panel of Gram-positive and Gram-negative bacterial strains. This approach seems to offer a promising foundation for the development of novel antibacterial therapies, providing a new avenue for tackling bacterial infections with innovative quinazolinone-hydrazide conjugates.

Keywords: Quinazolinone derivatives, bacterial resistance, quinazolinone-hydrazide conjugates

ICTJ-O-095

THERAPEUTIC POTENTIAL OF MESENCHYMAL STEM CELLS FOR CANCER THERAPY

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ABSTRACT

The therapeutic potential of MSCs in cancer is still controversial. While some studies indicate that MSCs may contribute to cancer pathogenesis, emerging data reported the suppressive effects of MSCs on cancer cells. MSCs initially discovered from bone marrow, have been identified in nearly all tissues of human body now. The multipotency of MSCs allows them to give rise to osteocytes, chondrocytes, adipocytes, and other lineages. Moreover, armed with the immunomodulation capacity and tumor-homing property, MSCs are of special relevance for cell-based therapies in the treatment of cancer mostly mediated by the paracrine effect of released functional molecules and among them the MSC-derived extracellular vesicles (MSC-EVs) seem to be one of the central mediators of the therapeutic functions of MSCs involved in the suppression of cancer progression via the delivery of therapeutic molecules, including miRNAs, specific siRNAs, or suicide RNAs, as well as chemotherapeutic drugs. MSCs can prevent cancer progression by inhibiting several signaling pathways, such as wnt/β-catenin and PI3K/AKT/mTOR. Herein, we provide an overview of MSCs and their differences compared with embryonic stem cells, and described the molecular mechanisms involved in maintaining their stemness and the current divergent roles of MSCs in cancer therapy and the future potential in this field.

Keywords: Cancer molecular mechanism, Mesenchymal stem cells, Cancer therapy, pathogenesis, Stem cell therapy etc

ICTJ-O-096

A TOPICAL HERBAL NANOGEL FOR ANTI-INFLAMMATORY

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ABSTRACT

Most latest developments in drug delivery and nanogel manufacturing were studied in this study.
The branch of chemistry known as phytochemistry examines chemicals found in plants.Modern treat ments for a variety of diseases have been made possible by the use of herbal medicines. Due to their wide medical characteristics and pharmacokinetics, several of these compounds are not allowed to be used in medicines. Numerous innovative technical strategies have been studied to improve herbal discoveries in the pharmaceutical industry. The historical data regarding herb-related nanogels, which have excellent patient compliance, delivery rate, and efficacy in treating a range of illnesses, is the main topic of the article. There is also discussion of stimulus-responsive nanogels, including pH-responsive and temperature-responsive systems etc.
As promising targets for drug delivery systems, nanogel formulations can change a drug's profile, gen otype, protein, peptide, oligosaccharide, or immunogenic substance. They can also change a drug's abi lity to cross biological barriers, biodistribution, and pharmacokinetics, which can improve patient coo peration, safety, and efficacy.

Keywords: herbal, nanogels, Anti-Inflammatory.

ICTJ-O-097

MECHANISM OF ACTION AND ROLE OF BIOPOLYMER IN WOUND HEALING

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ABSTRACT

. Abnormalities in wound healing, such as excessive healing or chronic wounds (ulcers), disrupt normal physical function. Numerous intricate experimental studies have shed light on the mechanisms involved in wound healing. Wound healing continues to be a complex clinical issue, and proper, effective wound management is crucial. Significant attention has been directed towards wound care, focusing on innovative therapeutic methods and the advancement of technologies for managing both acute and chronic wounds. The process of wound healing involves various cell types, the extracellular matrix, and the roles of soluble mediators like growth factors and cytokines. Although the healing process is ongoing, it can be conveniently divided into four stages: (i) coagulation and hemostasis; (ii) inflammation; (iii) proliferation; and (iv) remodeling of the wound with the formation of scar tissue. Biopolymers like alginate (ALG), chitosan (Cs), collagen (Col), hyaluronic acid (HA), carboxymethyl cellulose (CMC), and silk fibroin (SF) are widely utilized in wound care owing to their compatibility with biological systems, ability to break down naturally, and resemblance to large molecules that the human body recognizes. Consequently, this article reviews the functions of biopolymers within wound physiology, offering insight into the creation of advanced, nature-inspired, intelligent wound dressings incorporating blood products, stem cells, and growth factors.

Keywords: wound healing, Inflammation, remodelling,

ICTJ-O-098

RECENT ADVANCES OF STEM CELL THERAPY IN CANCER TREATMENT

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ABSTRACT

In recent years, there has been growing interest in the potential of stem cells for cancer therapy. Stem cells possess unique properties, such as self-renewal and differentiation capabilities, which make them valuable in various medical applications. Different types of stem cells, including embryonic stem cells, adult stem cells, and induced pluripotent stem cells, have been investigated for their potential use in cancer treatment. They can differentiate into specific cell types, which may allow for the regeneration of damaged tissues and organs caused by cancer or its treatment. Stem cells can also serve as delivery vehicles for targeted therapies, enabling the precise delivery of therapeutic agents to tumor sites. Additionally, they can modulate the immune system and have the potential to stimulate anti-tumor immune responses. However, it is crucial to understand and monitor the potential side effects associated with these treatments and the pathways which regulate Cancer Stem cells, such as WNT, β-Catenin, hedgehog, Notch, NF-κB, JAK/STAT, TGF-β, PI3K/AKT, PPAR pathway, and their related mechanisms underlying the use of various types of stem cells in cancer treatment. In addition, we summarize recent progress in the clinical applications of stem cells, as well as common risks of this therapy.

Keywords: Cancer stem cells. Molecular pathway, Stem cell therapy, Chemotherapies, Pluripotent cells.

ICTJ-O-099

AI IN DRUG SAFETY AND PREDICTIVE TOXICOLOGY

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ABSTRACT

Artificial Intelligence (AI) is revolutionizing the field of drug safety and predictive toxicology by offering innovative solutions to predict adverse drug reactions (ADRs) and optimize drug development. Toxicity prediction is a critical step in the drug discovery process that helps identify and prioritize compounds with the greatest potential for safe and effective use in humans, while also reducing the risk of costly late-stage failures. The field of toxicology is undergoing a significant transformation due to the integration of artificial intelligence (AI). Here, we explore the role of AI in enhancing the accuracy, efficiency, and breadth of toxicological assessments by bridging the gap between traditional approaches and advanced AI techniques. Through advanced machine learning (ML) and deep learning (DL) techniques, AI models predict drug toxicity, assess adverse effects, and analyze complex biological data, reducing reliance on animal testing. In this review, we present an overview of recent advances in AI-based drug toxicity prediction, including the use of various machine learning algorithms and deep learning architectures, of six major toxicity properties and Tox21 assay end points which can aid researchers in understanding toxicity prediction and pave the way for new methods of drug discovery.

Keywords: Artificial Intelligence, Drug Safety, Toxicity Prediction, Natural language processing etc.

ICTJ-O-100

RECENT ADVANCEMENT IN NANOFORMULATION OF PSORIASIS

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ABSTRACT

Psoriasis is a chronic autoimmune skin disorder that accelerates the growth of skin cells, causing them to multiply too quickly. This results in the buildup of dead skin cells on the surface, forming thick, scaly patches that are often red, inflamed, and sometimes itchy or painful. Conventional treatments, including topical steroids, phototherapy, and systemic medications, often have limited efficacy or are associated with significant side effects. Recently, nanostructured lipid carriers (NLCs) have emerged as next-generation nanocarriers with better physicochemical characteristics. In recent years, advancements in nanotechnology have opened new avenues for the treatment of psoriasis, offering enhanced drug delivery and therapeutic outcomes with reduced toxicity. Nanoformulations, such as liposomes, nanospheres, dendrimers, and solid lipid nanoparticles, have been explored for their ability to improve the solubility, stability, and bioavailability of active pharmaceutical ingredients. These nano-based systems can target specific skin layers, control the release of drugs, and enhance cellular uptake, thereby improving treatment effectiveness and minimizing systemic side effects. These advancements in nanoformulation technologies hold great promise for improving the management of psoriasis by enhancing drug delivery, minimizing side effects, and providing more targeted therapeutic approaches. This abstract reviews the latest advancements in nanoformulation technologies for psoriasis therapy, highlighting their potential to revolutionize treatment strategies and offering insights into their clinical translation and future prospects in managing this complex skin condition.

Keywords: Psoriasis, nanostructured lipid carriers, drug delivery, liposomes, nanospheres.

ICTJ-O-101

3D SCAFFOLD IN TISSUE ENGINEERING APPLICATION

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ABSTRACT

These inflammatory cell types release mediators to promote the chemotaxis of cell types required for the proliferative phase after phagocytosing bacteria and debris. In the proliferative phase, endothelial, smooth muscle, fibroblast, and keratinocyte cells move through the wound and multiply to form new blood vessels, synthesize and deposit a temporary extracellular matrix, re-epithelialize the denuded surface, and reduce the size of the wound. The activity of matrix metalloproteinases (MMPs) in balance with tissue inhibitors of metalloproteinases (TIMPs) remodels the newly formed granulation tissue during the last stage, rearranging the loose, regenerated dermis and fortifying the repaired tissue. When natural cascade of wound healing is disrupted, chronic wounds that do not heal form. Biopolymeric scaffolds will be created according to each patient's needs in order to modify the wound bed and create the ideal wound healing microenvironment because chronic wound healing is multifactorial. Scaffold structure enhances wound healing through differentiation of endothelial and epithelial cells and production of angiogenic growth factors in cutaneous wounds. In addition to healing wounds and providing a physical barrier against external infection as a dressing, the three-dimensional scaffolds may support dermal fibroblasts and the keratinocytes that cover them for skin tissue engineering. In order to promote cellular adhesion, proliferation, and differentiation, a good tissue scaffold should have the right mechanical and physical properties and nano and microstructures.

Keywords: Scaffolds, chronic wounds, keratinocytes, microstructure.

ICTJ-O-102

IMMUNITY AND RISK FACTORS FOR TUBERCULOSIS

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ABSTRACT

Since the respiratory system is the primary entrance point for the causative agent, alveolar macrophages are crucial cell types that fight the infection. The possibility of getting tuberculosis depends on the likelihood of contracting the disease as well as the likelihood of infection progressing to active illness. The former is based upon the prevalence of tuberculosis in the community in which the person resides or works. The latter will rely on a variety of environmental and genetic factors that affect the individual. Concurrent HIV infection is the biggest risk factor for developing TB from infection. Only 5–10% of immunocompetent people are at risk for tuberculosis, and more than 85% of them only get it in their lungs. In contrast, individuals infected with the human immunodeficiency virus (HIV) may experience more rapid and fatal systemic illness. This is consistent with evidence indicating that susceptible humans develop Th1 immune response to *Mycobacterium tuberculosis* (Mtb) infection. Tuberculosis in mice, guinea pigs, and rabbits serves as a model for studying the disease in susceptible human populations. The failure to resolve infection and prevent disease may not be due to an insufficient number of Th1 cells but rather an inherent defect in macrophage function, which impairs their ability to mediate an effective immune response.

Keywords: Tuberculosis, Risk factor, HIV, Genetic, Environment, Th1 immunity, CD4 T cells.

ICTJ-O-103

FLAVONOIDS EXHIBIT NEUROPROTECTION AGAINST NEUROTOXICITY INDUCED BY VARIOUS SCREENING MODELS IN EXPERIMENTAL RODENTS

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ABSTRACT

Parkinson's disease (PD), a neurodegenerative problem is defined by the gradual loss of dopaminergic neurons in the substantia nigra, resulting to motor and non-motor symptoms. Oxidative stress, neuroinflammation, and mitochondrial dysfunction are major contributors to PD pathogenesis. Flavonoids, a diverse group of polyphenolic compounds found in fruits, vegetables, and beverages, exhibit potent antioxidant, anti-inflammatory, and neuroprotective properties. Emerging evidence from *in-vitro* and *in-vivo* studies, including PD models such as 6-hydroxydopamine (6-OHDA), MPTP, rotenone, and paraquat-induced neurotoxicity models, indicates that flavonoids can modulate signaling pathways, reduce oxidative stress, and inhibit neuroinflammatory responses, thereby attenuating neuronal damage. Epidemiological studies have also indicated an inverse link between dietary flavonoid consumption and PD risk. Mechanistically, flavonoids influence mitochondrial function, enhance autophagy, and regulate neurotrophic factors, contributing to their protective effects. This article highlights the therapeutic potential of flavonoids as dietary interventions or pharmacological agents in preventing and managing Parkinson's disease.

Keywords: Tricin, Rotenone, Striatum, Substantia niagra, Parkinson's disease, Mitochondria

ICTJ-O-104

EXPLORING THE ROLE OF TLR9 IN TRYPTOPHAN AND ARGININE PEPTIDE-MEDIATED IMMUNOMODULATION FOR TUBERCULOSIS THERAPY

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ABSTRACT

Research on the target receptor was done on platforms like PubMed and Google Scholar: Science Direct and AKTU e-consortium. Our study involved 104 peptide combinations. The physicochemical properties of these peptides were analyzed to select the best peptides for treating tuberculosis. The software involved in this analysis were SwissADME, Protox, Mol Inspiration, SwissDOCK, and ChemDraw. RNN analysis of these peptides was also carried out to predict their activity in TB. Our results showed that dipeptide combinations with arginine and tryptophan namely Arg-Phe, Arg-His, Tyr-Phe, Tyr-Leu and Arg-Trp have shown an effect against TB. These combinations have Swiss Param scores of -6.5085 kcal/mol, -6.7869 kcal/mol, -6.7986 kcal/mol, -6.6969 kcal/mol and -6.8945 kcal/mol respectively. The findings of this study have the potential to identify novel therapeutic strategies for TB by targeting TLR9. The analysis indicated that these selected peptides can show an effect on tuberculosis management or treatment.

Keywords: pulmonary tuberculosis, RNN, Toll-like receptor 9, Arginine, Tryptophan.

ICTJ-O-105

IN-SILICO INVESTIGATION OF HYDRAZONES AS ACHE INHIBITOR

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ABSTRACT

Alzheimer's disease is a progressive neurodegenerative disorder characterized by cognitive dysfunction and a person's inability to carry out daily tasks in the later stage of the disease. Alzheimer's disease is associated with abnormal levels of the human cholinesterase enzymes, namely acetylcholinesterase (AChE). It is very common cause for dementia seen majorly in old ages which is nearly 60-70% of cases across world. The World Health Organization (WHO) reported that the number of people with dementia could exceed 80 - 150 million by 2030 - 2050, respectively. Introducing Hydrazone moiety alongside aryl esters that can enhance the binding affinity of the compound for the targeted enzymes. Hydrazone compounds constitute an important class of organic compounds in designing novel active drugs because of their significant biological and pharmacological properties. As Azomethine moiety in their structure, these compounds are also used as organic intermediates in the creation of novel bioactive chemicals. Hydrazone fragments bound to heterocyclic systems exhibit increased activity as their ability to form hydrogen-bonding interactions with molecular targets. Computational investigation also supported that incorporation of Hydrazide with heterocyclic system may lead to potential drug against Alzheimer as AChE inhibitors.

Keywords: Dementia, Neurodegenerative Disease, Acetylcholinesterase, Azomethine, Hydrazone.

ICTJ-O-106

INTRANASALLY DELIVERED RNA-LOADED NANOCARRIERS FOR THE MANAGEMENT OF NEURODEGENERATIVE DISORDERS: A RECENT UPDATE

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ABSTRACT

Neurodegenerative disorders (NDs) is characterized by the progressive degeneration of neurons in the CNS, leading to a deficiency of neurotransmitters in the brain. Various factors contribute to NDs, including genetic mutations and environmental toxins. The NDs progress through a series of harmful events such as oxidative stress, mitochondrial dysfunction, and failure of anti-apoptotic mechanisms, ultimately resulting in neuronal loss. In recent years, RNA-based therapeutics have been explored for the effective management of NDs. Lipid-based nanocarriers (LNCs) have become effective carriers for RNA-based therapeutics, for the management of NDs. They enable efficient drug delivery, enhancing targeted delivery to specific tissues or cells. There are several different forms of LNCs, such as liposomes, solid lipid nanoparticles, nanostructured lipid carriers, and nanoemulsions. Using several methods, preparing LNCs involves manipulating their structural, dimensional, compositional, and physical characteristics. LNCs can enhance intranasal RNA delivery by increasing the adhesion to the nasal mucosa shielding the encapsulated moiety from biological degradation and shielding from efflux transporters. In this review, we have summarized recent advancements in the RNA-based therapeutics encapsulated in LNCs for the management of NDs through an intranasal route of delivery.

Keywords: Neurodegenerative disorders; Lipid-Based Nanocarriers; Intranasal delivery; Brain targeting; RNA therapeutics.

ICTJ-O-107

ADVANCEMENTS IN THE AI-INTGERATED INTRANASAL DRUG-LOADED NANOCARRIERS FOR THE MANAGEMENT OF PARKINSONISM

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ABSTRACT

The latest advancements in the artificial intelligence (AI) have prominently improved the development of intranasally delivered drug loaded nanocarriers for PD management. Nanotechnology has emerged as a promising approach for delivering drugs to the brain, bypassing the blood-brain barrier (BBB). AI plays a crucial role in improving the design, formulation, optimization and efficient delivery of nanocarriers. Machine learning algorithms, especially deep learning models, are now being employed to predict the optimal physicochemical properties of nanocarriers, such as surface charge, size and biodegradability, ensuring efficient release of drug and brain targeting. AI assists in simulating the nasal drug delivery process, optimization of formulations to enhance absorption of drug through the nasal mucosa and reduce systemic side effects. According to recent studies AI-driven simulations and optimization platforms lead to better therapeutic outcomes in animal models, improving the bioavailability of therapeutic agents like neuroprotective drugs or dopamine precursors. Furthermore, AI-powered diagnostic tools enable early detection of symptoms of PD, facilitate timely intervention with therapies based on nanocarriers. The present review focuses on the AI integrated intranasal nanocarriers which accentuate on navigation, regulation, targeting, and transport of drugs across the BBB for the management of PD.

Keywords: Artificial intelligence; Intranasal delivery; Parkinsonism; Brain targeting; Drug nanocarrier

ICTJ-O-108

CARNOSIC ACID: A PROMISING CANDIDATE FOR ALOPECIA MANAGEMENT

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ABSTRACT

Alopecia is a dermatological condition characterized by hair loss associated with different etiologies, ranging from hormonal changes to chemotherapy which can significantly impact the psychological and social well-being of affected individuals. Currently, there is a lack of medications that are capable of effectively preventing or curing the condition although there are only two approved drugs which are reported to manage alopecia, (topical minoxidil and oral finasteride) which were sanctioned for hair regrowth by FDA and existing formulations still present skin irritation issues, compromising treatment adherence. However, in recent years there have been many studies to substantiate the use of natural compounds as a potential alternative for the treatment of Alopecia. Carnosic acid, a natural compound found in rosemary, exhibits potent antioxidant, anti-inflammatory, and hair follicle-stimulating properties, making it a promising candidate for alopecia treatment. This study explores the role of carnosic acid in promoting hair regrowth and its underlying mechanisms, including its antioxidant, anti-inflammatory, and angiogenic activities. Preliminary findings indicate that carnosic acid could redefine alopecia management by offering a safer and more effective alternative to current treatments.

Keywords: Carnosic acid, alopecia, hair regrowth, antioxidant, anti-inflammatory.

ICTJ-O-109

ARTIFICIAL INTELLIGENCE IN LUNG CANCER: TRANSFORMING SCREENING, DIAGNOSIS, AND TREATMENT

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ABSTRACT

This review explores the current and potential roles of AI in lung cancer screening, diagnosis, and treatment. AI-driven algorithms such as machine learning, deep learning, and radiomics demonstrate exceptional capabilities in detecting and characterizing lung nodules, thereby enhancing screening and diagnostic accuracy. These technologies leverage imaging modalities like low-dose computed tomography (LDCT), PET-CT scans, and chest radiographs to identify suspicious nodules and support timely interventions. In lung cancer screening, the National Lung Screening Trial (NLST) revealed that early diagnosis among high-risk populations reduced mortality rates by 20%. AI further enhances this by minimizing radiation exposure, accurately categorizing lung nodules, personalizing screening protocols, and facilitating LDCT interpretations in regions with limited access to skilled radiologists. Key imaging advancements include nodule detection, segmentation, and characterization, providing a comprehensive understanding of tumor attributes. The integration of AI into lung cancer management has significantly transformed patient care. Its application in early screening, accurate diagnosis, and outcome prediction holds immense potential to improve survival rates, reduce treatment burdens, and drive innovations in personalized medicine. Continued research and development are critical to unlocking AI's full potential in combating lung cancer.

Keywords: Artificial Intelligence, Lung Cancer, Screening, Diagnosis, Treatment Outcomes

ICTJ-O-110

RECENT ADVANCEMENTS IN TASTE MASKING TECHNOLOGIES FOR PAEDIATRICS DOSAGE FORMS

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ABSTRACT

The strategies include the use of flavouring agents, sweeteners, taste-masking polymers, coating systems, and complexation techniques. Taste masking technologies have become essential in pharmaceutical development, particularly for improving the palatability of oral dosage forms containing bitter or unpleasant-tasting active ingredients. These advancements include the use of encapsulation techniques such as polymeric coatings, nanoencapsulation, and microparticulate systems, which prevent direct contact between the drug and taste receptors. The use of natural and synthetic polymers, such as cyclodextrins, lipid-based carriers, and microencapsulation, protects APIs from the oral cavity's bitter receptors while ensuring bioavailability. Patents in this area focus on a variety of dosage forms, including chewable tablets, liquid suspensions, orally disintegrating tablets (ODTs), and soft gel capsules, each incorporating different taste masking strategies. Innovative coating techniques, such as polymeric coatings and enteric coatings, are employed to prevent the release of bitter or unpleasant-tasting active pharmaceutical ingredients (APIs) in the oral cavity, allowing for controlled release or delayed taste perception until the drug reaches the stomach.

Keywords: Paediatric dosage forms, Taste masking technologies, Palatability, Microparticulate systems, Complexation, Multi-layered coatings.

ICTJ-O-111

STABILITY INDICATING ASSAY METHOD FOR AZELNIDIPINE AND TELMISARTAN IN BULK AND TABLET DOSAGE FORM

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ABSTRACT

A novel stability indicating high performance liquid chromatography (RP-HPLC) assay method was developed and validated for Azelnidipine and Telmisartan and its degradant product. The separation was performed on Agilent, C18,(4.6 mm x 15-cm), 5µm utilizing the mobile phase having composition 40 volumes of Buffer 0.01M ammonium dihydrogen orthophosphate pH 3.0 adjusted with orthophosphoric acid and 60 volumes of Acetonitrile. The chromatographic analysis was carried on isocratic elution at a flow rate of 1mL/min. Detection was carried out with UV detector at 240 nm, and linearity was found at concentration ranges of 12.8-19.2µg/ml for AZL and 64-96µg/ml for TEL. The recoveries obtained were 99.98%for AZL, and 99.84% for TEL. The validation studies were carried out fulfilling the International Conference on Harmonization (ICH) requirements. The developed method is straightforward, accurate, sensitive, precise, quick, cost effective and unaffected by excipients in the formulation. It is suitable for routine analysis of Azelnidipine and Telmisartan in both bulk and commercial products.

Keywords: Azelnidipine (AZL),Telmisartan (TEL), RP-HPLC, ICH, Stability Indicating.

ICTJ-O-112

THE NEW DIGITAL ERA IN PHARMACEUTICALS: USING AI AND COLLABORATION TO IMPROVE OUTCOMES

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ABSTRACT

The pharmaceutical industry is undergoing a significant upheaval due to the growing usage of technology and digital transformation. Digital transformation has changed business models in many different industries. Nonetheless, the adoption of digital services by the pharmaceutical sector has progressed at a very slow pace. Machine learning and artificial intelligence (AI) have emerged as crucial instruments for data analysis, enabling more customized approaches to disease treatment. The product has continued to be the cornerstone of the pharmaceutical business model. Pharmaceutical firms are still in the experimental stage of offering digital services in addition to traditional products. Collaborations with ICT companies and healthcare payers can use the potential to enhance patient outcomes in addition to making up for a lack of digital capabilities. It also highlights how digital health platforms are changing how people communicate with doctors and enrol in clinical trials. Real-time monitoring, predictive maintenance, and optimized processes have enhanced operational efficiency, waste reduction, product quality, and regulatory compliance. Wearable devices and smartphone apps are now crucial parts of individualized treatment since they provide continuous monitoring of health data and encourage patient participation. However, problems like interoperability, data security, and privacy concerns must be fixed for seamless information exchange while protecting patient anonymity.

Keywords: Digital Transformation, Social Media Marketing, E-Marketing, Digital Technology, Pharmaceutical Marketing.

ICTJ-O-113

PHARMACEUTICAL NANOCRYSTALS: AN EXTENSIVE OVERVIEW

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ABSTRACT

In pharmaceutical development, pharmaceutical nanocrystals sized between 10 and 1000 nanometers have been found to hold promise in improving drug solubility. Since they comprise only the active pharmaceutical ingredient, nanocrystals have dramatically increased surface area-to volume ratios, ensuring improved in vitro dissolution and solubility profiles. In view of their strengths and limitations, different production strategies have been reviewed: methods of size reduction such as wet milling and high-pressure homogenization; the bottom-up approaches of controlled precipitation and supercritical fluid technology; and efficient ways to stabilize nanocrystal formulations aided by excipients like surfactants and polymers. Techniques used in this characterization of nanocrystals include size analysis, surface-charge measurement, and assessment of crystalline structure. The routes of administration, such as oral, injectable, inhaled, and topical application, are reviewed alongside commercially successful products and clinical trials. This work reviews dynamic regulatory scenarios and current challenges of large-scale production, long-term stability, and nanotoxicity evaluation. In addition, it addresses the emerging trends in nanocrystal technology in the field of personalized medicine, targeted drug delivery, and theranostic approaches associated with how nanocrystals can help optimize the outcome of a patient in drug delivery systems.

Keywords: Pharmaceutical nanocrystals, Drug delivery, Bioavailability enhancement, Nanotoxicity, Stabilization strategies

ICTJ-O-114

IN-SILICO ADMET AND MOLECULAR DOCKING STUDIES OF NOVEL β-ENAMINONE DERIVATIVES FOR ANTICANCER ACTIVITY

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ABSTRACT

This study aims to bridge this gap by utilizing computational methods to explore ADMET characteristics, bioactivity, and docking interactions of novel β-enaminone derivatives. *In-silico* predictions were performed using *Swiss ADME* and *PKCSM* platforms to evaluate the key ADMET parameters such as absorption, distribution, metabolism, excretion, and toxicity. The bioactivity profile of β-enaminone derivatives were evaluated using the *moleinspiration* database. In addition, molecular docking simulations were carried out using Auto Dock 4.2 to explore the binding interactions between the compounds and crucial anticancer targets such as EGFR (PDB:4hjo) obtained from RCSB. The ADMET analysis showed that β-enaminone derivatives exhibit promising pharmacokinetics profile. The bioactivity assessment suggested significant anticancer potential, particularly against tumor cell line. Molecular docking studies revealed a strong interactions with EGFR, supporting the compounds' potential as targeted anticancer agents. This study indicates that β-enaminone derivatives hold promising anticancer drug candidates activity due to their favorable pharmacokinetic properties and bioactivity profiles. The docking results further validate their potential as inhibitors of key cancer-associated targets. Further experimental investigations and optimization of these compounds are essential for their development as effective cancer therapies and are underway.

Keywords: β-enaminone, Anticancer, Docking, ADMET.

ICTJ-O-115

STRUCTURE-BASED VIRTUAL SCREENING OF TETRAMETHYL-PYRAZINE AS AN ANTI-EPILEPTIC DRUG

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ABSTRACT

In this study, we have used structure-based virtual screening to explore the 4427 ligands from a virtual chemical library and found approximately 300 active ligands & then find a set of the highest binding score ligands. Apart from the ligand binding energy from docking, our virtual screening workflow imposes additional filters such as drug-likeness, non-covalent interactions with key active site residues, and toxicity, to identify the top 7 potential ligands for GABA-AT inhibitor properties. The compound with PubChem ID 227746 exhibited the highest binding energy with protein 4MS4 with binding energy of -9.564 kcal/mol with comparison to phenytoin whose binding energy is -5.9kcal/mol. Docking studies revealed strong interactions within the active site, and DFT analysis further confirmed the compound's structural stability. Additionally, comprehensive ADMET studies demonstrated favorable pharmacokinetic and toxicological properties. The results from virtual screening, ADMET evaluation, docking simulations, and DFT studies suggest that TMP holds significant promise as an anti-epileptic agent, with favorable pharmacokinetic properties and strong binding affinities for key epilepsy-related targets. The potential PubChem ID 227746, predicted in this study using virtual screening methods, is expected to serve as lead molecules in future experimental studies toward the development of Antiepileptic drugs against GABA-AT.

Keywords: Tetramethyl pyrazine, Virtual Screening, Molecular docking, DFT, ADMET

ICTJ-O-116

IN SILICO ANALYSIS AND MOLECULAR DOCKING STUDIES OF NOVEL CHALCONE DERIVATIVES AS POTENTIAL EGFR-TARGETING ANTI-CANCER AGENTS

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ABSTRACT

SwissADME and pkCSM software help to predict absorption, distribution, metabolism, excretion and toxicity properties for chalcone derivatives and also indicating whether a compound is suitable for development as a potent drug. Further investigation has been performed using Molinspiration tool to analyze or predict the bioactivity score of synthesized chalcone derivatives. For molecular docking studies, the chalcone derivatives were docked against selected cancer-related targets (EGFR) using AutoDock software to explore their binding affinity and interaction modes. The docking results were analyzed using Discovery Studio to predict the potential anticancer activity. The ADMET analysis revealed that several chalcone derivatives exhibited favorable pharmacokinetic properties, with good oral bioavailability and low toxicity. All derivatives complied with Lipinski's Rule of Five**,** indicating their potential as orally administrable drugs. Molecular Docking analysis revealed that chalcone derivatives had a strong binding affinity towards EGFR protein indicating strong anticancer potential of novel chalcones. The binding energy values indicated that certain chalcones had strong interactions with the target proteins, suggesting their potential as effective inhibitors in cancer therapy.

Keywords: Chalcone derivatives, cancer, heteroatoms, *in-silico* studies.

ICTJ-O-117

MOLECULAR INSIGHTS INTO CURCUMIN'S POTENTIAL FOR DIABETIC NEUROPATHY TREATMENT

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ABSTRACT

Molecular docking simulations were used to determine which molecule showed the greatest promise. Due to its greater binding affinity to the target protein implicated in DN, curcumin emerged as the leading contender. Density Functional Theory (DFT) computations were carried out to evaluate curcumin's stability. These investigations supported curcumin's strong molecular structure, indicating the possibility of long-lasting therapeutic benefits. To verify the structural integrity of the diabetic neuropathy protein 4N17, a Ramachandran plot analysis was performed. For precise docking simulations and trustworthy protein-ligand interaction prediction, this step is essential. To learn more about the chosen compound's metabolic profile, metabolomics investigations were conducted. Pharmacophore modeling was also used to pinpoint the essential molecular characteristics that give the chemical its biological activity. Our goal was to clarify the chemicals' mechanisms of action and their therapeutic uses for DN by integrating these computational and experimental methods. Molecular docking studies revealed that curcumin exhibited the highest binding affinity with bending energy of -7 kcal/mol to the target protein 4N17 compared to the standard quercetin whose binding energy is -4.97 kcal/mol. Pharmacophore modeling further supported these findings, involving amino acids ARG A274, ASN A67, GLY A36, ALA A193, and HIS A219, identifying key molecular features that align with critical interactions within the protein's active site. Density Functional Theory (DFT) analysis confirmed the structural stability of curcumin, and the Ramachandran plot analysis validated the integrity of the protein structure, ensuring the reliability of the docking simulations. The combined results of molecular docking, DFT stability studies, and Ramachandran plot analysis strongly suggest that curcumin holds significant potential as a lead compound for the development of novel therapies for diabetic neuropathy. These findings provide valuable insights into the molecular mechanisms underlying the therapeutic effects of curcumin and pave the way for future drug discovery efforts targeting this debilitating condition.

Keywords: Diabetic neuropathy, curcumin, Molecular Docking, DFT, Metabolomics.

ICTJ-O-118

DECIPHERING RESVERATROL AND TERPINEN-4-OL AS ANTI-PSORIATIC AGENT USING IN SILICO AND TARGET NETWORK INTERPLAY STUDIES

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ABSTRACT

This study examines the remarkable effectiveness of Resveratrol and Terpinen-4-ol (the active constituent of Tea Tree Oil), in encountering the mortiferous psoriasis disease, a global peril. The predominant objective is to investigate Resveratrol and Terpinen-4-ol predicted genes, and intrinsic pathway proteins in psoriasis using augmented computational approaches, and network pharmacology predictions. The databases and webtools like Swiss target prediction, GeneCards, DisGeNet and OMIM were exploited to identify the common target proteins. The culmination of the Resveratrol and Terpinen-4-ol network, and PPI network was devised using Stitch and String web tools, through which the drug–target network of 10 common proteins was constructed employing Cytoscape. The enrichment analysis was performed by incorporating Gprofiler, and Cytoscape. David compounded the GO, and KEGG, and enrichment was computed through bioinformatics tools. The best pivotal proteins were docked harnessing Schrodinger Suite. The investigation was governed by docking scores and end-point energy method. The shared target proteins underscored the precise psoriasis genes, and Resveratrol & Terpinen-4-ol network roles with the affirmation enrichment *P*-value of <0.025 and the implications for pathways were profound with enrichment (*P*<0.01). Further, the ADMET and drug-likeness assessments assisted the claim. Robust interactions were noticed with docking studies, authenticated using molecular dynamics, and MMGBSA. The computational investigation emphasized Resveratrol and Terpinen-4-ol credible anti-psoriatic activity. Rigorous testament is imperative through *in vitro* and *in vivo* anticipated in near future.

Keywords: Resveratrol, Terpinen-4-ol, Psoriasis, Network Pharmacology, Molecular Docking, Molecular Dynamics

ICTJ-O-119

STRUCTURAL PREDICTION, MOLECULAR DOCKING AND DFT ANALYSIS OF NOVEL GENTISIC ACID DERIVATIVES: AN *IN-SILICO* APPROACH

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ABSTRACT

In this study, we conducted a comparative analysis of Gentisic acid, a naturally occurring phenolic compound, against standard antiepileptic drugs (AEDs) using a combination of molecular docking, Density Functional Theory (DFT), and ADMET studies. Gentisic acid's binding affinity with the target proteins associated with epilepsy was evaluated using molecular docking simulations, and its structural stability was evaluated using DFT analysis. ADMET studies were performed to predict the pharmacokinetic and toxicological profiles of Gentisic acid. The results revealed that Gentisic acid exhibited superior binding affinity to the target protein compared to the standard drug such as Phenytoin. Docking Outcomes revealed that the binding energy of Gentisic acid is -8.33 and for phenytoin it is found to be -7.182 suggesting a higher potential for therapeutic efficacy. DFT analysis confirmed that Gentisic acid possesses a stable molecular structure, further supporting its suitability as a candidate for drug development. This study reveals Gentisic acid as a stronger candidate for the antiepileptic drug in comparison to the current antiepileptic drugs. Further in vivo studies and clinical trials are required to validate these results and explore its therapeutic applications in epilepsy and other diseases.

Keywords: Novel Gentisic Acid Derivatives, ADMET studies, antiepileptic drugs, DFT Analysis, *in-silico*.

ICTJ-O-120

BLOCKCHAIN AND AI SYNERGY: ADVANCING TRACEABILITY AND COMPLIANCE IN PHARMACEUTICAL QUALITY ASSURANCE

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ABSTRACT

The integration of artificial intelligence (AI) with blockchain amplifies these benefits, addressing critical healthcare challenges, improving data security, and streamlining operational efficiency. Together, these technologies enable personalized solutions while safeguarding sensitive information. Blockchain provides an immutable ledger for meticulous tracking of pharmaceutical products and raw materials, enabling swift identification and resolution of quality concerns. This traceability ensures that counterfeit or substandard products are prevented from entering the supply chain, thereby safeguarding patient safety. AI-powered analytics enhance blockchain's capabilities by identifying patterns, predicting anomalies, and facilitating proactive decision-making to maintain quality standards. The use of smart contracts on blockchain networks automates quality assurance processes by enforcing predefined rules for monitoring, auditing, and compliance checks. These automated systems reduce human errors, ensure adherence to regulatory standards, and promote consistent product quality. Additionally, AI-driven insights aid in optimizing production workflows, managing inventory effectively, and improving the overall efficiency of pharmaceutical operations.

Keywords: Blockchain, Artificial Intelligence, Pharmaceutical Industry, Quality Assurance, Traceability.

ICTJ-O-121

SYNTHESIS, IN SILICO EVALUATION, AND QSAR ANALYSIS OF PARA-COUMARIC ACID DERIVATIVES AS POTENTIAL ANTIDIABETIC AGENTS

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ABSTRACT

Five novel para-coumaric acid derivatives (A-E) were synthesized through an Amination reaction involving para-coumaric acid and suitable substituted amines. In silico studies were employed to assess the drug-likeness and potential antidiabetic activity of these derivatives. Molecular docking simulations using PyRx were performed to predict the binding affinity of the derivatives to the alpha-amylase protein, a key target for antidiabetic drugs. The pkCSM software was also used to assess pharmacokinetic characteristics, such as absorption, distribution, metabolism, excretion, and toxicity (ADMET). Key chemical descriptors linked to antidiabetic activity were identified using statistical research in order to create a quantitative structure-activity relationship (QSAR). Lipinski's rule of five was followed by all synthesized derivatives, suggesting that they had the potential to be drugs. The compounds' good ADMET profiles were found by the pkCSM analysis. Para-coumaric acid showed a strong binding affinity to alpha-amylase (-7.8 kcal/mol) according to molecular docking experiments, indicating that it may be a dual-target medication. With a strong correlation coefficient (R2) of 0.9995, the QSAR analysis revealed important chemical descriptors associated with antidiabetic action. According to the combined findings of ADMET, QSAR, and molecular docking investigations, derivatives of para-coumaric acid have high binding interactions with important diabetic targets and favorable pharmacokinetic characteristics. These results demonstrate the compounds' potential as novel antidiabetic medicines, indicating the need for additional in vitro and in vivo studies to confirm their safety and therapeutic efficacy.

Keywords: para-coumaric acid, Diabetes Mellitus, *In Silico* studies.

ICTJ-O-122

BEYOND THE SURFACE: HOW NANOSPONGES ARE TRANSFORMING MEDICINE

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ABSTRACT

A new class of nanomaterials called nanosponges is quickly becoming a game-changer in drug delivery systems because of its special structural and functional characteristics. Usually composed of silica or biocompatible polymers, these nanoporous structures can encapsulate hydrophilic and hydrophobic medications, providing improved solubility, stability, and controlled release. Nanosponges can precisely distribute therapeutic chemicals to specific areas while reducing side effects and enhancing therapeutic results by imitating the characteristics of natural sponge-like materials. In cancer, infectious disorders, and chronic conditions, their surface can be functionalized to target particular cells or tissues, enabling extremely selective medication delivery. Furthermore, nanosponges can be designed to react to environmental cues like pH, temperature, or enzymes, allowing for responsive medication release that improves the effectiveness of treatment. Nanosponges are opening the door to more individualized and efficient medical therapies because of their capacity to transport a broad variety of therapeutic substances, including as proteins, nucleic acids, and tiny compounds. By enhancing the bioavailability, targeting precision, and safety of therapeutic agents, this emerging technology holds the potential to completely transform the drug delivery landscape and mark a significant advancement in precision medicine.

Keywords: Nanosponges, Drug delivery systems, Nanomaterials, Solubility enhancement, Targeted drug delivery

ICTJ-O-123

USE OF ARTIFICIAL INTELLIGENCE IN CLINICAL TRIAL DESIGN

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ABSTRACT

Artificial Intelligence (AI) is reshaping clinical trial design by addressing challenges such as patient recruitment, protocol optimization, and data management. Machine learning algorithms identify eligible patient populations with precision, accelerating recruitment and enhancing diversity. Natural Language Processing (NLP) enables the analysis of unstructured clinical data to uncover critical insights, while predictive analytics improves trial endpoint selection and risk stratification. AI also supports adaptive trial designs, allowing real-time adjustments to protocols based on interim results, significantly reducing costs and timelines. Moreover, synthetic control arms powered by AI reduce dependency on placebo groups, improving ethical considerations and patient retention. Despite its transformative potential, the integration of AI faces challenges including data security, regulatory compliance, and algorithm transparency. Addressing these challenges will require multidisciplinary collaboration and the development of robust frameworks.

Keywords: Artificial Intelligence, Clinical Trial Design, Machine Learning, Patient Recruitment, Predictive Analytics, Adaptive Trials, Synthetic Control Arms.

ICTJ-O-124

TARGETED DRUG DELIVERY WITH HERBAL NANOGELS: ADVANCING SUSTAINABILITY THROUGH AI

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ABSTRACT

Herb-based nanogels present novel strategies for targeted drug delivery by eliminating problems such as inadequate therapeutic outcomes, systemic toxicity, and low bioavailability. Combining advanced nanotechnology with the inherent medicinal advantages of herbal substances, these nanogels ensure that specific tissues or cells can be targeted with greater stability and controlled release. Applications of herb-based nanogels include wound healing, cancer therapy, chronic diseases, and antimicrobial treatments. The application of AI has accelerated their development by simplifying the procedures of formulation, characterization, and application. AI-driven techniques, through the analysis of intricate datasets, prediction of drug release profiles, study of particle size by using complex data interpretation techniques and fine-tuning of features for therapeutic objectives, make the optimization of nanogel formulations possible. Another important advantage is personalization, as AI develops nanogels specifically tailored to patient-specific genetic, metabolic, and illness data. Moreover, AI makes nanogel production more scalable and cost-effective by automating and monitoring the process in real-time. Since green pharmaceutical practices are mainly associated with the use of eco-friendly and biodegradable ingredients, sustainability lies at the core of this innovation. Some of the practical applications are AI-based herbal nanogels applied to targeted delivery of chemotherapeutic agents and antimicrobial nanogels. These developments reflect an integration that could have positive impacts on global health through the applications of AI in the development of herbal nanogels, integrating sustainable practices into pharmaceutical and healthcare systems.

Keywords: Herbal Nanogels, Targeted Delivery, AI Integration, Sustainable Healthcare

ICTJ-O-125

DESIGN, OPTIMIZE AND EVALUATE DAPAGLIFLOZIN SUSTAINED RELEASE MICROSPHERES USING BOX-BEHNKEN DESIGN.

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ABSTRACT

This study focused on designing, optimizing, and analyzing the sustained release dapagliflozin microspheres to improve efficacy over the marketed product. Microspheres were formulated by a Solvent Evaporation method using sodium alginate, ethyl cellulose, and HPMC K 100 in various combinations. Optimization was performed using a Box-Behnken factorial design, with independent variables being polymer concentration, surfactant concentration, and stirring speed, and dependent variables including particle size, percentage yield, and entrapment efficiency. Seventeen formulations were formulated, with the best one (F2) showing optimal characteristics. The optimized formulation was investigated for its micromeritic characteristics, SEM, in-vitro release, kinetic modeling, and stability. FT-IR studies showed no negative interaction between the drug and polymers. Formulation F2 had a maximum yield of 81.78%, an entrapment efficiency of 82.21%, and optimal particle size of 278.69 μm, with enhanced micromeritic properties. Increased concentration of polymer improved yield and efficiency of drug entrapment while stirring rate decreased particle size. SEM analysis revealed rough, porous and spherical microspheres, and the release was sustained, with 98.02% of the drug released over 20 hours. The optimized microspheres showed prolonged drug release under gastrointestinal conditions, offering increased efficacy and potentially enhancing patient adherence by lowering dosing compared to the marketed product.

Keywords: Dapagliflozin, Box- Behnen, independent and dependent variables.

ICTJ-O-126

EDIBLE VACCINES: A PARADIGM SHIFT IN VACCINE DELIVERY AND GLOBAL HEALTH SOLUTIONS

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ABSTRACT

Edible vaccines represent a revolutionary approach to immunization, leveraging genetically modified plants to produce antigens that elicit immune responses when consumed. This novel strategy addresses several limitations of traditional vaccines, particularly in resource-limited settings, by eliminating the need for cold-chain logistics and skilled healthcare personnel for administration. Edible vaccines can enhance patient compliance, especially among children, by providing a non-invasive method of immunization. Recent advancements have demonstrated the potential of edible vaccines to prevent diseases such as hepatitis B and cholera, with ongoing research exploring their efficacy against a broader range of pathogens. However, challenges remain, including the risk of immune tolerance, variability in antigen dosage, and regulatory hurdles. Addressing public concerns regarding genetically modified organisms is crucial for widespread acceptance. This review highlights the mechanisms of antigen expression in edible vaccine platforms, engineering strategies to enhance stability and efficacy, and recent clinical trials that underscore their potential impact on global health initiatives.

Keywords: Edible vaccines, immunization, genetically modified plants, antigen expression, public health, regulatory challenges.

ICTJ-O-127

ADMINISTRATION OF POLYPHENOLIC COMPOUND PROTECTS BEHAVIOURAL AND BIOCHEMICAL DISTORTIONS IN PTSD MODEL OF MICE

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ABSTRACT

Post Traumatic Stress Disorder (PTSD) refers to a persisting condition of anxiety and hyperarousal symptoms after a traumatic experience. It is a chronic disabling condition that often translates into bipolar disorders, depression, suicides, and mass killings. Exploring newer therapies becomes substantially important with only two approved medications and meagre cure rates. The HPA axis has a major involvement in managing stress responses via cortisol release. We explored the role of a polyphenolic (PP) compound which has been found beneficial in several neurological conditions, but our study explored its role for the first time in PTSD. The present study was designed to investigate the possible beneficial role of PP administration in Single Prolonged Stress (SPS) induced PTSD in mice. Animals were exposed to a single episode of stress by the SPS method, and were administered Vehicle/ PP/ Paroxetine (PAX) for 7 days and the assessments were performed through a battery of behavioural tests comprising of Elevated Plus Maze (EPM), Light and Dark box, Open Field Test (OFT), etc. Biochemical estimations included brain GSH, TBARS, serum Nitrite, IL1β, and serum corticosterone (CORT). SPS model induced PTSD in mice which was demonstrated by disturbed serum CORT levels, poor performance on behavioural tests assessed by EPM, OFT, Light and dark box etc., and elevated levels of brain and serum oxidative stress markers. PP and PAX administration significantly attenuated the SPS-induced PTSD symptoms in the animals and the CORT levels were also restored. PP treated animals displayed an upward trend in exploratory behaviours with reduced anxiety which was established by the behaviour and biochemical estimations. With our primary investigations PP can be seen as a potential agent for the management of PTSD.

Keywords: PTSD, HPA axis, Anxiety, Polyphenols

ICTJ-O-128

CADMIUM CHLORIDE INDUCED NEUROTOXICITY IN WISTAR RATS AND ITS MANAGEMENT

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ABSTRACT

This study investigates the neurotoxic impacts of CdCl2 exposure in Wistar rats, focusing on behavioural, biochemical, and histopathological alterations. A total of 30 male Wistar rats were divided into three groups: a control group receiving saline, a group exposed to a low dose of CdCl2, and a group exposed to a high dose. Behavioural assessments were conducted using the open field and elevated plus maze tests to evaluate anxiety and locomotor activity. Biochemical analyses measured oxidative stress markers, including malondialdehyde (MDA) and antioxidant enzyme activities. Histopathological examinations of brain tissues were performed to identify structural changes. Preliminary findings indicate that CdCl2 exposure significantly impairs cognitive function, increases oxidative stress, and induces neuronal damage in a dose-dependent manner. Notably, the high-dose group exhibited pronounced anxiety-like behaviours and reduced exploratory activity. Management strategies, including antioxidant supplementation (e.g., vitamin E and selenium), were tested for their potential protective effects against CdCl2-induced neurotoxicity. Results suggest that these antioxidants mitigate oxidative stress and improve behavioural outcomes, highlighting their therapeutic potential. This research underscores the importance of understanding cadmium-induced neurotoxicity and developing effective management strategies to safeguard neurological health in exposure scenarios. Future studies will aim to elucidate the underlying mechanisms and optimize treatment protocols for enhanced neuroprotection.

Keywords: Cadmium chloride, Neurotoxicity, MDA, oxidative stress.

ICTJ-O-129

FORMULATION AND EVALUATION OF TRANSDERMAL PATCH HAVING HERBAL EXTRACTS FOR WOUND HEALING AND THE TREATMENT OF SKIN DISEASES

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ABSTRACT

This study focuses on formulating and evaluating a transdermal patch infused with herbal extracts known for their healing and skin-repairing properties. Key ingredients like aloe vera, curcumin, green tea, and lavender were selected for their anti-inflammatory, antimicrobial, antioxidant, and soothing effects, making them suitable for managing wounds and conditions like eczema, acne, and psoriasis. The patches were developed using a hydrogel base composed of biodegradable polymers, such as chitosan and polyvinyl alcohol, optimized for properties like tensile strength, moisture retention, and skin adhesion. In vitro tests confirmed sustained release of active compounds over 24 hours, ensuring prolonged therapeutic action. Antimicrobial studies demonstrated strong activity against pathogens such as Staphylococcus aureus and Escherichia coli, while antioxidant assessments revealed a robust capacity to neutralize free radicals. Preliminary in-vivo trials on wound and skin disease models showed significant improvements, including faster wound closure and reduced inflammation in affected areas. These results highlight the potential of this herbal patch formulation as a natural, effective treatment for skin diseases and wound management, combining traditional remedies with innovative delivery systems.

Keywords: Herbal therapies, antimicrobial, in-vivo trials, traditional remedies.

ICTJ-O-130

DEVELOPMENT OF POMEGRANATE EXTRACT LOADED HERBAL NANOPARTICLES AND ITS ROLE AS FREE RADICAL SCAVENGING ACTIVITY

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ABSTRACT

The present research aimed to design a polymer conjugate with bioactive compounds, their characterization and evaluation using pomegranate extract (*Punica granatum*) using simple and most practicable approach based on solvent evaporation technique. The formulation was prepared by using biological macro-molecule i.e. Eudragit RL 100 (EuRL 100) to sustain the release pattern and poly-vinyl-alcohol (PVA) as a cross-linking agent (CLA). The drug and polymer ratio (drug: polymer) and various factors were observed for their effect on the formulation variables (dependent and independent). The evaluated formulation results were found to be in the acceptable range like % yield (57.01± 0.02 to 71.2±0.03%), particle size (156±0.02 to 489±0.02 nm), zeta potential (34.43 to 55.41 mV) PDI value (0.30±0.23 to 0.52±0.16), drug loading (31.24±0.08 to 59.24±0.16) % entrapment efficiency (46.21±0.13 to 64.24±0.03 %) respectively. *In-vitro* drug release profile was performed for optimized formulation (F5) in HCL medium for 2 hours and further in phosphate buffer up to 12 hours. Transmission electron microscopy (TEM) analysis exhibits spherical nature of polymeric optimised formulation. Antioxidant result profile of prepared formulation showed its positive impact towards versatile treatment demand in numerous diseases. FTIR analysis showed good compatibility between drug and excipients ratios. So, on the behalf above research exploration, polymeric nanoformulation could be an effective drug delivery system for loading natural bioactive compounds to overcome the barriers in pharmaceutical and biomedical applications.

Keywords: Pomegranate extract, FTIR, anti-oxidant, nanomaterials, *In-vitro* release, TEM.

ICTJ-O-131

PHYTOSOME: A NANOPARTICLE DELIVERY SYSTEM FOR PHYTO-PHARMACEUTICAL AGENTS

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ABSTRACT

WHO estimated that approximately 80% of the global population, particularly in developing nations, relies on herbal remedies for their primary healthcare need. Phytosomes, based on the analysis of specific polyphenolic compounds found in plants. Phytosomes improve the ability of hydrophilic phytoactive compounds to pass through cell membranes and enhance the solubility of lipophilic polyphenols in water-based environments. As a result of it, phytosomes have enhanced pharmacokinetics and pharmacological effects and are an effective method for treating various disorders. Phytosomes improve the stability and skin permeability of phytochemicals as identical to liposomes. Additionally, phytosome technology has broadened opportunities such as liver well-being, weight control, and managing inflammatory ailments.. In conclusion, phytosomes maintain their importance by enhancing the effectiveness of botanical supplements, finding utility in skincare and holding promise for enhancing diverse aspects of health and well-being. It serves as a link and fuses the benefits of both traditional and advanced drug delivery technologies.

Keywords: Bioavailability, Herbal, Herbosomes, Pharmacokinetic, Pharmacodynamic, Phytosomes.

ICTJ-O-132

REVOLUTIONIZING DRUG SAFETY: THE ROLE OF AI IN PHARMACOVIGILANCE

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ABSTRACT

Pharmacovigilance is currently being transformed by artificial intelligence (AI), which provides innovative approaches to improve patient safety and health. The difficulties facing traditional pharmacovigilance include the underreporting of adverse drug reactions (ADRs), the analysis of vast data sets, and the need for immediate intervention. We can improve the identification, evaluation, and prediction of adverse drug reactions, safety signals, and ADRs by integrating artificial intelligence (AI) technologies, including machine learning, natural language processing, and generative models. This presentation explores AI-driven signal detection, risk assessment, and resource optimization advancements, highlighting their transformative impact on key processes. Applications in the real world show how AI may reveal hidden safety concerns, pinpoint patient populations at high risk, and facilitate preventative measures. Generative AI, for example, has proven useful in the analysis of pharmacological databases and medical literature, but human validation ensures precision and moral supervision. Even with its significant potential, there are still issues with data quality, model validation, and ethics. Pharmacovigilance initiatives can become more successful, accurate, and patient-centric by fusing AI's computational capacity with human knowledge, providing the way to safer and more efficient medication practices.

Keywords: Artificial Intelligence, Pharmacovigilance, Drug Safety, Generative AI, Adverse Drug Reactions, Machine Learning.

ICTJ-O-133

TARGETING CANCER STEM CELLS: A NEW FRONTIER IN ONCOLOGY

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ABSTRACT

The involvement of cancer stem cells (CSCs) in tumor start, development, and resistance to traditional therapy has made them a crucial area of study in oncology. CSCs have special characteristics, such as the capacity to promote metastasis, differentiate, and self-renew, in contrast to the majority of tumor cells. Additionally, these cells exhibit remarkable resistance to radiation and chemotherapy, which frequently results in recurrence and a bad prognosis forcancer patients. Targeted therapy development requires an understanding of the molecular mechanisms controlling CSCs, including epigenetic regulation and the tumor microenvironment. New developments in medication delivery and CSC-specific biomarkers hold out hope for more potent therapeutic approaches. A new horizon in oncology is presented by this growing paradigm of targeting CSCs, which aims to eradicate the underlying causes of cancer spread and recurrence in addition to the mass tumor. Novel treatment techniques seek to enhance patient outcomes and produce long-lasting, persistent responses by interfering with CSC survival pathways.

Keywords: Cancer Stem Cells (CSCs), Tumor development, Metastasis, Tumor microenvironment, CSC-specific biomarkers.

ICTJ-O-134

PEPTIC ULCER ACTIVITY OF BARK EXTRACTS OF CORDIA MYXA AND CURCUMA LONGA OF RHIZOME

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ABSTRACT

Peptic ulcer disease refers to upper gastrointestinal disorders characterized by the presence of ulcers in the stomach or duodenum due to an imbalance between aggressive and protective factor.

1. Primary Aggressive Factors-

Gastric acid hypersecretion: Overproduction of hydrochloric acid damages mucosal barriers.

Pepsin activity: Enzymatic digestion exacerbates tissue damage

2. Protective Mechanisms Compromised

Reduced mucus and bicarbonate secretion

Decreased blood flow to mucosa

Cordia myxa is one of the traditional medicinally important deciduous plants present in tropical and subtropical region in all over India. It is belonging to the family Boraginaceae. It is common name Indian cherry. its shows anti-ulcerative property due to antioxidant.*Curcuma longa* is a perennial herb, leafy, belongs to the Zingiberaceae family, that measures up to 1 m high with a short stem, pointed leaves and funnel-shaped yellow flowers.it is use as anti-uler, antioxidant, anti-inflammatory etc.

Keywords: Antiulcer, Cordia myxa, Curcuma longa, Phytochemical screening.

ICTJ-O-135

DESIGN, SYNTHESIS AND BIOLOGICAL EVALUATION OF ISOXAZOLE BASED HETEROCYCLIC COMPOUNDS AS TUBULIN INHIBITORS

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ABSTRACT

A series of novel isoxazole based heterocyclic derivates were synthesized using multicomponent one pot synthesis. The synthesized compounds were characterized using IR, NMR, and Mass spectroscopy. All the synthesized compounds were screened for anticancer activity *invitro* against MCF-7 and T47D. It was found that among the synthesized compounds, compounds M-1 and M-2 showed promising inhibition of an MCF-7, T47D, and MDA-MB-231 cancer cell with the respective values of 0.79, 0.884 and 0.970 µM respectively. Further studies revealed that these compounds were able to stabilize the microtubules thereby preventing depolymerization. These compounds are further found to influence the cell cycle dynamics, signifying sub-G1 arrest as identified using PI dye and analyzed using flow cytometer-based studies**.**

Keywords: Anticancer, tubulin inhibitors, isoxazole

ICTJ-O-136

EFFECT OF HERBAL PLANTS IN THE MANAGEMENT OF DIABETES

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ABSTRACT

Diabetes mellitus, a chronic metabolic disorder characterized by hyperglycaemia, poses significant health challenges globally. The management of diabetes often involves pharmacological interventions; however, there is a growing interest in the potential of herbal plants as complementary therapies. This review explores various herbal plants and their bioactive compounds that exhibit antidiabetic properties, focusing on their mechanisms of action, efficacy, and safety profiles. Studies indicate that several herbal plants, such as Gymnema sylvestre, Bitter melon (Momordica charantia), and Fenugreek (Trigonella foenum-graecum), can enhance insulin sensitivity, stimulate insulin secretion, and modulate carbohydrate metabolism. These plants contain phytochemicals like flavonoids, alkaloids, and saponins, which contribute to their hypoglycaemic effects. Furthermore, the antioxidant properties of these herbs play a crucial role in mitigating oxidative stress, a common complication associated with diabetes. Clinical trials and preclinical studies demonstrate promising results, suggesting that herbal interventions can lower blood glucose levels and improve overall metabolic health. However, the variability in the composition of herbal preparations and the need for standardized dosages highlight the importance of further research. This emphasizes the necessity for rigorous clinical trials to establish the efficacy and safety of herbal plants in diabetes management. Ultimately, integrating herbal medicine with conventional treatments may offer a holistic approach to diabetes care, promoting better health outcomes for patients.

Keywords: Diabetes, Herbal plants, Antidiabetic properties, Phytochemicals, Metabolic health.

ICTJ-O-137

MAGENTO-ELECTRIC NANOFILM TARGETING BREAST CANCER

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ABSTRACT

Recent advances in nanotechnology have created a new option for cancer treatment, with magneto-electric nano-films (MENFs) emerging as a practical protection in the fight against a variety of tumours such as: breast, ovarian, lung, and colorectal cancer. MENFs provide accuracy targeting and regulated drug administration. Now, they have lowering systemic toxicity. Although, they have a unique capacity to create localised electric fields in response to external magnetic stimuli promotes increased cellular penetration and medication release within tumour microenvironments. MENFs can increase variation and accuracy in magnetic resonance imaging (MRI) and positron emission tomography (PET). They may be modified to patient-specific medicines for targeted therapy by using artificial intelligence and machine learning. They have a multi-use characteristic to differentiate them as an improvement in advance cancer treatment. Conclusion: MENFs' will provide a better result regarding specific cancer medicines and which is more effective in case of breast cancer

Keywords: Magnetoelectric nano film, Breast Cancer, Stem Cell, Artificial Intelligence.

ICTJ-O-138

PHYTOCHEMICAL COMPOSITION OF *ALSTONIA SCHOLARIS*: A REVIEW OF BIOACTIVE COMPOUNDS AND THEIR THERAPEUTIC POTENTIAL

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ABSTRACT

Alstonia scholaris, also known as the Indian Devil Tree, is a tropical plant with many medicinal uses, thanks to its rich mix of natural compounds. This review looks at the key bioactive compounds in the plant, such as alkaloids, flavonoids, tannins, saponins, and terpenoids, and their potential health benefits. These compounds give *Alstonia scholaris* its antimicrobial, anti-inflammatory, pain-relieving, antidiabetic, and anticancer properties. Alkaloids, like echitamine, help with pain and inflammation, while flavonoids act as antioxidants and boost the immune system. Tannins have antimicrobial and wound-healing effects, and saponins can help with diabetes and inflammation. Terpenoids also show promise in fighting cancer and reducing inflammation. Studies suggest that *Alstonia scholaris* may help treat various health problems, including infections, chronic pain, diabetes, and digestive issues. However, the plant can be toxic at high doses, so it should be used with care. This review highlights the need for more research to better understand how these compounds work and their safety. By summarizing current findings, this review provides an overview of the plant's medicinal properties and its potential use in modern medicine.

Keywords: Alstonia scholaris, bioactive compounds, alkaloids, flavonoids, antimicrobial, anti-inflammatory, antidiabetic, analgesic.

ICTJ-O-139

AI POWERED DRUG DISCOVERY, DEVELOPMENT & THERAPEUTICS

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ABSTRACT

Here's an overview of its key aspects, processes, and applications:1. Role of AI in Drug Discovery AI accelerates and improves the efficiency of discovering new drugs by analyzing vast datasets and generating predictive insights. Key contributions include: Target Identification: AI identifies biological targets (e.g., proteins, genes) involved in diseases using genomic, transcriptomic, and proteomic data. Identification: AI helps screen libraries of chemical compounds to find those likely to interact with the biological target. Drug Repurposing: AI identifies existing drugs that can be repurposed for new therapeutic uses, saving time and costs.2. AI-Driven Approaches in Drug Development AI employs various techniques for different stages of drug discovery: Machine Learning (ML): Predicts outcomes such as drug-protein interactions, ADMET properties (absorption, distribution, metabolism, excretion, toxicity), and optimal dosages. Deep Learning (DL): Analyze complex relationships in omics data, enabling accurate predictions of disease mechanisms and compound behavior. Natural Language Processing (NLP): Extracts knowledge from scientific literature, patents, and clinical trial data to identify trends and hypotheses. Generative Models: AI generates new chemical structures optimized for desired properties using techniques like GANs (Generative Adversarial Networks) and reinforcement learning.

Keywords: Artificial intelligence, Natural Language Processing, Generative Adversarial Networks.

ICTJ-O-140

RADIOPHARMACEUTICALS: NAVIGATING THE FRONTIER OF THERAPEUTIC INNOVATION AND PRECISION MEDICINE

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ABSTRACT

This review article examines the rapidly evolving subject of radiopharmaceuticals, where novel discoveries are made by fusing medicines with radioisotopes, creating intriguing therapeutic opportunities. The in-depth exploration covers targeted drug delivery, delving into passive targeting through enhanced permeability and retention, as well as active targeting using ligand-receptor strategies. The article also discusses stimulus-responsive release systems, which orchestrate controlled release, enhancing precision and therapeutic effectiveness. A significant focus is placed on the crucial role of radiopharmaceuticals in medical imaging and theranostics, highlighting their contribution to diagnostic accuracy and image-guided curative interventions. The review emphasizes safety considerations and strategies for mitigating side effects, providing valuable insights into addressing challenges and achieving precise drug delivery. Looking ahead, the article discusses nanoparticle formulations as cutting-edge innovations in next-generation radiopharmaceuticals, showcasing their potential applications. Real-world examples are presented through case studies, including the use of radiolabelled antibodies for solid tumors, peptide receptor radionuclide therapy for neuroendocrine tumors, and the intricate management of bone metastases. The concluding perspective envisions the future trajectory of radiopharmaceuticals, anticipating a harmonious integration of precision medicine and artificial intelligence. This vision envisions a time when scientific discoveries and therapeutic precision coexist harmoniously, bringing forth a new era characterised by the combination of therapeutic resonance and innovative advancement.

Keywords: radiopharmaceuticals, theranostics, artificial intelligence

ICTJ-O-141

ADVERSE DRUG REACTION, PHARMACOVIGILANCE: NEED AND FUTURE PROSPECTIVE IN INDIA FOR HERBAL MEDICINE

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ABSTRACT

Pharmacovigilance is related to the detection, assessment, understanding and prevention of adverse drug effects or any drug related problems. Herbal medicines are frequently used in India and in recent times herbal medicines are also accepted worldwide and make up an important module towards alternative medicine. This review article provides an overview about the ayurvedic concepts of adverse reactions to medicine, the need of pharmacovigilance for ayurvedic medicine, challenges in introducing pharmacovigilance in ayurveda and recommendations to successful implementation of the ideas.

The objective and future aspects of this article is to review the recent trends and challenges in passing the pharmacovigilance of herbal drug,

Keywords: Pharmacovigilance, adverse drug reaction, herbal drugs, ayurvedic concepts.

ICTJ-O-142

INNOVATIVE MULTI-MODAL STRATEGIES TO ENHANCE EPROSARTAN BIOAVAILABILITY: A SYNERGISTIC APPROACH

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ABSTRACT

Eprosartan, an effective angiotensin II receptor blocker, faces significant bioavailability limitations due to its low solubility and extensive first-pass metabolism. This study presents a novel multi-modal drug delivery system that combines polymeric nanoparticles, bioenhancers, and oral thin films to address these challenges. Polymeric nanoparticles encapsulate eprosartan, improving its solubility, stability, and controlled release properties. Bioenhancers, such as piperine and quercetin, are incorporated to inhibit efflux transporters and enzymes responsible for first-pass metabolism, thereby enhancing drug absorption. Oral thin films provide a fast-dissolving matrix for buccal absorption, bypassing the gastrointestinal tract and minimizing first-pass effects. The synergy of these advanced delivery platforms is designed to maximize the therapeutic potential of eprosartan. Formulation optimization using computational modeling ensures precise release profiles tailored to enhance absorption. In vitro and in vivo studies are conducted to evaluate the pharmacokinetics, stability, and patient compliance of the combined system. The results indicate a significant improvement in solubility and bioavailability, offering enhanced therapeutic outcomes compared to conventional eprosartan formulations. Furthermore, the multi-modal system offers flexibility for personalized treatment strategies, addressing variability in absorption and metabolism among different patients.

This innovative approach demonstrates the potential of multi-modal strategies in improving the bioavailability of poorly soluble drugs like eprosartan. The findings open avenues for developing advanced drug delivery systems for other similarly challenging pharmaceuticals, contributing to improved patient outcomes and more effective therapies.

Keywords: Eprosartan, bioavailability, nanoparticles, bioenhancers, oral thin films.

ICTJ-O-143

DEVELOPMENT AND NANOFORMULATION OF POLYHERBAL EXTRACTS FOR ENHANCED WOUND HEALING: A FOCUS ON ANTIOXIDANT AND ANTIMICROBIAL SYNERGY

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ABSTRACT

This study focuses on the development and characterization of a nanoformulated polyherbal extract for effective wound healing. The formulation combines medicinal plants rich in antioxidants and antimicrobial compounds, encapsulated into biodegradable nanoparticles for improved stability, sustained release, and enhanced bioavailability. The prepared nanoformulation was evaluated for its physicochemical properties using advanced techniques such as FTIR, SEM, and zeta potential analysis. Antioxidant and antimicrobial activities were assessed to establish the formulation's efficacy in neutralizing free radicals and inhibiting bacterial growth. To facilitate clinical translation, the nanoformulation was incorporated into a hydrogel dressing for localized application. The dressing demonstrated excellent biocompatibility, enhanced moisture retention, and prolonged therapeutic action. In vitro scratch assays and in vivo preclinical studies showed accelerated re-epithelialization, collagen deposition, and angiogenesis. This novel approach integrates traditional herbal medicine with nanotechnology, offering a sustainable, cost-effective solution for wound management. The results underscore the potential of polyherbal nanoformulations to improve healing outcomes while minimizing drug resistance and side effects. Future work will explore scaling up production and validating the efficacy in clinical trials.

Keywords: Polyherbal, formulation, Nanoformulation**,** Wound healing, Antioxidant activity**,** Biodegradable nanoparticles.

ICTJ-O-144

ANTIMICROBIAL RESISTANCE: AN OVERVIEW ON ANTIBIOTIC RESISTANCE

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ABSTRACT

Antimicrobial resistance (AMR) happens whereas organisms advance component that protect them from the results of antimicrobials (drugs utilized to treat infection).All classes advance resistance like parasites (antifungal resistance), viruses (antiviral resistance), smaller scale life form (anti-microbial resistance) and numerous more. A bother that has tormented anti-microbial treatment from the most punctual days is the resistance. The current challenges related to anti-microbial resistance are exact and vacillate from the challenges of the past on account that unused pathogens are stressed and keep up to adjust. Strains with resistance to a couple of anti-microbial lessons have risen which the disclosure of modern anti-microbial has fizzled to coordinate. The results of anti-microbial resistance are grave with mortality and dreariness persistently at the upward thrust. Bacteria have created state-of-the-art instrument of sedate resistance to keep absent from murdering by implies of antimicrobial atoms. Resistance to one antimicrobial greatness can regularly be finished thru different biochemical pathways. as an occurrence, fluoroquinolones resistance can happen due to three diverse biochemical courses, all of which may also coexists interior the same smaller scale living being at a given time. If we're to handle this issue, endeavors on ponders and advancement require to be intensely quickened and bolstered. A total data of the component by means of which microscopic organisms develop as resistance to anti-microbial is of foremost importance to format novel strategies to counter the resistance danger.

Keywords: Antimicrobial, Resistance, Antibiotic, Pathogens, Strain

ICTJ-O-145

INNOVATIVE MULTI-MODAL STRATEGIES TO ENHANCE CANDESARTAN BIOAVAILABILITY: A SYNERGISTIC APPROACH

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ABSTRACT

This study proposes a multi-modal drug delivery system that combines polymeric nanoparticles, bioenhancers, and oral thin films to overcome these challenges. Polymeric nanoparticles encapsulate candesartan, improving its aqueous solubility, stability, and controlled release profile. Bioenhancers such as piperine and quercetin are incorporated to inhibit efflux transporters and enzymatic degradation, further augmenting drug absorption. Oral thin films, designed as a fast-dissolving delivery platform, enable buccal absorption, bypassing the gastrointestinal tract and reducing first-pass effects. The integration of these technologies offers a synergistic approach to maximize absorption and therapeutic efficacy. The study involves formulation optimization using computational modeling, followed by in vitro and in vivo evaluations of pharmacokinetics, stability, and patient compliance. Results demonstrate enhanced solubility, higher bioavailability, and improved therapeutic outcomes compared to conventional candesartan formulations. Additionally, the multi-modal system ensures flexibility in tailoring drug delivery to patient-specific needs, addressing interindividual variability in absorption and metabolism. This innovative approach highlights the potential of combining advanced drug delivery systems to address bioavailability challenges in oral therapeutics. The findings provide a framework for further exploration of multi-modal strategies for other poorly bioavailable drugs, offering significant advancements in pharmaceutical formulation and patient care.

Keywords: Candesartan, bioavailability, nanoparticles, bioenhancers, oral thin films

ICTJ-O-146

RECENT INNOVATIONS IN AI-POWERED HEALTHCARE: RENOVATING CANCER TREATMENT THROUGH INNOVATIVE METHODS

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ABSTRACT

In this comprehensive study, we examine the various facets of artificial intelligence's (AI) function in cancer therapy, stressing its possible uses, difficulties, and prospects. When used to several facets of cancer therapy, such as medication development and discovery, early diagnosis and screening, and drug discovery, artificial intelligence (AI) has the potential to transform patient care and enhance results. AI-driven methods in early detection and screening can increase sensitivity, decrease false-positive rates, and provide personalized risk assessment, which can boost the efficacy and efficiency of cancer screening programs. However, issues like algorithm bias, data quality, and regulatory compliance need to be resolved before AI can be fully utilized in this field. In addition, AI-driven drug discovery and development offers chances to speed up target identification, repurpose current medications, and create new therapeutics with improved safety and efficacy profilesResearchers, clinicians, regulators, and industry stakeholders must work together to develop strong data-sharing initiatives, ethical guidelines, and governance frameworks in order to address these challenges. By putting patient-centered approaches first, integrating multi-modal data, and encouraging interdisciplinary collaboration, we can harness the transformative power of AI to speed up the translation of research findings into novel therapies and enhance global cancer patient outcomes.

Keywords: Artificial intelligence, cancer treatment, early recognition, examining.

ICTJ-O-147

INTEGRATING ECOLOGY AND DIGITAL INNOVATION: HEALTHCARE'S FUTURE SHAPING

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ABSTRACT

In particular, we adopt a holistic and convergent vision of the energy mix and its infrastructure, moving beyond the ideological dichotomy of energy sources. Renewable sources, digital innovations, and the circular economy are seen as playing key roles in the future of the energy sector. In this research, a mixed methodology was employed, combining a questionnaire consisting of 31 questions with semi-structured interviews conducted with the top management of a major player in the private healthcare sector located in southern Italy in 2023. Consequently, we examine the main macro-guidelines of technological development, encompassing enabling technologies, new business models, roles, and professional skills. Based on the analyses conducted, we provide some insights to inform governmental policies and industrial strategies in the near future. Digitalization represents an opportunity to enhance the efficiency of healthcare services, reducing waste and ensuring quality. For instance, digital healthcare solutions enable personalized care on a global scale and offer decision support systems that can enhance overall healthcare performance. However, to maximize the benefits of digital transformation, it is essential to integrate new technologies effectively and sustainably into the existing healthcare ecosystem. A promising example is telemedicine, which can help reduce carbon emissions by decreasing healthcare workers' travel.

Keywords: Sustainable, healthcare, innovation, disruptive technology.

ICTJ-O-148

NOVEL NANOTECHNOLOGY-BASED DRUG DELIVERY METHODS FOR IMPROVED BRAIN TARGETING IN THE TREATMENT OF EPILEPSY

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ABSTRACT

Antiepileptic medications' (ASMs') poor blood-brain barrier (BBB) permeability, systemic adverse effects, and limited efficacy are some of the difficulties in treating epilepsy. Novel delivery systems based on nanotechnology have been created to solve these problems, with a focus on quick, targeted delivery and improved brain bioavailability. In mouse models, chitosan-coated PLGA nanoparticles and nanolipid carriers (NLCs) have demonstrated notable seizure suppression, better nasal permeability, improved pharmacokinetics, and outstanding drug retention. Similar to this, dopamine-pyrrole hybrid nanocarriers provide a revolutionary method that allows for on-demand administration and lower dosage through receptor-mediated transcytosis and photothermal-responsive drug release. Exosomes can be designed to transport therapeutic materials, including as proteins, nucleic acids, and tiny compounds, increasing the effectiveness of epilepsy treatments while reducing systemic side effects. Exosomes are positioned as a novel therapy option for drug-resistant epilepsy due to their capacity to pass the blood-brain barrier without the need for invasive procedures or complicated formulations.

Keywords: Chitosan-coated PLGA nanoparticles, Nanolipid carriers (NLC).

ICTJ-O-149

LIFE SCIENCES INNOVATION VIA STRATEGIC MANAGEMENT: A COMPREHENSIVE OVERVIEW

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ABSTRACT

In the life sciences sector, innovation is a major factor in success since it enables businesses to create new goods, procedures, and services that can enhance patient outcomes and lead to quicker and more effective solutions for healthcare problems. As evidenced by the recent COVID-19 outbreak and healthcare responses, emerging big data, digitization of processes and services, and increased cloud collaboration have reduced innovation costs while providing healthcare solutions at breathtaking speeds. This enables key stakeholders (academia, biotechnology/med technology startups, pharmaceutical companies, manufacturers and investors, etc.) to invest intelligently in future life sciences industry disruptors, and builds resilience to prevent future disruptions due to health emergencies. However, to manage such a rapidly changing innovation scenario and adaptation in life sciences, it is necessary to have a strategic approach that aligns with a company's overall business goals, and at the same time, provides effective and efficient solutions to contribute to resilient innovation for the future. In this review, we will be discussing the key challenges in handling innovation pipelines involving big data and artificial intelligence, some case studies we have experienced, and key business strategies we have adopted to navigate our way in the field of innovation in life sciences.

Keywords: COVID-19, patient outcomes, pharmaceutical companies, artificial intelligence

ICTJ-O-150

HEALTHCARE INNOVATION THROUGH INFORMATION TECHNOLOGIES: A REVIEW

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ABSTRACT

By improving accessibility and affordability, the use of cutting-edge information technologies in the healthcare sector can undoubtedly lessen the current constraints facing the sector. It encompasses the use of artificial intelligence, big data, biomedical research including drug invention, medical education, innovative/robotic surgical technology, cutting-edge equipment, telemedicine, virtual consultation, online supportive platforms, etc. The present review is an attempt to identify and analyse the impact of these innovative information technologies and explore the potential scope of improvement in the Indian healthcare system. The database search was performed in Scopus, Web of Science, PubMed, ProQuest, Google Scholar and Wiley Online Library. Initially, 319 articles related to innovative digital healthcare technologies have been sourced. However, 105 articles were taken into consideration for the review due to various exclusion criteria. Through an extensive review of previously published articles, the present study concludes that undoubtedly information technologies and their applications aid providers reduce inefficiencies, increasing quality, increasing access, removing human errors, reducing costs and making diagnosis, treatment and medicine more personalised for patients. It has really improved the quality, quick and convenient healthcare system.

Keywords: Healthcare, telemedicine, innovative/robotic surgical, healthcare.

ICTJ-O-151

PHARMACOLOGICAL & ETHANOBOTANICAL EXPLORATION ON SELECTED INDIAN MEDICINAL PLANTS FOR NEPHROPROTECTIVE HEPATOPROTECTIVE CARDIOPROTECTIVE AND ANTICANCER ACTIVITIES

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ABSTRACT
World Health Organization (WHO) has compiled a list of 21,000 plants that are utilized globally for medicinal purposes. Amongst these instances, 2500 species are found in India, of which 150 are exploited on a very substantial scale for commercial purposes. Plants & pharmaceuticals have been closely connected since the beginning of humanity & plant-based products are still widely used in indigenous medicine and the field of ethnomedicine presently. Over the past three decades, there has been a huge increase in interest in medicinal plants. Research institutes and major pharmaceutical corporations are focusing their efforts on searching the untapped wealth of the plant kingdom for novel medications and lead compounds. Plants and pharmaceuticals have been closely associated since the beginning of humanity, and plant-based products are still widely used in traditional medicine and ethnomedicine today. The study of traditional medicines, most of which have a botanical origin and are still used by a vast majority of people globally as sources of medicine, has taken center stage in review. The following tasks could be included in an ethnobotanicals survey of medicinal plants recording the medicinal flora, gathering information on traditional remedies, assessing ethnomedicinal data, and investigating the most widely used varieties. Several plants, including Digitalis purpurea, Vinca, Hamelia patens, and Oriental thuja, have been used in this study. The four chosen plants for the study are listed in Ayurvedic publications as general tonics for enhancing health and are also traditionally used for a variety of illnesses, including liver-protective, cardiovascular disorder ailments, nephroprotective, and anti-carcinogenic.
Keywords: Ethnomedicinal, Hamelia patens, liver-protective, nephroprotective.

ICTJ-O-152

THIOUREA BASED HETEROCYCLIC COMPOUNDS AS ANTICANCER AGENTS

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ABSTRACT
Thiourea derivatives have shown a wide range of biologicalactivities and are capable of targeting various cancer related cellular pathways. This includes inhibition and/or inhibition of kinases, Alpha-Estrogenase, tubulin, Dihydrofolate Reductase (DHFR), Thymidylate Synthase. Many anticancer drugs work by targeting enzymes that play essential roles in cellular processes like DNA replication, repair, and cell cycle regulation. Some of the key enzyme targets include Alpha-Estrogenase, Tyrosine Kinases, Cyclin- Dependent Kinases, Dihydrofolate Reductase (DHFR), and Thymidylate Synthase. The successful story of such compounds are witnessed by the success story of multiple clinically approved drugs including Sorafenib, Lenvatinib, Regorafenib and linifanib against biological target FGFR-1. These enzymes are crucial to cancer progression, making them ideal targets fortherapy. Researchers are continually working to improve thiourea derivatives by enhancing their pharmacokinetics, reducing side effects, and improving their ability to specifically targetcancer cells. With further development, these compounds have the potential to become valuabletools in the fight against cancer.
Keywords: Thiourea, Anticancer agents, Alpha- estrogenase.

ICTJ-O-153

EXPLORING LONG-TERM ADVERSE EFFECTS OF METFORMIN: A COMPREHENSIVE EXAMINATION

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ABSTRACT

The purpose of this review is to compile the most recent knowledge about the long-term side effects associated with metformin. One of the controversial topics is how metformin affects vitamin B12 levels. Long-term metformin use has been linked to a vitamin B12 shortage, which may eventually cause a number of neurological and haematological problems. Moreover, prolonged metformin treatment has been linked to gastrointestinal issues, such as diarrhoea and decreased absorption of vitamin B12, which can be problematic for patient compliance and general health. Additionally, a credible association between the use of metformin and an increased risk of cardiovascular events has been revealed by recent studies. Further research endeavours to clarify the intricate relationships among metformin, cardiovascular function, and long-term health consequences, even though the specific processes involved are yet unknown. Furthermore, although rare, concerns have been expressed about metformin's possible role in causing lactic acidosis, especially in patients with renal impairment or other predisposed conditions. Even though the data now available suggests that metformin monotherapy has a low incidence of lactic acidosis, careful monitoring and prudent prescribing techniques are necessary to reduce this risk. In conclusion, even if metformin is still the go-to medication for treating type 2 diabetes, medical professionals need to be alert to any potential long-term side effects. In order to clarify underlying mechanisms and improve clinical standards, further research efforts are necessary to ensure efficacy and safety in diabetes management.

Keywords: Metformin, Long-term, Adverse effects, Cardiovascular, Lactic acidosis.

ICTJ-O-154

ROLE OF POLYHERBAL FORMULATION ON NICOTINE INDUCED GASTRIC ULCER

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ABSTRACT

This study investigates the role of polyherbal formulations in mitigating nicotine-induced gastric ulcers. Polyherbal formulations, composed of multiple medicinal plants, leverage synergistic effects that enhance therapeutic outcomes. Various herbs, such as Aloe vera, Ginger (Zingiber officinale), and Turmeric (Curcuma longa), possess anti-inflammatory, antioxidant, and mucoprotective properties that can counteract the damaging effects of nicotine on the gastric mucosa. Experimental models demonstrate that these formulations significantly reduce ulcer index, promote mucosal healing, and restore the balance of gastric secretions. The active phytochemicals, including flavonoids, phenolic compounds, and terpenoids, play crucial roles in enhancing gastric mucosal defence and reducing oxidative stress. Additionally, the formulation's ability to inhibit pro-inflammatory cytokines further supports its protective effects against nicotine-induced damage. This review synthesizes current findings on the efficacy of polyherbal formulations in the management of nicotine-induced gastric ulcers, highlighting their potential as a natural therapeutic strategy. Future research should focus on standardizing these formulations and elucidating the specific mechanisms by which they exert their protective effects. The integration of polyherbal therapies into conventional treatment regimens may provide a comprehensive approach to managing gastric ulcers associated with nicotine exposure, ultimately improving patient outcomes.

Keywords: Nicotine, Gastric ulcer, Polyherbal formulation, Mucosal protection, Phytochemicals.

ICTJ-O-155

DACLATASVIR IN HEPATITIS C MANAGEMENT: A REVIEW ON BREAKTHROUGH IN ANTIVIRAL THERAPY: CURRENT INSIGHTS AND FUTURE PERSPECTIVE

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ABSTRACT

Traditional interferon-based therapies were associated with suboptimal efficacy, severe side effects, and poor patient adherence. Daclatasvir, in combination with other direct-acting antivirals (DAAs), has demonstrated remarkable efficacy across multiple HCV genotypes, with sustained virological response (SVR) rates exceeding 90% in many clinical trials. Its oral administration, short treatment duration, and favorable side-effect profile have made it a cornerstone in HCV management, particularly in patients with comorbidities, such as HIV coinfection, cirrhosis, or renal impairment. Daclatasvir's mechanism of action involves disrupting HCV replication and assembly by inhibiting the NS5A protein, a multifunctional viral protein essential for the viral life cycle. Despite its high efficacy, challenges remain, including the emergence of resistance-associated variants (RAVs) and accessibility issues in low-resource settings. Addressing these barriers requires global efforts to improve access, lower costs, and optimize treatment regimens. This abstract highlight the critical role of daclatasvir in advancing HCV treatment paradigms and its impact on achieving the World Health Organization's goal of eliminating HCV as a public health threat by 2030. Further research and policy efforts are essential to enhance its accessibility and long-term efficacy in diverse patient populations.

Keywords: Hepatitis C, Daclatasvir, virological.

ICTJ-O-156

RECENT INNOVATIONS IN HOSPITAL MANAGEMENT: A REVIEW

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ABSTRACT

This review examines the revolutionary field of hospital management innovations, highlighting their critical significance in determining the present and future of healthcare. Examined is the importance of innovations in the areas of patient care advancements, human resource strategies, and technological integration. Proposed solutions emphasise the significance of change management and strategic financial planning while addressing issues including budgetary restrictions and opposition to change. Future research and innovation areas are identified in the study, such as blockchain technology and the integration of artificial intelligence. New developments like the Internet of Things and the growth of telehealth highlight how hospital management is changing. The review's conclusion promotes a cooperative and creative strategy, putting hospitals in a position to overcome obstacles and usher in a future marked by improved patient care, operational effectiveness, and technological advancement.

Keywords: Hospital management, innovations, healthcare, technology integration, patient-centric care.

ICTJ-O-157

HEALTHCARE DEVELOPMENT IN 2024: NAVIGATING ALL OVER THE HORIZON

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ABSTRACT

The healthcare industry is expected to experience transformative changes as we enter the exciting new era of 2024, which promises to rethink patient care, make use of cutting-edge technologies, and tackle global health issues. The foundation for a vibrant year ahead is created by the convergence of innovation, legislative changes, and a shared dedication to enhancing health outcomes. A significant turning point in the widespread adoption of precision medicine will occur in 2024. Healthcare professionals can now customise therapies based on a patient's genetic composition, improving therapeutic results and reducing adverse effects, thanks to developments in genomics and data analytics. Advances in genomics and data analytics enable healthcare providers to tailor treatments based on an individual's genetic makeup, optimizing therapeutic outcomes and minimizing side effects. The intersection of innovation, policy reforms, and a collective commitment to improving health outcomes sets the stage for a dynamic year ahead. A significant turning point in the widespread adoption of precision medicine will occur in 2024.

Keywords: Transformative changes; technology; healthcare; policy reforms.

ICTJ-O-158

RECENT TRENDS ON PLANTS AND AGRICULTURAL PRODUCTS AS NUTRITIONAL SOURCE IN MANAGEMENT OF DIABETES

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ABSTRACT

Traditional medicine derived from plant extracts has several advantages over contemporary pharmaceuticals, including lower costs, greater clinical efficacy, and fewer side effects. Primarily, the condition has been managed by a range of synthetic medications that improve the altered glycemic state in individuals with diabetes. Synthetic medications work well, but along with their benefits, they come with noticeable adverse effects. Due to the lack of knowledge regarding their chemical composition, preparation method, active bio-actives, potential side effects, and the optimal way to administer them, medicinal plants have not been fully utilised as acceptable drugs in the treatment of diabetes, despite their long history of use as primary health care. Because of a lack of sufficient data on the parameters described earlier, most medicinal plants that show promise as anti-diabetic agents do not make it to the clinical trial phase. Medicinal plants that have been studied in humans with diabetes and shown promise as a treatment for the disease, either alone or in conjunction with other plants, are summarised in this review. Pharmacologically active phytomolecules with an antidiabetic action that are derived from medicinal plants were the primary topic of this review article. Its goal was to discuss their importance in diabetes management and therapy. These all-natural substances have the potential to be successful and alternative diabetes treatments, as well as a new method of approaching the disease.

Keywords: Diabetes prevention; herbal remedies; action mechanisms; human clinical trial.

ICTJ-O-159

ARTIFICIAL INTELLIGENCE IN ALZHEIMER'S DISEASE: UPDATES

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ABSTRACT

Artificial Intelligence has emerged as a transformational technology allowing breakthroughs into earlier and improved diagnostic capabilities, personalized treatment methods, and drug discovery capabilities. Biomarkers for the early detection or diagnosis of Alzheimer's disease in MRI, PET, and CT scans are made possible through AI-powered analysis of imaging. This includes developing models of disease progression based on clinical and genetic data, even to the use of machine learning models, in determining care strategies. AI-driven algorithms drive transformation in drug discovery as the speed in identifying novel targets for therapy helps to facilitate optimum design of drugs and accelerates clinical trials, saving time and costs. NLP tools analysed massive datasets of medical literature and electronic health records yielding insights into mechanisms of diseases and patient outcomes. This application of AI consists of wearable devices, applications providing real-time feedback on cognitive decline in patient monitoring as well as assistance by clinicians and the caregivers. Non-pharmacological interventions also include cognitive training and behavior therapy through AI-enabled custom-built tools for each specific need. There are many challenges remaining, such as issues of data privacy and bias by algorithms and others through regulations, but the directions of AI research promise considerable hope to rejuvenate both diagnosis and understanding and, consequently, management of Alzheimer's disease and its improvement with time.

Keywords: Artificial intelligence, Alzheimer's disease, Personalized treatment, NLP tools, Machine learning

ICTJ-O-160

ARTIFICIAL INTELLIGENCE IN PERSONALIZED CARE ANXIETY DISORDERS

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ABSTRACT

In the course of clinical therapy for anxiety disorders, medication and all sorts of psychotherapy treatments are administered as first line interventions. Artificial Intelligence is revolutionizing mental health care through diagnosis, treatment, and constant support for individuals with mental conditions. In the last few years, AI has transformed and changed the early identification and intervention in these widespread mental health disorders. AI tools can possibly transform behavioral healthcare services by facilitating psychiatrists to collect objective data concerning the progress and tasks on the patients. The innovations given by these technologies enhance accuracy, accessibility, and personalization through AI-powered diagnostic tools to offer real-time monitoring with instant analysis of data. Continuous monitoring can be done and predictive analytics can be there, providing seamless integration to digital health platforms such that mental care is always proactive and centered on patients. This review will try to put the spotlight on the current state of AI technology, keeping in mind the success, limitation, and future direction, to contribute towards the enhancement of the comprehensive understanding about the scope of AI as well as its potentiality to revolution in mental illness diagnosis and advancing research further.

Keywords: Artificial Intelligence, Personalized care, Anxiety disorders, AI

ICTJ-O-161

CUCURBITA MAXIMA: THERAPEUTIC INTERVENTION IN VARIOUS PHARMACOLOGICAL DISORDERS

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ABSTRACT

Studies have reported to reduce anxiety and depression also enhance the memory C. maxima seeds have enough magnesium which acts as NMDA receptor blocker hence is effective in reducing acute or chronic pain, especially nerve pain. Diabetes mellitus is considered as a common, growing, serious, costly, and potentially preventable public health problem. It is said to have anti-diabetic properties based on prior research. The purpose of the current study was to assess the safety profile and investigate the analgesic and anti-inflammatory properties of Cucurbita maxima (C. maxima) seed ethanol extract. The presence of secondary metabolites such cucurbitacin, beta-sitosterol, polyphenolic compounds, citrulline, kaempferol, arginine, β-carotene, quercetin, and other antioxidants may be the cause of these biological effects of C. maxima. Consuming pumpkin seeds in the right amounts may reduce the risk of colon cancer. Minerals like potassium (K), calcium (Ca), manganese (Mn), phosphorus (P), and magnesium (Mg) are found in significant concentrations in pumpkin seeds. By inhibiting the production of reactive oxygen species and free radicals, these bioactive compounds protect health and reduce the risk of serious illnesses. Accordingly, research indicates that pumpkin seeds have a high nutritional value and may be crucial for preserving a person's general health. Our review compiles the various interventions of Cucurbita maxima studies conducted in the last ten years in the prevention and mitigation of various diseases.

Keywords-Anti-Diabetes, Cucurbita-Maxima, anti-anxiety, Anti-Inflammatory, Anti-depressant, NMDA.

ICTJ-O-162

GREEN SYNTHESIS OF NANOPARTICLES: RECENT ADVANCEMENTS AND POTENTIAL APPLICATION

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ABSTRACT

The synthesis of nanoscale metals is a topic of current interest because of the wide range of applications for nanoscale metals in industries like engineering, medicine, and the environment. Currently, chemical processes are the primary means of creating nanoscale metals, which might have unexpected consequences such including potential health issues, adverse effect, excessive energy use, and environmental contamination. To address these issues, green synthesis was created, which reduces metal ions using plant extracts rather than industrial chemical agents. Green synthesis is better for the environment and human health than traditional chemical synthesis since it is less expensive, produces less pollution less side effects, and is safer. This review examined recent advancements in the environmental friendly production of gold (Au NPs), silver (Ag NPs), palladium (Pd NPs), copper (Cu NPs), and iron and its oxide (Fe NPs) nanoparticles. The approach has significantly boosted up nanoparticles (NPs) production without employing harsh and toxic conditions and chemicals. This review is aimed to provide an outline of latest developments in synthesis of NPs through biotic entities and their potential applications.

Keywords: Green synthesis, Nanoparticles, Therapeutic use, less side effects.

ICTJ-O-163

ARTIFICIAL INTELLIGENCE IN PERSONALIZED MEDICINES AND TAILORED THERAPIES

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ABSTRACT

Patients who are more likely to experience severe toxicity can be distinguished from those who might benefit from a given medication based on individual polymorphisms. The availability of surrogate biomarkers predictive of action, the best biological dose, the administration schedule, the tumor histotype and stage to treat, and the modalities of combination with chemotherapy and radiation therapy are some of the issues that hinder the practical use of targeted therapy. Healthcare is undergoing a change because to the concept of personalized medicine, which adjusts medical care to each patient's unique traits. Deep learning, a branch of artificial intelligence (Al) that is particularly good at identifying patterns in complicated data, is one of the main forces behind this transformation. This abstract examines deep learning's function in personalized medicine, emphasizing how it might improve precision. The deep learning algorithms examine a variety of information, such as imaging, health records, and genetics, to produce insights that inform tailored interventions. It also look at the difficulties and moral dilemmas that come with applying deep learning to personalized treatment. In conclusion, the integration of artificial intelligence with precision and genomic medicine has promise for enhancing patient care. Genomic medicine technologies are being used by patients with uncommon treatment responses or special medical needs. Al improves physician decision-making by enabling the system to reason and learn through sophisticated computation and inference.

Keywords: Artificial Intelligence, Personalized Medicine, Genomic Treatment, Cancer Biomarkers.

ICTJ-O-164

DEVELOPMENT AND VALIDATION OF HPLC METHOD FOR THE DETERMINATION OF HYDROCORTISONE

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ABSTRACT

Analyzing various concentrations of pharmaceutical active drug substances in dosage forms without any interference is challenging. Hydrocortisone usually found in Topical Creams. The aim of the study is to estimate Hydrocortisone by HPLC. Hydrocortisone is a steroid (corticosteroid) medicine. It works by calming down your body's immune response to reduce pain, itching and swelling (inflammation). It can also be used as hormone replacement for people who do not have enough of natural stress hormone, cortisol. The estimation carried out with C18 Column and Acetonitrile and Phosphate Buffer pH 8 in ratio of 65:35v/v at flow rate of 1ml/min detection carried out at 250nm by UV Detector. The retention time of drug 2.26min. For validation concentration range of drug 0.02 to 0.4 mg/ml of Hydrocortisone. Recoveries of 98-101% were attained at concentration levels of 80%, 100% and 120% with RSD of 0.19%-0.55% and 0.33-0.71% respectively. The method validated with respect to linearity, precision, assay, accuracy and robustness. Method also not show significant difference as compare to Official USP method ($p>0.05$) at 95% confidence interval.

Keywords: Hydrocortisone, HPLC, Validation.

ICTJ-O-165

POLYHERBAL LOZENGES FOR ENHANCED SYNERGISTIC EFFECTS

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ABSTRACT

Herbal lozenges are gaining prominence as a natural and effective means for managing throat infections, cough, and cold. Combining multiple herbs in a single formulation, referred to as polyherbal lozenges, has the potential to amplify therapeutic effects through synergistic interactions. This study explores the development and evaluation of polyherbal lozenges containing complementary herbs such as licorice, ginger, tulsi (holy basil), and menthol. The formulation process focused on optimizing the balance of active ingredients to ensure efficacy while maintaining palatability and stability. Phytochemical screening confirmed the presence of bioactive compounds like flavonoids, alkaloids, and essential oils in the selected herbs. In vitro antimicrobial studies demonstrated the enhanced efficacy of the polyherbal combination compared to single herb lozenges, highlighting synergistic effects. Additionally, sensory evaluations and stability testing established the product's consumer acceptability and shelf life. Polyherbal lozenges present an innovative approach to harnessing the combined benefits of medicinal plants, making them a promising alternative to synthetic lozenges. This study emphasizes the importance of scientific validation and standardization in developing effective and safe polyherbal products for therapeutic use.

Keywords: Polyherbal lozenges, synergistic effects, phytochemicals, antimicrobial activity, natural remedies, throat health, herbal formulations.

ICTJ-O-166

ADVANCEMENT IN LIPOSOME BASED INTRANASAL DRUG DELIVERY IN BRAIN CANCER THERAPY

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ABSTRACT

Liposomes, by improving cell type-specific delivery and enhancing drug efficacy have shown the potential to further improve cancer immunotherapy and even stronger immune responses. Liposomes can solve the common problems which have been face by several cancer immunotherapies, including the following: it can improve the delivery of antigens and other stimulatory molecules to antigen-presenting cells or T-cells during vaccination; it can deliver drugs selectively to the tumor microenvironment to overcome the immune-suppressive state; it can be used for the delivery of specific drugs to specific cell types to correct or modulate pathways to facilitate better anti-tumor immune responses; Studies aiming for developing nanoparticles as an intranasal drug carrier have shown considerable promise in overcoming the challenges of intranasal drug delivery route. In this review recent advancement in liposome formulations, surface modifications with ligands, and strategies to improve mucoadhesion and cellular uptake are discussed. Furthermore, preclinical and clinical findings are analyzed to demonstrate the efficacy of this approach in delivering chemotherapeutic agents, RNA-based drugs and other therapeutics.

Keywords: Liposomes, intranasal drug delivery, trigeminal pathways, targeted drug delivery, surface modification, non-invasive treatment, nanocarriers.

ICTJ-O-167

NANOSTRUCTURED LIPID CARRIERS (NLCS): A PROMISING APPROACH FOR EFFECTIVE PSORIASIS MANAGEMENT

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ABSTRACT

Psoriasis is a chronic inflammatory skin disease whose prevalence varies from 0.1 to 8% depending on the geographical region and affects more than 125 million people worldwide, posing a significant challenge for healthcare systems. Despite the availability of conventional treatments like topical creams for mild cases to systemic therapies for severe cases, these methods often have limitations, including poor skin retention, systemic side effects, and reduced patient compliance. The condition, therefore entail effective and innovative drug delivery strategies to enhance therapeutic outcomes. Nanostructured Lipid Carriers (NLCs) have emerged as a cutting-edge nanotechnology-based platform to address these limitations. By leveraging their unique lipid matrix composition, NLCs provide enhanced drug encapsulation, controlled release, and improved skin permeability, ensuring targeted delivery to psoriatic lesions while minimizing systemic exposure. This review highlights the potential of lipid nanocarriers to address the limitations of conventional therapies, such as poor drug solubility, systemic side effects, and low bioavailability.

Keywords: Nanostructured Lipid Carriers, Psoriasis Management, Skin Permeability, Controlled Release.

ICTJ-O-168

FUNCTIONAL FOOD: A PATHWAY TO HEALTHY LIFESTYLE

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ABSTRACT

Functional foods, enriched with bioactive compounds such as antioxidants, probiotics, prebiotics, phytochemicals, and omega-3 fatty acids, offer health benefits beyond basic nutrition. They play a crucial role in preventing and managing chronic diseases, including cardiovascular conditions, diabetes, and obesity, while promoting overall well-being. Regular consumption of functional foods, such as fortified dairy products, whole grains, fatty fish, nuts, fruits, and vegetables, enhances immunity, improves gut health, and reduces inflammation. The increasing global awareness of health and wellness has driven the demand for functional foods, emphasizing their importance in modern diets. By incorporating these foods into daily nutrition, individuals can adopt sustainable strategies to support healthy lifestyles, complementing other factors such as exercise and stress management. Functional foods serve as a bridge between nutrition and preventive healthcare, offering a holistic approach to long- term health.

Keywords: Functional foods, bioactive compounds, chronic disease prevention, gut health, immunity, healthy lifestyle, preventive healthcare, wellness.

ICTJ-O-169

DEVELOPMENT AND ENHANCEMENT OF PHARMACUETICAL SOFTWARE

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ABSTRACT

The development and enhancement of pharmaceutical software plays a pivotal role in streamlining operations and improving the efficiency of the pharmaceutical industry. This sector involves complex processes such as drug discovery, clinical trials, regulatory compliance, manufacturing, and distribution, all of which benefit from the integration of advanced software solutions. Modern pharmaceutical software systems include functionalities for managing data, ensuring quality control, and maintaining strict regulatory standards. Recent advancements in artificial intelligence (AI), machine learning (ML), and cloud computing have significantly enhanced the capabilities of pharmaceutical software, enabling faster drug development cycles, improved patient safety, and better inventory management. Furthermore, the ongoing development of software platforms tailored to meet the ever-evolving regulatory demands ensures compliance with global standards. As the industry continues to face challenges related to data management, security, and market demands, the continuous enhancement of pharmaceutical software is crucial in achieving operational excellence, fostering innovation, and ensuring patient-centric solutions. This abstract highlights the importance of continuous innovation in pharmaceutical software, emphasizing its critical role in shaping the future of healthcare delivery.

Keywords: drug discovery, clinical trials, pharmaceutical industry.

ICTJ-O-170

REGULATORY ASPECTS FOR AI-DRIVEN CLINICAL TRIALS FOR ORTHOPEDIC IMPLANTS: CURRENT STATUS AND FUTURE PERSPECTIVES

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ABSTRACT

This article examines the regulatory landscape governing AI-driven clinical trials, emphasizing the necessity for robust oversight to ensure safety, efficacy, and ethical use of these technologies. Current regulations from agencies such as the FDA and EMA are analyzed, revealing challenges in applying traditional regulatory frameworks to AI systems. The article highlights the potential benefits of utilizing AI in orthopedic trials, including improved patient selection, optimized trial design, and enhanced data analysis for predicting clinical outcomes.Key considerations for AI-driven orthopedic implant trials include validating algorithms across diverse patient populations, ensuring algorithmic fairness, and enhancing the interpretability and explainability of AI decisions. Regulatory aspects focus on the validation and verification of AI systems, data privacy and security, regulatory approval pathways, and post-market surveillance to monitor long-term outcomes.. In conclusion, this article underscores the urgent need for comprehensive regulation of AI in orthopedic implant trials while expressing optimism about future innovations. It calls for collective action from all stakeholders to address these critical issues in healthcare, highlighting regulatory challenges and emphasizing the importance of dynamic data solutions and ongoing learning in this evolving field.

Keywords: Artificial Intelligence, Orthopedics, artificial intelligence and robotics, robot-assisted.

ICTJ-O-171

CARDIOVASCULAR DISEASES

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ABSTRACT

Cardiovascular diseases are the most common cause of mortality not only in India but worldwide. Cardiovascular diseases are a group of disorders of heart and blood vessels including coronary heart disease, cerebrovascular disease, peripheral artery disease, congenital heart disease. The annual number of deaths in India is projected to rise from 2.2 million in 1990 to 4.77 million in 2020. Heart diseases are caused by unhealthy habits, smoking, not exercising, and health issues like high blood pressure, diabetes, and inherited family conditions. Treatments include medicines, lifestyle changes, and sometimes surgeries. Many heart diseases can be prevented, by eating healthy foods, exercising regularly, avoiding smoking, and managing health problems. Common treatments like blood pressure pills, cholesterol-lowering drugs, and procedures like clearing blocked arteries. There are several disadvantages such as Poor therapy; People from lower socioeconomic backgrounds often don't receive optimal therapy, Premature deaths, CVD risk factors like hypertension, diabetes, and abdominal obesity are more prevalent in India than in other ethnic groups. To diagnose this disease, we have great use of Artificial intelligence, Gene therapy and cell therapy. Several drugs are used to treat CVDS some of them are alpha beta blockers i.e. labetalol, anticoagulants like heparin, angiotensin-converting enzyme inhibitors like benazepril. There are some government agencies in India that are actively involved in raising awareness about CVDs i.e. National Program for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases & Stroke. Technology is improving heart care as scientists are working on new treatments, ways to repair the heart using regenerative medicine.

Keywords: Lifestyle, CVDs, Treatment

ICTJ-O-172

ROBOTICS IN MEDICINE: ADVANCING SURGICAL PRECISION AND PATIENT OUTCOMES

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ABSTRACT

The COVID-19 pandemic further accelerated the use of hospital robots for tasks like delivering medicines, screening, and maintaining hygiene. Recent literature discusses popular surgical robots like the Da Vinci system and how they help doctors perform complex surgeries. Rehabilitation robots help people regain movement and strength after injuries or illnesses. This explains how robotic arms, legs, and training machines help patients recover and live more independently. Robotic Pharmacies; in hospital settings, robots can assist in dispensing medications, improving the accuracy of prescriptions, and reducing human error. Robots can also manage inventories, ensuring that medications are properly stocked and quickly available. Using robots in healthcare also brings challenges like ensuring safety, protecting patient privacy, and making sure everyone can afford these technologies. Robots are getting smarter with artificial intelligence and smaller with new technologies like nanobots. This shows how future robots might give us even better, personalized treatments. Robots are transforming healthcare by making it more advanced, efficient, and patient-friendly. From the above statement, it is amply clear that robotics can help to improve lives and solve challenges in the medical field.

Keywords: Rehabilitation, AI, Robotics, Medical, Surgery.

ICTJ-O-173

PRECISION NANOMEDICINE FOR TRIPLE-NEGATIVE BREAST CANCER (TNBC)

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ABSTRACT

Triple-negative breast cancer (TNBC) is an aggressive subtype of breast cancer characterized by the absence of estrogen receptor (ER), progesterone receptor (PR), and HER2 expression, limiting the efficacy of conventional hormone or targeted therapies. Precision nanomedicine has emerged as a promising approach to overcome the challenges in TNBC treatment by enabling targeted delivery of therapeutic agents while minimizing systemic toxicity. This approach leverages advanced nanocarriers, such as liposomes, polymeric nanoparticles, and dendrimers, engineered for enhanced specificity to TNBC cells via tumor-specific ligands or antibodies. Furthermore, stimuli-responsive nanocarriers—triggered by pH, enzymes, or redox changes in the tumor microenvironment—allow for controlled drug release, maximizing therapeutic outcomes. Recent innovations include multifunctional nanoplatforms combining chemotherapy, immunotherapy, and gene therapy, which provide synergistic effects against TNBC. Despite significant progress, challenges such as tumor heterogeneity, nanoparticle stability, and clinical translation remain. This review highlights recent advancements in precision nanomedicine for TNBC and explores future directions to improve patient outcomes through personalized and targeted therapeutic strategies.

Keywords: Triple-Negative Breast Cancer (TNBC), precision nanomedicine, targeted drug delivery.

ICTJ-O-174

THE SIGNIFICANCE OF LIVER FUNCTION TESTS IN IN VIVO STUDIES: IMPLICATIONS FOR DRUG SAFETY AND HEPATOTOXICITY EVALUATION

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ABSTRACT

Liver function tests (LFTs) are of great importance in the assessment of liver damage and its continuous activity in life dependent studies often used in measuring the impact of drugs, chemicals and other agents on the liver organ. This covers the assessment of serum enzymes such as ALT and AST suggestive of liver cells injury, biliary function ALP and GGT, bile excretion bilirubin, and albumin and Prothrombin time, which seek to measure liver synthetic functions. They work synergistically, allowing the identification and classification of the various forms of liver injury which include the hepatocellular, cholestatic and mixed types. As such, preclinical studies utilize LFTs not just for toxicities assessment, but also for estimating exposure thresholds. The relevance of these studies is to ensure that the outcomes of animal studies are translatable to human beings. But there are concerns with species specific metabolism heterogeneities in the application of LFTs in experimental models. LFTs are evolving and new technologies are making them more predictive than ever before, making them useful in assessing liver function and health. Drug development and hepatoprotective strategies may also be made more efficient by combining conventional LFTs with these newer technologies, thereby enhancing safety during therapeutic interventions.

Keywords: LFTs, DILI, ALT, AST, ALP, Bilirubin, Preclinical research, Hepatic biomarkers, Xenobiotics, Hepatoprotective strategies, *In vivo* studies, Hepatotoxicity.

ICTJ-O-175

NUTRACEUTICALS IN THE TRANSFORMATION OF CONVENTIONAL FOODS

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ABSTRACT

The potential of nutraceuticals—bioactive compounds found in foods and botanicals that provide health benefits beyond basic nutrition. Historically, food and herbal extracts have been central to healing practices in systems like Ayurveda and Greek medicine. Nutraceuticals, delivered through functional foods or dietary supplements, can enhance health and prevent diseases such as type-2 diabetes. The paper outlines examples of functional foods like rice, wheat, and legumes, which offer health benefits through their antioxidant, anti-inflammatory, and fiber-rich properties. For instance, rice is a source of resistant starch and essential nutrients, promoting gut health, while wheat, especially its bran, supports gastrointestinal health due to its high fiber content. The paper also highlights the anti-cancer and anti-inflammatory benefits of nutraceuticals. Compounds from foods like garlic, curcumin, and green tea have been shown to inhibit cancer cell proliferation and metastasis, with effectiveness against various cancers such as breast, prostate, and colon cancer. Additionally, nutraceuticals with anti-inflammatory properties can help manage chronic diseases like cardiovascular conditions, diabetes, and cancer by reducing inflammation, potentially offering alternatives to traditional drugs with fewer side effects. In conclusion, nutraceuticals, produced using biotechnology, offer safe, effective, and cost-efficient health solutions. With scientific validation, they can play a significant role in disease prevention and treatment, potentially matching the efficacy of conventional pharmaceuticals.

Keywords: Nutraceuticals, functional foods, bioactive compounds, chronic disease prevention.

ICTJ-O-176

NUTRACEUTICALS AS ALTERNATIVE FOR PHARMACEUTICALS

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ABSTRACT

In recent years, with increasing concerns about the side effects of traditional medications, nutraceuticals have gained attention as a safer, more natural alternative or complement to pharmaceuticals. These bioactive compounds, which include functional foods, herbal supplements, and plant-based nutrients, are known for their potential to support overall health, prevent chronic diseases, and even manage conditions like heart disease, diabetes, and neurodegenerative disorders. The growing interest in nutraceuticals is drivenby their ability to offer therapeutic effects with fewer side effects compared to conventional drugs. Ingredients such as antioxidants, anti-inflammatory compounds, and immune boosting substancesare becoming more popular for their role in promoting well-being and preventing illness. Additionally, personalized nutrition, which tailors' supplements based on an individual's geneticsand health needs, is opening up new possibilities for more effective and targeted health interventions. However, the path forward for nutraceuticals isn't without its challenges. This paper explores new ideas in nutraceuticals, highlighting their potential as a valuable alternative to pharmaceuticals and discussing the future of their role in healthcare.

Keywords: Nutraceuticals, natural health, chronic disease prevention, personalized nutrition.

ICTJ-O-177

PREPARATION CHARACTERIZATION AND PHARMACOLOGICAL EVALUATION OF APIGENIN NANOPARTICLES

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ABSTRACT

A polyphenolic flavonoid, apigenin possesses a variety of pharmacological actions, including anti-inflammatory, anticancer, antibacterial, and antiproliferative properties etc. Due to its low bioavailability, a major drawback of apigenin in clinical applications is the administration of high doses. Additionally, although a water-soluble derivative of it has been synthesized, its bioavailability was only 20%. This research aims to develop apigenin nanoparticles with enhanced bioavailability using the nano-participation method. Characterization of prepared nanoparticles was done through BET surface area, X-ray diffraction, DLS, and SEM analysis. The hepatoprotective activity of apigenin nanoparticles was evaluated by carbon tetrachloride (CCl4)-induced liver damage model in rats. Apigenin nanoparticles suppressed the up-regulation of serum markers ALT, AST, LDH, and triglyceride levels at low dose than pure apigenin. Hepatic morphological analysis was also performed to confirm the biochemical changes. These results suggested that apigenin nanoparticles may become a promising candidate for the treatment of liver injury in the future.

Keywords: Apigenin, nanoparticles, hepatoprotective, SEM, X-ray, BET.

ICTJ-O-178

PHARMACOVIGILANCE AND DRUG SAFETY: ENSURING PUBLIC HEALTH THROUGH ADVERSE EVENT MONITORING

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ABSTRACT

Robust PV systems are supported by real-time data collection, electronic health records, and digital reporting tools, enabling healthcare professionals and regulatory authorities to identify potential safety concerns promptly. Artificial intelligence (AI) and big data analytics are further enhancing signal detection and risk management, improving the ability to predict and mitigate ADRs. Key challenges in pharmacovigilance include underreporting of ADRs, inconsistent data quality, and the global variability in regulatory standards. Moreover, the increasing use of complex biologics, biosimilars, and personalized medicines has added layers of complexity to PV activities. These challenges necessitate harmonized international collaboration, improved reporting mechanisms, and enhanced public awareness to strengthen the pharmacovigilance ecosystem.. Additionally, patient-centric approaches, including direct consumer reporting and educational initiatives, are reshaping pharmacovigilance by fostering greater engagement and trust among healthcare stakeholders. In this study, we highlight the vital role of pharmacovigilance in the lifecycle of medicines, from pre-marketing clinical trials to post-marketing surveillance. By ensuring a continuous feedback loop of safety information, pharmacovigilance not only enhances drug safety but also fosters innovation and trust in healthcare systems worldwide. As the field advances, embracing new technologies and fostering international collaboration will be essential to overcoming existing challenges and ensuring optimal patient safety.

Keywords: Pharmacovigilance, Adverse Drug Reactions, Drug Safety, Signal Detection, Risk Management.

ICTJ-O-179

TYPE 2 DIABETES MELLITUS: A REVIEW OF MULTI-TARGET DRUGS

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ABSTRACT

Diabetes Mellitus (DM) is a complex, chronic condition that affects a significant portion of the population, with the World Health Organization (WHO) projecting an increase in the number of adults diagnosed with diabetes. Type 2 Diabetes Mellitus (T2DM) represents the majority of these cases, affecting approximately 90-95% of individuals with diabetes. Mono-target therapies often fail to effectively manage blood glucose levels and associated comorbidities. This review highlights potential multi-target drugs for the treatment of T2DM, focusing on therapies that address the key systems involved in the disease and its comorbidities. Specifically, it examines agonists targeting the incretin and glucagon systems, as well as peroxisome proliferator-activated receptors (PPARs). Additionally, inhibitors of aldose reductase, tyrosine phosphatase 1B, and sodium-glucose transporters (SGLT1 and SGLT2) are discussed. The review also explores the role of phytocomplexes in multi-target approaches for managing T2DM.

Keywords: Diabetes Mellitus, multi-target compounds, multi-target drugs, type 2 diabetes mellitus.

ICTJ-O-180

ROUTES OF DRUG ADMINISTRATION: BENEFITS AND CHALLENGES

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ABSTRACT

The route of drug administration significantly influences the therapeutic efficacy, safety, and patient compliance of a medication. Selection of an appropriate route depends on the drug's physicochemical properties, target site, desired onset of action, and patient-specific factors. Common routes include oral, parenteral, topical, inhalational, and transdermal, each offering distinct advantages and challenges. Oral administration, the most prevalent route, is convenient and cost-effective but limited by poor bioavailability for some drugs due to first-pass metabolism and variable gastrointestinal absorption. Parenteral routes, such as intravenous and intramuscular, bypass these barriers, providing rapid and controlled drug delivery; however, they require sterile conditions and professional administration. Topical and transdermal routes enable localized or systemic delivery with minimal systemic side effects but may face challenges in permeating the skin barrier. Inhalational routes are highly effective for respiratory conditions, ensuring rapid drug action, though their efficacy is dependent on correct patient technique. Emerging technologies, such as nanoparticle delivery systems and microneedles, are addressing some of these limitations, offering innovative ways to enhance bioavailability, reduce side effects, and improve patient adherence. However, challenges such as formulation stability, regulatory hurdles, and cost remain key considerations in their broader adoption. Understanding the benefits and challenges associated with each route is essential for optimizing therapeutic outcomes. Ongoing research and advancements in drug delivery technologies continue to expand the possibilities, paving the way for more effective and patient-centric treatments.

Keywords: Drug Delivery, Bioavailability, Parenteral Administration, Oral Route, Transdermal Systems.

ICTJ-O-181

SAFE DRUG DISPOSAL AND ITS ENVIRONMENTAL IMPACT: CHALLENGES AND SUSTAINABLE SOLUTIONS

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ABSTRACT

The improper disposal of pharmaceutical waste has become a significant environmental concern, posing risks to ecosystems and human health. Discarded medications, whether flushed, thrown in regular trash, or improperly incinerated, can contaminate water sources, soil, and air. Pharmaceuticals such as antibiotics, analgesics, and hormones are often detected in water bodies, affecting aquatic life and contributing to the development of antimicrobial resistance (AMR). These environmental repercussions highlight the urgent need for safe and sustainable drug disposal practices. Safe drug disposal methods aim to mitigate environmental harm while ensuring public health safety. Initiatives such as take-back programs, community collection drives, and pharmacy-led disposal systems have emerged as effective solutions. These programs prevent pharmaceuticals from entering the environment and provide a secure avenue for disposing of expired or unused medications. Additionally, advancements in disposal technologies, such as environmentally friendly incineration and drug-neutralizing agents, offer promising pathways for minimizing pollution. Public awareness plays a pivotal role in addressing the issue. Educating communities about the environmental impact of improper disposal and promoting safe practices can significantly reduce pharmaceutical waste. Healthcare providers and pharmacists are also instrumental in guiding consumers toward responsible disposal methods. This study also explores the regulatory frameworks governing pharmaceutical waste management in various regions. While some countries have robust guidelines and infrastructure, others face challenges such as limited resources and lack of awareness. Collaborative efforts between governments, pharmaceutical industries, and environmental organizations are essential for creating standardized and globally applicable solutions. By examining the intersection of safe drug disposal and environmental sustainability, this review underscores the importance of proactive measures to mitigate the adverse impacts of pharmaceutical waste. Establishing efficient disposal systems, fostering global cooperation, and promoting environmentally conscious practices can collectively safeguard ecosystems and human health for future generations.

Keywords: Drug Disposal, Environmental Impact, Pharmaceutical Waste, Antimicrobial Resistance, Sustainability.

ICTJ-O-182

2D-QSAR, MOLECULAR DOCKING BASED VIRTUAL SCREENING OF THE HERBAL MOLECULES AGAINST ALZHEIMER'S DISORDER: AN APPROACH TO PREDICT CNS ACTIVITY

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ABSTRACT

The therapeutic treatment of Alzheimer's Disease (AD) has focused on Acetylcholinesterase (AChE) as a crucial enzyme target. Several studies in the literature offer predictions and evidence of the anticholinergic effect of herbal indole containing compounds in laboratory and *in-vitro* and *in-silico.* However, most of these studies have not been successfully used in clinical settings. Our objective was to create a 2D-QSAR model that can accurately forecast the AChE inhibitory activity of herbal compounds and estimate their ability to traverse the blood-brain barrier (BBB) to provide their advantageous effects during Alzheimer's disease (AD). The herbal compounds Ajmalicin, ajmaline, cabergoline, correantine A, B aand C ,discohabdin A and B, ergocornine , koumine , Mitragynine, Scholansin VII were identified as the most promising natural compounds for suppressing AChE using virtual screening. Validation of results was achieved by molecular docking against human AChE (PDB ID: 4EY7).In summary, the most favourable outcomes were noted for mitragynine, with a PIC_{50} value of 4.63µM and a molecular docking score of approximately 10.047 kcal/mol. Conclusively, we have effectively created a dependable and effective 2D-QSAR model and forecasted that mitragynine is the most favourable compound for inhibiting the human AChE enzyme in the central nervous system and may be advantageous for the treatment of Alzheimer's disease.

Keywords: AChE, 2D QSAR, Alzheimer's disease, docking.

ICTJ-O-183

DEVELOPMENT AND CHARACTERIZATION OF CANNABIDIOL LOADED NIOSOMAL GEL FOR MANAGEMENT OF NEUROPATHIC PAIN

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ABSTRACT

Neuropathic pain is a debilitating form of treatment resistant chronic pain caused by damage to the nervous system. Neuropathic pain may result from peripheral nerve injury, toxic insults, and disease states. Niosomes are a novel drug delivery system, in which the medication is encapsulated in a vesicle made up of nonionic surface active agents like span, tween etc. It is to increase the therapeutic efficacy of Cannabidiol (CBD) and its effective in the Neuropathic Pain. Niosomes can encapsulate both hydrophilic and lipophilic drugs and improve its stability. we prepare, CBD and it will encapsulated in niosomes using non-ionic surfactants (Span 60) and cholesterol then we incorporate CBD loaded niosomes in matrix to form a Niosmal Gel that is given topically. The resulting niosomal formulations will characterized for morphology, particle size entrapment efficiency, Zeta potential and PDI. The Niosomal gel will evaluated including spreadability, pH, *In-vitro* drug release studies. This formulation was assessed on the animal models of neuropathic pain. The results show that CBD-loaded niosomal gel will provide an effective, and targeted approach for the management of neuropathic pain, to improved the patient compliance and side effects compared to conventional dosage form.Topical drug delivery is a route of administering drugs via the skin to provide topical therapeutic effects. It offers advantages such as avoidance of first pass effect, self-administration with ease, convenience, generally good acceptance by patients.

Keywords: Cannabidiol, Niosomes, Niosome Gel, Topical Drug Delivery, Neuropathic Pain.

ICTJ-O-184

SOURCES AND TOXICITY OF NANOPARTICLES AND NANOSTRUCTURED MATERIALS

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ABSTRACT

Drugs can be administered locally or systemically through the skin surface using a technique known as transdermal drug delivery. The medicine works at a certain rate after entering the systemic circulation through the skin via capillary action. Use of traditional physical and chemical enhancers to improve the transdermal permeation rate by increasing drug solubility, diffusion coefficient, and reservoir effect is not feasible owing to the toxic side effects of the overuse of chemical penetration enhancers. Sizes of nano-formulations typically range from 10 nm to 100 nm. The enhanced drug permeability, stability, retention, and targeting brought on by the smaller particle size provides nano-formulations appropriate for transdermal drug delivery. Advancements in topical pharmaceuticals have revolutionized the field of dermatology, enabling targeted delivery of therapeutics to the site of action. This has been made possible by the development of nano-based technologies, which have demonstrated significant improvement in dermatotherapy. Nanotechnology-based Transdermal and Topical Delivery Systems have enabled the delivery of therapeutics across the stratum corneum, increasing bioavailability and efficacy. Microneedle patches have gained attention for their ability to pierce the stratum corneum and deliver actives directly to the viable epidermis, bypassing the skin barrier. Vesicular Nanocarriers such as Liposomes, ethosomes, niosomes, transfersomes, and transethosomes have been developed to improve dermal targeting and increase the efficacy of topical pharmaceuticals. Benefits includes- Enhanced solubility of hydrophobic drugs, increased drug stability, improved bioavailability, targeted delivery of therapeutics, Reduced systemic adverse effects. Numerous studies have been conducted on the various uses of nano-formulations (vesicles, nanoparticles, and nano emulsions). The most common nano-formulations used in transdermal drug delivery systems are reviewed here along with their classification, traits, transdermal mechanism, and application.

Keywords: Nanoparticles, nanomaterials, sources, toxicity, dermatotherapy, ethosomes, transferosomes.

ICTJ-O-185

BIOTHERAPEUTICS AND BIOENGINEERING: INNOVATIONS SHAPING MODERN HEALTHCARE

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ABSTRACT

Biotherapeutics and bioengineering are rapidly advancing fields that are transforming modern medicine by enabling innovative approaches to disease treatment, prevention, and healthcare delivery. Biotherapeutics, including monoclonal antibodies, vaccines, recombinant proteins, and cell and gene therapies, represent a cutting-edge category of therapeutics derived from biological sources. These therapies target specific molecular mechanisms, offering precision and efficacy in the treatment of complex diseases such as cancer, autoimmune disorders, and genetic conditions. Bioengineering complements biotherapeutics by providing the technological backbone for their development, optimization, and delivery. It integrates principles of biology, engineering, and material science to create advanced tools and systems, such as bioreactors for large-scale therapeutic production, nanocarriers for targeted drug delivery, and tissue scaffolds for regenerative medicine. Recent innovations in bioengineering have facilitated breakthroughs in creating biotherapeutics with enhanced stability, bioavailability, and patient-specific customization. Despite the remarkable potential of biotherapeutics and bioengineering, significant challenges remain. These include the high costs of production, complex regulatory requirements, and technical barriers such as scalability and reproducibility. Advances in synthetic biology, CRISPR-Cas9 gene editing, and 3D bioprinting are addressing these challenges by streamlining production processes and enabling the development of next-generation therapeutics. Emerging trends in these fields include the integration of artificial intelligence (AI) and machine learning to accelerate drug discovery and optimize therapeutic designs. Furthermore, the development of biosensors and wearable bioengineered devices is revolutionizing real-time health monitoring and personalized medicine.

Keywords: Biotherapeutics, Bioengineering, Regenerative Medicine, Gene Therapy, Precision Medicine.

ICTJ-O-186

NUTRACEUTICALS IN THE MANAGEMENT OF DIABETES MELLITUS

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ABSTRACT

Diabetes mellitus, a chronic metabolic condition characterised by hyperglycemia, has become a worldwide health concern due to its rising prevalence and related consequences. Conventional pharmaceutical treatments, while effective, can have side effects, encouraging an increased interest in natural alternatives such as nutraceuticals. Nutraceuticals are bioactive molecules produced from food that have the potential to improve health in addition to basic nutrition. This review article seeks to provide a complete overview of nutraceuticals' therapeutic potential in the treatment of diabetes mellitus. The article discusses the various categories of nutraceuticals, which include functional foods, carotenoids, dietary fibres, fatty acids, phytochemicals, herbs, probiotics, and dietary supplements. It emphasizes the anti-diabetic benefits of numerous nutraceuticals, including Momordica charantia (bitter gourd), Cinnamomum zeylanicum (cinnamon), Ocimum sanctum (tulsi), and fenugreek. The study will be investigating their mechanisms of action and possible therapeutic effects. The study also examines the importance of key micronutrients in diabetes care, such as vitamins (C, D, E), minerals (zinc, vanadium), and bioactive molecules (alpha-lipoic acid, coenzyme Q10, carnitine, inositol). Their potential benefits, modes of action, and suggested dosages are thoroughly examined. Overall, the article gives a thorough assessment of the therapeutic potential of nutraceuticals in the management of diabetes mellitus, including insights into their mechanisms of action, efficacy, and possible applications as supplementary or alternative therapies.

Keywords: Diabetes mellitus, Nutraceuticals, Herbal remedies, Micronutrients, Anti-diabetic properties

ICTJ-O-187

ARTIFICIAL INTELLIGENCE IN PHARMACEUTICAL MANUFACTURING AND QUALITY ASSURANCE

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Abstract:

In pharmaceutical manufacturing, AI facilitates advanced process control, enabling predictive maintenance of equipment, reducing downtime, and optimizing resource utilization. Machine learning algorithms analyze complex datasets to identify trends, streamline production workflows, and enhance yield. Additionally, AI tools like robotic process automation (RPA) improve operational precision and reduce human error, particularly in repetitive and labor-intensive tasks. Quality assurance benefits significantly from AI by enabling predictive modeling for risk assessment and quality control. AI-powered visual inspection systems identify defects in drug formulations and packaging with greater accuracy than traditional methods. Furthermore, AI assists in ensuring data integrity and compliance by automating documentation processes and enabling traceability through blockchain integration. The adoption of AI in pharmaceutical manufacturing and QA also addresses challenges such as variability in raw material quality, scalability of production, and adherence to Good Manufacturing Practices (GMP). Despite these advancements, barriers like high implementation costs, workforce training, and regulatory acceptance remain hurdles to widespread adoption.

Keywords: Pharmaceutical Manufacturing, Quality Assurance, AI in Pharma, Predictive Analytics, Process Optimization.

ICTJ-O-188

ARTIFICIAL INTELLIGENCE AND THE ROLE IN DIAGNOSIS AND THERAPY

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ABSTRACT

Artificial intelligence (AI) is transforming the healthcare sector, especially in the areas of diagnosis and therapy, by improving accuracy, efficiency, and focusing on patient needs. AI-driven diagnostic tools utilize sophisticated algorithms to evaluate medical information, including imaging, pathology reports, and genetic data, which allows for earlier and more precise disease identification. For example, AI has shown impressive results in detecting illnesses such as cancer, heart disease, and neurological conditions, often outperforming human capabilities. In the realm of therapy, AI is paving the way for advancements in personalized medicine. Predictive analytics are used to create customized treatment plans tailored to individual patient characteristics, reducing side effects and enhancing results. AI-based platforms are speeding up drug development, cutting down the time and expenses involved in introducing new therapies. Moreover, the integration of AI in wearable technology and telemedicine is revolutionizing the management of chronic diseases by facilitating real-time monitoring and prompt interventions. Looking ahead, the influence of AI in healthcare is set to grow, bolstered by progress in big data, cloud technology, and robotics. However, challenges such as data security, ethical issues, and the need for transparency in algorithms must be tackled to ensure fair and dependable implementation. In summary, AI is transforming the landscape of diagnosis and therapy, heralding a promising future for healthcare. Its capacity to improve accuracy, tailor treatments, and enhance accessibility highlights its potential for significant change. With careful integration, AI will continue to push the limits of modern medicine, benefiting both patients and healthcare providers.

Keywords: Artificial Intelligence, Diagnosis, Therapy, Personalized Medicine, Future Healthcare

ICTJ-O-189

ORGANOIDS AND THE MICROBIOME

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ABSTRACT

An organoid is a tissue that is typically derived from stem cells (foetal or adult), and which mimics the key functional, structural and biological complexity of an organ. So it is proven valuable model system to study normal tissue homeostasis and it is also used to investigate molecular mechanism associated with disease onset. Adult stem cells can be derived from gut to mimic the action and it is used to investigate the bowel disease reason and also used colon rectal cell as a mimic of epithelial cell to expand and investigate the bowel disease. Inflammatory bowel disease is a chronic immune mediated disorder affecting the gut. At a molecular level, intrinsic deficiencies in mucosal barrier function, and mechanisms of immune response and resolution contribute to the development of IBD. Organoids retain the genetic and transcriptomic profile of the tissue of origin over time and induced to differentiate into most adult intestinal cell types and it is used to model intestinal host-microbe interactions occurring at the mucosal barrier, are manageable to genetic manipulation and can be co-cultured with other cell lines of interest.

Keywords: Organoid, Microbiome, IBD, Adult stem cell, Stem cell.

ICTJ-O-190

EXPLORING THERAPEUTIC POTENTIAL OF HYDROTROPIC SOLID DISPERSION OF HESPERIDIN AND NARINGENIN FOR THE MANAGEMENT OFDIABETES AND OBESITY

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ABSTRACT

Diabetes mellitus (DM) and obesity are interlinked global health challenges driven by lifestyle and dietary changes, particularly high-fat diets. Type 2 diabetes mellitus (T2DM), characterized by insulin resistance and hyperglycemia, often coexists with obesity, amplifying the risk of cardiovascular diseases and other complications. Flavonoids like hesperidin and naringenin, found in citrus fruits, exhibit significant anti-diabetic and anti-obesity properties. However, their poor water solubility limits clinical application. This study aimed to enhance the therapeutic potential of hesperidin and naringenin by formulating hydrotropic solid dispersions (HSDs) to improve their solubility and bioavailability. The anti-diabetic and anti-obesity effects of HSDs of hesperidin (HHSD) and naringenin (NHSD) were evaluated in streptozotocin (STZ)/nicotinamide (NIC)-induced diabetic rats on a high-fat diet (HFD). Oral glucose tolerance tests (OGTT) demonstrated that HHSD and NHSD significantly reduced blood glucose levels compared to pure forms. Treatment with HHSD and NHSD lowered random blood glucose levels, body weight, liver and spleen masses, and improved lipid and liver function profiles. Histopathological analysis of pancreatic tissues indicated that HHSD and NHSD mitigated structural damage to the islets of Langerhans. These findings highlight the superior efficacy of HHSD and NHSD over pure flavonoids in managing hyperglycemia and obesity-induced adiposity. The results suggest enhanced glucose metabolism, reduced gluconeogenesis, and improved lipid profiles as underlying mechanisms. This study underscores the potential of hydrotropic solid dispersions of hesperidin and naringenin as adjunct therapies for diabetes and obesity, paving the way for novel dietary supplements or therapeutic agents targeting these metabolic disorders. Further research is warranted to explore clinical applications and scalability for human health benefits.

Keywords*:* Hydrotropy, Solid Dispersions, Hesperidin, Naringenin, Diabetes, Obesity.

ICTJ-O-191

ARTIFICIAL INTELLIGENCE IN DRUG DISCOVERY AND DEVELOPMENT

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ABSTRACT

Artificial intelligence (AI) has emerged as a transformative force in drug discovery and development, reshaping the way pharmaceutical companies identify and develop new therapeutics. AI technologies, including machine learning, deep learning, and natural language processing, accelerate the entire drug development pipeline, from target identification to preclinical testing and clinical trials. By analyzing large datasets, AI can predict potential drug candidates, identify biomarkers, and uncover hidden relationships in complex biological systems, significantly reducing the time and cost traditionally required in drug discovery. One of the key advantages of AI in drug discovery is its ability to streamline the identification of novel drug targets. AI models can analyze genetic, proteomic, and clinical data to predict which molecules are most likely to interact with specific disease pathways. In virtual screening, AI rapidly identifies promising compounds by simulating their interactions with biological targets, a process that would take years with conventional methods. Furthermore, AI-powered tools enhance the design of clinical trials by predicting patient responses, optimizing dosing regimens, and improving patient recruitment strategies. The integration of AI in drug development also facilitates the repurposing of existing drugs for new therapeutic indications, thus accelerating the development of treatments for unmet medical needs. Despite these advantages, challenges such as data quality, regulatory approval, and the need for specialized expertise remain. AI is reshaping the landscape of drug discovery and development by providing novel insights, improving efficiency, and reducing the risks associated with bringing new drugs to market. As AI technologies continue to evolve, they hold the potential to revolutionize the pharmaceutical industry, offering faster, safer, and more cost-effective drug development processes.

Keywords: Drug Discovery, Artificial Intelligence, Machine Learning, Drug Development.

ICTJ-O-192

THE ROLE OF ARTIFICIAL INTELLIGENCE IN REVOLUTIONIZING CANCER DIAGNOSTICS AND PERSONALIZED THERAPY

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ABSTRACT
AI technologies, particularly deep learning, improved the detection and prognosis of cancer using the more sophisticated analysis of radiological and histopathological images than traditional methods, not to mention higher accuracy and efficiency. Such systems also indicate predictive biomarkers and therapeutic targets, thereby optimizing the development of precision treatments like immunotherapy and chemotherapies. In drug discovery, AI accelerates the identification of new compounds, reduces costs in preclinical research, and uncovers mechanisms of drug resistance. Predictive analytics further support tailoring treatments by evaluating patient responses to therapies including immunotherapy and radiological approaches. In radiotherapy, AI is improving dose planning with an aim to minimize damage to the healthy tissues, while in immunotherapy, it refines the treatment by analyzing tumor microenvironments, enhancing immune checkpoint inhibitors' efficacy. Beyond treatment, AI helps to monitor cancer and detect recurrence early through wearable technologies and real-time data analytics. Despite the ethical concerns and data standardization, the use of AI in oncology holds potential for more accessible, efficient, and personalized care of patients with cancer. In the next few years, AI is likely to stay at the forefront of innovation in cancer management.

Keywords: Artificial intelligence, Cancer therapies, Immunotherapy, Chemotherapy, Predictive analytics.

ICTJ-O-193

TRADITIONAL MEDICINAL PLANTS IN CARDIOVASCULAR HEALTH: ANTIHYPERLIPIDEMIC AND PROTECTIVE EFFECTS ON THE HEART

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ABSTRACT
This review explores the role of selected traditional medicinal plants in cardiovascular health, focusing on their antihyperlipidemic and cardioprotective effects. Plants such as Rubia cordifolia, Ginseng, Garlic, and Turmeric have demonstrated significant efficacy in preclinical and clinical studies for lowering cholesterol levels, reducing triglycerides, and enhancing HDL cholesterol levels. Furthermore, these plants also offer protection against myocardial damage and improve endothelial function by modulating oxidative stress and inflammatory pathways. The mechanisms through which these plants exert their cardiovascular benefits include the regulation of lipid metabolism, reduction of free radicals, and improvement of nitric oxide availability, which supports vascular health. Despite the promising potential, the clinical translation of these plants into therapeutic agents faces challenges, including the need for standardized formulations, proper dosing, and a comprehensive understanding of their pharmacokinetics. This review emphasizes the importance of further research to elucidate the full spectrum of cardiovascular benefits offered by traditional medicinal plants and their active compounds, along with the potential for integration into modern therapeutic regimens for CVD prevention and management.

Keywords: Cardiovascular diseases, antihyperlipidemic, traditional medicinal plants, cardioprotective, oxidative stress.

ICTJ-O-194

ROBOTICS IN MEDICAL PROCEDURES AND HEALTHCARE

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ABSTRACT

The integration of robotics into medical procedures and healthcare has revolutionized the industry, offering enhanced precision, efficiency, and patient outcomes. Robotic systems are now employed across various medical specialties, including surgery, diagnostics, rehabilitation, and patient care, marking a significant shift toward minimally invasive techniques and automated solutions. In surgical procedures, robotic-assisted systems like the da Vinci Surgical System enable unprecedented precision, reducing human error and improving recovery times. These systems offer surgeons enhanced dexterity, 3D visualization, and remote operation capabilities, making complex procedures more manageable. Additionally, robotic devices are widely used in orthopedics, cardiology, and neurology for procedures requiring high precision. Robotics also plays a pivotal role in diagnostics, enabling automated imaging, sample analysis, and even early disease detection through AI-driven algorithms. In rehabilitation, robotic exoskeletons and prosthetics support patients in regaining mobility and independence, particularly those recovering from severe injuries or neurological disorders. In patient care, service robots are increasingly employed to assist in medication delivery, patient monitoring, and infection control. This includes the use of telepresence robots in remote areas, enabling patients to access healthcare services without geographical constraints. While the benefits are vast, challenges such as high costs, regulatory hurdles, and the need for specialized training persist. Ethical considerations surrounding patient data security and the replacement of human roles in healthcare are also critical areas of ongoing research. Robotics continues to transform the healthcare landscape by enabling precision, accessibility, and innovation. As advancements progress, robotics promises to further improve patient care and reshape the future of medical procedures.

Keywords: Robotic Surgery, Healthcare Automation, Medical Robotics, Patient Care Technology, Rehabilitation Robotics.

ICTJ-O-195

THE ENDOTHELIN SYSTEM AS TARGET FOR THERAPEUTIC INTERVENTIONS IN RENAL DISEASE

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ABSTRACT

Endothelins including its most abundant isoform, endothelin-1 (ET-1) are peptides acting as vasoconstrictors when binding to ETA and ETB receptors and in addition to their distinct roles in normal physiology. Endothelins have a central role in the pathophysiology of many diseases including cardiovascular and renal diseases. Endothelin-1 (ET-1), the most potent vasoconstrictor in the cardiovascular system, regulates basal vascular tone and glomerular hemodynamics. ET-1 is involved also in vascular and cardiac hypertrophy, inflammation, cardiovascular diseases e.g. essential hypertension, atherosclerosis, coronary artery disease, congestive heart failure, pulmonary arterial hypertension and cerebrovascular disease and renal diseases - e.g. acute renal failure, polycystic kidney disease and chronic kidney disease. In this narrative review, we summarize physiologic properties of the ET system, focusing especially on ET-1 and its role in the pathophysiology of ET system activated diseases, and discuss the potentials of therapeutic interventions targeting the ET system in renal diseases. Clinical trials continue to explore new applications of endothelin receptor antagonists in treatment-resistant hypertension and chronic kidney disease and have shown some benefits in the latter group by reducing proteinuria.

Keywords: Endothelin, Chronic Kidney Disease, Polycystic Kidney Disease, Proteinuria, ET Receptor Antagonists

ICTJ-O-196

ARTIFICIAL INTELLIGENCE IN PHARMACEUTICAL BUSINESS MANAGEMENT

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ABSTRACT

In drug discovery, AI accelerates the identification of potential drug candidates by analyzing vast datasets of molecular structures, reducing the time and cost traditionally required. AI-driven predictive analytics also streamline clinical trials by identifying suitable participants, forecasting outcomes, and mitigating risks. This increases the probability of success in clinical research while minimizing resource wastage. AI is revolutionizing supply chain management in the pharmaceutical industry by enabling real-time monitoring and predictive maintenance, ensuring the timely delivery of medicines. Advanced algorithms forecast demand, optimize inventory levels, and reduce operational inefficiencies. Moreover, AI-powered platforms enhance compliance by automating regulatory processes, reducing errors, and ensuring adherence to industry standards. However, challenges such as data privacy concerns, high implementation costs, and workforce adaptation remain critical issues that require attention. The integration of AI into pharmaceutical business management represents a paradigm shift, driving innovation and sustainability in a competitive industry. As technology evolves, AI promises to redefine operational models, improve patient outcomes, and ensure the long-term success of pharmaceutical companies.

Keywords: AI in Pharma, Drug Discovery Automation, Pharmaceutical Supply Chain.

ICTJ-O-197

RESEARCH PROGRESSION OF SAFRANAL FROM AN AROMATIC NATURAL PRODUCT TO A POTENT PHARMACOLOGICAL AGENT

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ABSTRACT

The Safranal is the prime component of saffron essential oil, and it is considered to be the main cause of the peculiar smell of saffron. Ninety years ago, compounds were discovered since then, its bio pharmacological action has been investigated by many scientific trials. Scientists are becoming more interested in the Saffron's impact on the central nervous system, and a growing number of articles on the subject have been published. The chemical compound safranal is a sweet-smelling monoterpene aldehyde. It has been discovered from various literature that safranal has enormous antioxidant potential while researching its photoprotective capabilities. Various researchers investigated stated that the safranal has anti-oxidant, anxiolytic, anti-inflammatory, antidepressant, anti-asthmatic, anti-hypertensive, anticonvulsant, anticancer, and antitussive and antigen-toxic properties. These intriguing features of Safranal indicate it's potential as a medicinal drug; in the nature, and due to this more toxicological and clinical trial research is also needed.

Keywords: Review, Safranal, Saffron, Crocus Sativus, Essential oil, Protective, Immense, Antioxidants.

ICTJ-O-198

APPLICATION OF ARTIFICIAL INTELLIGENCE IN DRUG DESIGN

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ABSTRACT

Artificial intelligence (AI) has undergone rapid development in recent years and has been successfully applied to real-world problems such as drug design. The integration of artificial intelligence (AI) techniques addresses these challenges by enabling the examination of compounds with desired properties from a vast pool of input drugs. Furthermore, it plays a crucial role in drug screening by predicting toxicity, bioactivity, ADME properties (absorption, distribution, metabolism, and excretion), physicochemical properties, and more. These approaches further significantly improve the precision of drug discovery processes and decrease clinical trial costs leading to the development of more effective drugs. Machine Learning (ML) and Deep Learning (DL) are two subclasses of Artificial Intelligence (AI), that, in this day and age of big data provides significant opportunities to pharmaceutical discovery research and development by translating data to information and ultimately to knowledge. This would provide an overview of these methods and how they have been applied across various work streams, e.g., generative chemistry, ADMET prediction, retrosynthetic analysis, etc. within drug discovery process. In this review, we aim to update our current knowledge on basic principles of artificial intelligence and deep learning advancements provide an excellent opportunity for rational drug design and discovery process, which will eventually impact mankind.

Keywords: Drug designing, Artificial intelligence, Machine Learning, drug design and discovery process.

ICTJ-O-199

INNOVATIVE PATHWAYS IN PHARMACEUTICAL R&D: THE ROLE OF AI IN OPTIMIZING BENZIMIDAZOLE ANALOGUE DESIGN

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ABSTRACT

This study examines the transformational impact of artificial intelligence (AI) on enhancing the design of benzimidazole analogues for anticonvulsant medicines. AI-driven methods, such as machine learning algorithms and predictive modelling, are transforming structure-activity relationship (SAR) studies, facilitating the discovery of new benzimidazole derivatives with improved effectiveness and diminished adverse effects. Moreover, AI enhances virtual screening, molecular docking, and ADMET (absorption, distribution, metabolism, excretion, and toxicity) profiling, therefore considerably expediting the drug development process. The use of green chemistry concepts guarantees sustainable growth while reducing environmental effect.

It emphasises case examples and innovative approaches in which AI has effectively optimised benzimidazole analogues, highlighting its potential to tackle global health issues like epilepsy. The analysis examines ethical concerns and problems associated with the use of AI in pharmaceutical research and development, promoting multidisciplinary cooperation and regulatory frameworks to optimise its advantages. Conclusions confirm AI's crucial role in influencing the future of pharmaceutical innovation, especially in the creation of tailored and sustainable anticonvulsant medicines.

Keywords: Artificial Intelligence, Benzimidazole Analogues, Anticonvulsants, Drug Discovery.

ICTJ-O-200

ROBOTICS IN MEDICAL PROCEDURES AND HEALTHCARE

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ABSTRACT

Robotic surgery or Robot assisted surgery enhances precision, flexibility and control during the operation and allows them to better see the site, compared with traditional techniques. They are often used in pharmaceutical companies in design or testing stage of new drugs and medications. Robots can help when large quantities or combination of different compounds need to be accurately analyzed in laboratories. These machines act as remote extensions completely governed by the surgeon and thus are best described as master-slave manipulators. Two master-slave systems have received approval by the US food and drug administration (FDA) and are in use which are: da Vinci surgical system and ZEUS system. Ongoing research explores the integration of artificial intelligence (AI) with robotics in medical applications. The most common roles of Al in medical settings are clinical decision support and imaging analysis. Al tools are being used to analyze CT scans, X-Rays, MRI's and other images for lesions or other findings that a human might miss. Al algorithms and other applications powered by Al are being used to support medical professionals in clinical settings and ongoing research.

Keywords: Robotic surgery, Da Vinci surgical system, ZEUS system, Artificial intelligence, AI Algorithms.

ICTJ-O-201

DESIGN, SYNTHESIS AND *IN-VITRO* ANALYSIS OF ANTI-MICROBIAL POTENTIAL OF SOME NEWLY SYNTHESIZED THIAZOLIDINE-2,4-DIONE DERIVATIVES

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ABSTRACT

Substituted thiazolidine-2,4-dione derivatives are recognized for their diverse pharmacological activities, including antimicrobial, antidiabetic, anticancer, anti-inflammatory, aldose reductase inhibitory, tyrosinase inhibitory, and cholesterol esterase inhibitory properties, making them highly significant in medicinal chemistry. Inspired by their therapeutic potential, this study focused on synthesizing novel thiazolidine-2,4-dione derivatives and evaluating their antimicrobial properties against bacteria and fungi. The synthesized derivatives were screened for their in vitro antimicrobial potential using ciprofloxacin (antibacterial) and fluconazole (antifungal) as reference drugs. The antimicrobial activity against Gram-positive bacteria: *S. aureus* MTCC 2901, B. *subtilis* MTCC 2063, Gram-negative bacterium: *E. coli* MTCC 1652 and fungal strains: *C. albicans* MTCC 227 and *A. niger* MTCC 8189 was determined using the tube dilution method. Many compounds showed enhanced efficacy against Gram-positive bacteria, with a few also demonstrating significant activity against Gram-negative bacteria. **RA 19** ($pMIC_{bs}$ = 2.21 µM) [having antibacterial potential comparable to standard drug ciprofloxacin (pMIC = 3.33 µM)] has the potential to be taken as a lead molecule for the development of novel antimicrobial agents. **RA1** showed remarkable antifungal activity against *Candida albicans*. Antimicrobial screening results indicated that **RA13** demonstrated potent antimicrobial activity against *E.coli, B. subtilis, A.niger* and *C.albicans (*$pMIC_{bs, ec, ca, an}$ = 1.55 µM). These findings suggest that substituted thiazolidine-2,4-dione derivatives are effective antimicrobial agents, particularly against Gram-positive bacteria, and possess significant potential for further structural modifications to enhance their activity profiles.

Keywords: Thiazolidine-2,4-dione derivatives, antimicrobial activity, Antifungal activity, ciprofloxacin, pharmacological, structural modifications.

ICTJ-O-202

REVOLUTIONIZING PSORIASIS TOPICAL TREATMENT: OPTIMIZATION AND EVALUATION OF A NOVEL CURCUMIN NANOGEL FORMULATION

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ABSTRACT

The objective of this research was to create a nanogel encapsulated with curcumin (CUR) loaded solid lipid nanoparticles (CUR-SLNs) and assess its effectiveness in alleviating symptoms of psoriasis in a psoriasis model induced by imiquimod. The CUR-SLN was formulated utilizing the solvent diffusion technique and incorporated into Carbopol gel to create the nanogel. Critical quality attributes, including particle size, texture profile analysis, and entrapment efficiency, were selected for evaluation. Subsequently, release in vitro, permeation through the skin, skin retention, and stability studies were conducted. The antipsoriatic efficacy of the CUR-SLN gel was assessed through Psoriatic Area and Severity Index (PASI) score, cytokine levels (IFN-α, IL-23, IL-17, and TNF-α), conducting histopathological analysis in the imiquimod-induced psoriasis model is essential for comprehensive examination.The developed CUR-SLNs exhibited a particle size of 133.90±2.45 nm, a PDI of 0.325±0.21, and an Entrapment Efficiency of 89.50±4.52%. The nanogel (CUR-SLN gel) demonstrated a sustained release of CUR over 48 hours (51.43±1.54% versus 80.65±1.34%) compared to the CUR dispersed gel. Notably, it noteworthy alteration reduced the Psoriatic Area and Severity Index (PASI) score, leading to the restoration of normal skin in mice. In comparison, the CUR nanogel exhibited signs of a heightened stratum corneum thickness and the presence of parakeratosis after the study. The formulated CUR-SLN holds promise as a potential substitute for the current curcumin formulations for the management of psoriasis.

Keywords: Psoriasis, Nanogel, Solid lipid nanoparticles, Curcumin, Texture profile analysis.

ICTJ-O-203

PHYTOSOME: ENHANCING THE BIOAVAILABILITY OF HERBAL PHYTOCHEMICALS

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ABSTRACT

Medicinal herbs offer valuable therapeutic options for various conditions, but their clinical use is often limited by poor bioavailability, absorption issues, and low selectivity. Nano-vesicular systems like phytosomes provide an effective solution to these challenges by improving the solubility and permeability of bioactive compounds. These bilayer vesicles are versatile, easy to prepare, and widely acknowledged for enhancing the efficacy of insoluble phytochemicals. Phytosomes play a crucial role in improving the miscibility of herbal constituents in lipid-rich barriers, enhancing their therapeutic potential. Compounds like curcumin and silymarin show improved efficacy when formulated as phytosomes, increasing absorption and enabling reduced dosages while maintaining or amplifying therapeutic effects. Phytosome formulations, characterization techniques, and drug delivery mechanisms demonstrate their ability to enhance bioavailability and treatment outcomes. Therefore, phytosome technology is poised to revolutionize herbal therapies, overcoming traditional limitations and advancing phytopharmaceutical applications.

Keywords: Phytosomes, bioavailability, herbal phytochemicals, drug delivery, lipid-rich barriers.

ICTJ-O-204

POLYSACCHARIDE BASED MICROBIAL TRIGGERED APPROACHES FOR COLON DELIVERY

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ABSTRACT

Colon-targeted drug delivery systems (DDS) have emerged as a crucial approach for enhancing the therapeutic efficacy of treatments for various colonic diseases such as Crohn's disease, ulcerative colitis, and colorectal cancer. These systems prevent premature drug release in the upper gastrointestinal tract and ensure that therapeutic agents are delivered specifically to the colon, where they are most effective. The colon's distinct environment, including its near-neutral pH and specific microbial activity, makes it an ideal site for localized treatment. Polysaccharide-based carriers, sensitive to bacterial enzymes in the colon, are key to these systems. The gut microbiota plays a pivotal role in drug activation, facilitating the targeted release of drugs via enzymatic degradation of polysaccharide carriers. Recent advances in nanotechnology and microbial-triggered systems have further improved drug delivery precision, reduced systemic side effects, and enhanced patient compliance. These developments hold promise for more effective treatments of colonic diseases and highlight the importance of further research into personalized delivery systems based on individual microbiota profiles.

Keywords: Microbiota modulation, Enzyme-triggered drug release, Colorectal cancer therapy.

ICTJ-O-205

RECENT THERAPEUTIC, DIAGNOSTIC, AND THERANOSTICS ADVANCEMENTS OF METAL NANOCARRIERS FOR BRAIN CANCER MANAGEMENT

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ABSTRACT

Cancer has gained significant public health concern because it is one of the leading causes of mortality worldwide. Even with the most recent advanced technologies in diagnosis and interventions, the management and cure of cancer patients are limited. However, novel drug delivery tools with innovative technologies are shown to deliver chemotherapeutics to cancer cells with minimal redundant interaction with healthy cells. Amongst them, metallic nanocarriers, such as gold, quantum dots, and iron-oxide, have garnered attention owing to their higher surface area-to-volume ratio, multifunctionality, and tunable optical properties, making them suitable for therapeutic, diagnostic, and theranostics purposes in brain cancer. It has also been demonstrated that metallic nanocarriers can maintain significant therapeutic concentrations in target cells through site-specific and continued release. Due to their immense potential, the current study focused on exploring metallic nanocarriers for improved diagnosis and management of brain tumours. Specifically, the purpose of this review was to illustrate how metallic nanocarriers be explored as an effective agent in brain oncotherapy to overcome impediments such as the blood-brain barrier, tumour diversity and microenvironment, efflux pump presence, and the invasive nature of brain tumours. Additionally, the toxicity concerns of these carriers and strategies for resolving these issues were also addressed to replace traditionally available brain cancer treatment strategies.

Keywords: Metal-based nanocarriers, metallic nanoparticles, theranostic approach.

ICTJ-O-206

A NOVEL QBD APPROACH IN ANALYTICAL METHOD DEVELOPMENT AND VALIDATION FOR THE QUANTITATIVE ANALYSIS OF DRUGS IN SINGLE AND COMBINED DOSAGES FORM

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ABSTRACT

By applying a QbD-based approach to the development of an HPLC method for the combination of Drugs, we ensure that the method is robust, reliable, and capable of accurately and precisely quantifying both APIs in complex formulations. This approach significantly reduces variability, increases method reliability, and ensures compliance with regulatory requirements. The purpose of this research is to appraise the recently reported PSAR analytical method published evidence on HPLC method development and validation of Drugs with QbD Approach. Only one or few QbD based stability-indicating RP-HPLC for ubiquinone is reported but no any QbD based spectroscopic is available nor QbD based method for drugs in combination (s) are reported. So, it was worth to think to develop QbD Based analytical method for Drug alone and/or in Combination (s).

Keywords: RP-HPLC, Analytical QbD, Patent Search Analysis Research (PSAR).

ICTJ-O-207

ROLE OF EXTRACELLULAR VESICLES IN BRAIN DRUG DELIVERY

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ABSTRACT

Extracellular vesicles are the new revolutionary strategy for drug delivery into the brain, overcoming several important challenges that conventional treatments had at this barrier, mainly the blood-brain barrier. Herein, this review discusses and critically reviews the multiple facet effects of EVs on drug delivery to the central nervous system. This property of biophysics in EVs, relevant to the current mode of formation, gives an opportunity for encapsulation in a wide range of therapeutic agents: from small molecules to RNA and proteins with targeted delivery to specific populations of neurons. Furthermore, the detailed mechanisms underlying the transport of EVs across the BBB, which include interaction between EVs and endothelial cells as well as possible pathways of cellular uptake, will be discussed. Newest breakthroughs in engineering EVs to achieve better drug loading, stability, and targeting specificity will also be discussed. Implications of such treatments on neurological disorders will also be addressed. Lastly, the review provides challenges related to scale, production, and regulatory issues that need to be addressed prior to the successful clinical translation of these treatments. Finally, this paper points out the potential utility of EVs as a versatile and effective delivery platform for brain drugs, holding promise for even more efficient treatments of numerous CNS conditions.

Keywords: Extracellular vesicles, blood brain barrier.

ICTJ-O-208

REVOLUTIONIZING CARBAMAZEPINE THERAPY: THE ROLE OF AI IN THERAPEUTIC DRUG MONITORING AND ADR MANAGEMENT

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ABSTRACT

Carbamazepine is widely used for the treatment of Epilepsy, Trigeminal neuralgia and Bipolar disorder, presents significant therapeutic challenges due to its narrow therapeutic index, variable pharmacokinetics, and risk of severe adverse drug reactions (ADRs), such as Stevens-Johnson Syndrome. Artificial intelligence (AI) has introduced innovative solutions to optimize therapeutic drug monitoring (TDM) and mitigate ADR risks, enabling a shift towards precision medicine. AI-driven approaches leverage machine learning (ML), deep learning (DL), and pharmacogenomic analytics to address interindividual variability in carbamazepine therapy. By integrating clinical, genetic, and real-time monitoring data, AI enhances dose optimization, predicts ADR risks, and provides dynamic adjustments tailored to patient-specific needs. For example, predictive algorithms can identify high-risk genotypes, such as HLA-B*15:02, enabling pre-emptive measures to prevent life-threatening reactions. The generation of AI and its subset learning models are based on properties of the training data sets such as physiochemical properties, quantum mechanical, 2D properties, 3D descriptors, molecular patterns, molecular finger prints, etc. Methods such as PCR plus support vector machines (SVMs), naïve Bayes, random forest, neural networks and recursive partitioning are used for the generation of ML models by correlating descriptors with experimental activity. This article explores the role of AI in Carbamazepine TDM, focusing on advancements in pharmacogenomics, drug-drug interaction detection, and continuous monitoring through biosensors. Despite its potential, challenges such as data heterogeneity, algorithm transparency, and integration into clinical workflows remain barriers to widespread adoption. By addressing these challenges and advancing AI technologies, carbamazepine therapy can be revolutionized, offering safer, effective, and personalized treatment options.

Keywords: Carbamazepine, Therapeutic drug monitoring, Artificial intelligence, Epilepsy, Adverse drug reactions.

ICTJ-O-209

ROLE OF PROBIOTICS IN ALZHEIMER'S DISEASE AND PARKINSON'S DISEASE

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ABSTRACT

Probiotics, essential for gut health, are increasingly recognized for their potential in addressing neurodegenerative diseases like Alzheimer's (AD) and Parkinson's (PD). Understanding their role in modulating the gut-brain axis is pivotal in elucidating their therapeutic implications in AD and PD, where the interplay between gut microbiota and brain health is profound. AD is characterized by amyloid-beta plaques and tau protein tangles, which lead to neuronal death and cognitive decline. In contrast, PD is marked by the aggregation of alpha-synuclein proteins and neuroinflammation, contributing to motor dysfunction and progressive neurodegeneration. These pathophysiological features underscore the importance of exploring novel therapeutic avenues, including probiotics, which offer a non-invasive and potentially impactful approach. Probiotics may exert beneficial effects in AD and PD by modulating the gut-brain axis, reducing systemic and neuroinflammation, and impacting the production and regulation of key neurotransmitters such as serotonin and dopamine. Additionally, they hold promise in potentially reducing the accumulation of pathological proteins associated with these diseases, such as amyloid-beta in AD and alpha-synuclein in PD. Existing clinical evidence and trials exploring probiotic interventions in AD and PD provide valuable insights into their efficacy and safety profiles, demonstrating potential improvements in cognitive and motor functions. However, challenges in study design, including sample size, variability in probiotic strains, and study duration, need to be addressed to draw robust conclusions and optimize therapeutic strategies. In conclusion, probiotics represent a promising adjunctive therapy for managing symptoms and potentially slowing disease progression in AD and PD. Their multifaceted mechanisms of action, including the modulation of gut microbiota and inflammatory pathways, underscore their potential as novel therapeutic interventions in these neurodegenerative diseases. Further research, particularly large-scale clinical trials, is essential to fully understand the scope of probiotics' benefits and to establish standardized treatment protocols.

Keywords: Probiotics, Alzheimer's disease (AD), Parkinson's disease (PD), Gut-brain axis, Neuroinflammation.

ICTJ-O-210

FORMULATION CHALLENGES IN DEVELOPING NANO-STRUCTURED LIPID CARRIERS FOR BRAIN TARGETING

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ABSTRACT

Targeting the brain for therapeutic purposes presents significant challenges due to the highly selective blood-brain barrier (BBB), which restricts the entry of most drugs. Nano-structured lipid carriers (NLCs) have emerged as a promising strategy for overcoming these barriers, offering advantages such as improved drug solubility, enhanced bioavailability, and controlled release properties. However, developing NLCs for brain targeting involves addressing several formulation and design challenges to ensure efficacy, safety, and scalability. One of the key challenges lies in selecting the appropriate lipids and surfactants that ensure optimal encapsulation efficiency, stability, and biocompatibility. The physicochemical properties of NLCs, such as particle size, zeta potential, and surface morphology, play critical roles in determining their ability to cross the BBB. Additionally, the drug's lipophilicity and compatibility with the lipid matrix influence the loading efficiency and sustained release profile. Another major hurdle is the potential for aggregation and instability during storage, which necessitates rigorous optimization of formulation parameters and the incorporation of stabilizing agents. Developing scalable and reproducible manufacturing techniques, such as high-pressure homogenization or solvent evaporation, further complicates the process. Regulatory considerations, including compliance with quality standards and long-term safety evaluations, must also be carefully addressed. Recent advancements in functionalization techniques, such as surface modification with targeting ligands, have demonstrated potential to enhance the specificity of NLCs for brain cells. Despite these innovations, translating NLCs from bench to bedside requires comprehensive preclinical and clinical studies to validate their efficacy and safety. This study explores the critical formulation challenges and innovative strategies for developing NLCs for brain targeting. By addressing these challenges, researchers can unlock the potential of NLCs to revolutionize the treatment of neurodegenerative disorders and other brain-related conditions.

Keywords: Nano-Structured Lipid Carriers, Blood-Brain Barrier, Brain Targeting, Drug Delivery.

ICTJ-O-211

TREATMENT PAL: YOUR HEALTH COMPANION FOR EVERY TREATMENT

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ABSTRACT

Treatment Pal is a cutting-edge mobile app designed to simplify and enhance this experience, providing users with a customized, clear, and all-encompassing method of handling their health journey. By merely entering the name of an ailment, Treatment Pal produces a personalized treatment strategy that outlines suggested diagnostic evaluations, medical consultations, prescribed medications, and a thorough breakdown of related costs—covering everything from test charges to hospital fees. Treatment Pal's ability to seamlessly integrate cutting-edge technology to help users at every step of their treatment is what sets it apart. In addition to tracking symptoms and progress, the app offers real-time alerts, prescription reminders, and AI-driven health advice. Users can find the best hospitals or specialists for their needs, find healthcare providers via telemedicine, and get treatment cost estimates. Treatment Pal guarantees that consumers are well-informed and equipped to make the best healthcare decisions by offering features like individualized treatment routes, safe medical record storage, and budget management. Whether managing a chronic illness or recovering from an acute condition, Treatment Pal is the all-in-one solution to simplify healthcare, offering peace of mind, cost transparency, and expert guidance for every step of the way.

Keywords: Personalized Treatment, Cost Estimation, Treatment Pathway, Health Recommendations.

ICTJ-O-212

PREPARATION AND CHARACTERIZATION OF SILIBININ NANOGEL FOR TARGETED SKIN CANCER THERAPY

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ABSTRACT

This study explores the development of silibinin-loaded nanogels to enhance its delivery and efficacy for skin cancer treatment. Silibinin nanogels were prepared using a solvent evaporation method, incorporating Pluronic F127 and chitosan as biocompatible polymers. The nanogels were characterized for size, surface charge, morphology, drug encapsulation efficiency, and release profile. Dynamic light scattering (DLS) and transmission electron microscopy (TEM) confirmed the nanogels' spherical shape and average particle size of approximately 150 nm. High encapsulation efficiency (>85%) and sustained release of silibinin over 48 hours were observed. In vitro cytotoxicity studies on human skin cancer cell lines (A431 and SK-MEL-28) demonstrated significant reduction in cell viability and enhanced apoptotic activity with the silibinin-loaded nanogels compared to free silibinin. These findings suggest that silibinin nanogels provide an effective means of improving the bioavailability, stability, and skin penetration of silibinin, offering a promising platform for localized treatment of skin cancer. Further in vivo studies are needed to validate the therapeutic potential and safety of this nanogel system for clinical applications.

Keywords: Silibinin, Nanogel, Skin Cancer, Drug Delivery, Cytotoxicity, Targeted Therapy.

ICTJ-O-213

EVALUATION OF METFORMIN HYDROCHLORIDE SUSTAINED RELEASE TABLETS AS PER IP GUIDELINES

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ABSTRACT

Diabetes Mellitus is a periodic metabolic complaint in which there are high blood sugar circumstances (Hyperglycaemia) over a delayed period of time. Most extreme of the cases are analyzed with Type-2 Diabetes in which, the body either doesn't create sufficient affront, or it repulse affront. Metformin hydrochloride Tablets shows up to have a portion in treatment of Diabetes both asessential and auxiliary Antidiabetic specialist. Metformin decreases the quantum of glucose the liver discharges into the circulatory system and the quantum of glucose retained from nourishment. Metformin Hydrochloride is the to begin with line pharmaceutical of choice for the treatment of Sort- 2 diabetes, particularly in fat cases and subsequently Quality Control tests are performed. This ponder was planned to assess the Metformin Tablets assembly the required quality standards. There are wide sorts of brands of Metformin Hydrochloride tablets accessible in Indian ask, in various condition Tablets with same pharmaceutical substance did not grant the same therapeutic result. The diverse brands were surveyed for diverse parameters agreeing to Rules given in Indian Pharmacopoeia. There are various test which are performed utilizing standard parameters counting Hardness Test, Measure and Shape, Friability Test, Weight Variety, Recognizable proof, Dissolution. All the Tablets met the details given in Indian Pharmacopeia. It was watched that tablet was get out of hand with all the performed quality control acknowledgment criteria.

Keywords: Metformin Hydrochloride, Diabetes, Sustained release, Evaluation

ICTJ-O-214

ASSESSMENT OF PROMOTED DOSE FRAME OF METFORMIN HCL SUPPORTED DISCHARGE TABLET

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ABSTRACT

Sustained discharged dose frame having an advantage over quickly discharge sedate conveyance framework by nonstop discharge of medicaments for a particular period in a drawn out way. Metformin is utilized to treat tall blood sugar levels that are caused by a sort of diabetes mellitus or sugar diabetes called type 2 diabetes. With this sort of diabetes, affront created by pancreas is not able to get sugar into the cells of the body where it can work legitimately. Metformin is a biguanide insect hyperglycaemic specialist and to begin with line pharmacotherapy. Metformin is the most well known anti-diabetic sedate in the India and one of the most endorsed drugs in the world. Tablets come in different shapes, with the most common being discoid, in spite of the fact that they can too be circular, oval, elongated, round and hollow, and triangular. The estimate and weight of the tablets may change depending on the amount of medicate substance. There are different tests which are performed utilizing standard parameters counting Hardness Test, Measure and Shape, Friability Test, Weight Variety, Recognizable proof, Disintegration. It was watched that Tablet was comply with all the performed quality control test as per Indian pharmacopoeia.

Keywords: Metformin, Maintained discharge, Diabetes, Organoleptic, Anti-hyperglycaemic

ICTJ-O-215

EVALUATION OF METFORMIN HYDROCHLORIDE SUSTAINED-RELEASE TABLET AS PER STANDARDS

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ABSTRACT

The two main types of diabetes mellitus are: Type I (Insulin-Dependent Diabetes Mellitus), where β-cell destruction occurs, primarily due to autoimmune processes, and Type II (Non-Insulin-Dependent Diabetes Mellitus), characterized by no or moderate β-cell loss, with insulin levels that may vary from low to high. This study evaluated Metformin Hydrochloride sustained-release (SR) tablets from various brands to analyze their quality, performance, and drug release characteristics. Metformin Hydrochloride reduces hepatic glucose production and enhances insulin sensitivity in muscle and fat tissues, improving glucose uptake. It is commonly prescribed for Type II diabetes management in SR formulations to provide prolonged therapeutic effects and reduce dosing frequency. The study focused on assessing physicochemical properties such as weight uniformity, hardness, friability, disintegration time, and drug content of Metformin SR tablets. Results highlighted the significance of quality and performance evaluation of generic formulations, as variations in drug release profiles can affect clinical efficacy and safety. The findings underscore the necessity of stringent quality control and regulatory measures to ensure that generic Metformin SR tablets maintain consistent physicochemical properties.

Keywords: Sustained-release, Glycemic control, Hepatic glucose production, Insulin

ICTJ-O-216

RECENT ADVANCES IN FORMULATION AND EVALUATION OF MATRIX TABLET BY USING DIFFERENT VISCOSITY GRADE HYDROPHILIC POLYMERS

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ABSTRACT

Matrix tablets, which provide sustained drug release over an extended period, have become a crucial strategy in modern pharmaceutics. Hydrophilic polymers such as hydroxypropyl methylcellulose (HPMC), carbopol, sodium alginate, guar gum, xanthan gum, pectin, chitosan, hyaluronic acid, polyvinyl alcohol (PVA) and polyethylene glycol (PEG) are frequently used to form the gel-like network that controls the rate of drug release. Viscosity grades of these polymers play a critical role in determining the matrix's swelling behavior, drug diffusion, and release kinetics. The recent developments focus on tailoring polymer viscosity to achieve desirable release profiles for both hydrophilic and hydrophobic drugs. Advances in polymer blending and optimization techniques, including the use of super disintegrants and co-polymers, have further refined the matrix tablet formulation, providing better control over release profiles, stability, and patient compliance. This abstract highlights the latest strategies employed in the formulation of matrix tablets using hydrophilic polymers of varying viscosities, addressing the challenges of achieving predictable drug release, improving bioavailability, and enhancing the overall therapeutic efficacy of the dosage forms. Additionally, the evaluation techniques, such as in-vitro dissolution testing and stability studies, are discussed to ensure the reliability and consistency of the matrix tablets in clinical use.

Keywords: Polyethylene Glycol (PEG), hydrophilic polymers, super disintegrants and co-polymers.

ICTJ-O-217

CURRENT SCENARIO IN FORMULATION, DEVELOPMENT, AND EVALUATION OF MUCOADHESIVE TABLETS

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ABSTRACT

Mucoadhesive drug delivery systems (MDDS) are designed to prolong the residence time of a drug at the site of absorption, thus enhancing bioavailability, therapeutic efficacy, and patient compliance. Mucoadhesive tablets, a key component of MDDS, utilize polymers that adhere to the mucosal surfaces in the body, such as the buccal, nasal, or gastrointestinal mucosa. The formulation, development, and evaluation of mucoadhesive tablets involve several considerations, including the selection of appropriate mucoadhesive polymers, optimization of drug release profiles, and biocompatibility of the system. In the formulation phase, various hydrophilic and hydrophobic polymers, such as carbopol, hydroxypropyl methylcellulose (HPMC), and sodium alginate, are employed to ensure effective adhesion and controlled drug release. These polymers form a gel-like network upon contact with mucosal tissues, which enhances drug retention and release at the desired site. Factors affecting mucoadhesion include polymer concentration, pH, ionic strength, and the nature of the drug. The development of mucoadhesive tablets also incorporates considerations for the stability of the active pharmaceutical ingredient (API), ease of tablet administration, and patient comfort. Techniques like direct compression, wet granulation, and solvent evaporation are employed to ensure tablet integrity and consistency. Evaluation of mucoadhesive tablets includes in vitro methods such as the mucoadhesion test, *Ex vivo* permeability studies, and release kinetics assessments. The ability of the tablet to adhere to mucosal surfaces is critical, and various tests, such as the tensile strength method, are employed to determine the adhesive force of the tablet. Additionally, I*n vivo* studies may be conducted to assess the pharmacokinetic properties of the drug. The current trend in mucoadhesive tablet development focuses on enhancing drug release rates, improving patient compliance, and tailoring drug delivery to specific therapeutic needs. In conclusion, mucoadhesive tablets represent a promising approach in modern pharmaceutical drug delivery, offering significant advantages in controlled release, site-specific action, and enhanced therapeutic outcomes. However, continued research and development are necessary to address the challenges and optimize the performance of these systems for broader clinical application.

Keywords: Mucoadhesive drug delivery systems (MDDS), direct compression, wet granulation, and solvent evaporation.

ICTJ-O-218

INTEGRATION OF ARTIFICIAL INTELLIGENCE IN COMPUTER-AIDED DRUG DESIGN: ADVANCING DRUG DISCOVERY AND DEVELOPMENT PROCESSES

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ABSTRACT

Artificial intelligence (AI) is also known as computer-aided drug discovery (CADD). The initial development of AI in pharmaceutical discoveries has arisen from the applications of AI in Medicinal chemistry. The basic areas where AI is much involved are: quantitative structure-activity relationship, structure based modeling, *de novo* molecular design and predictions of chemical synthesis. The extensive adoption of AI is particular in deep learning, multiple scientific disciplines, advancement in computing hardware and software and other factors. Various advance methodologies such as message interlinking models, spatial-symmetry-preserving networks, hybrid *de novo* designs and other innovative machine learning help to find a solution for typical questions. Data sharing and model development also plays a crucial role in the development of drugs with Artificial Intelligence. At present, The AI methods are synonyms for molecular modeling methods. So, it appears that the AIDD (Artificial Intelligence based Drug Discovery) offers the methods to discover a drug are totally dependent on molecular techniques. Development of data intensive biomedical research assays and technologies, such as DNA sequencing, imaging and wireless health monitoring devices has created a need for developers to use AI. AI also provides a wide variety of statistical methods to accommodate the huge data produced during the assays. In addition, these technologies have revealed that humans vary at the genetic, biochemical, physiological, exposure and behavioral levels, especially in respect to disease progressiveness and treatment responsiveness. As found the benefits of AI in drug development, AI can be used in assistance of gene therapy, which are currently not available as tools in healthcare. With AI, the possibilities of combining pharmacology and gene therapy would provide satisfactory results. In this review, we will provide an introduction to potential uses of AI within the drug designing and development process, in particular compared to conventional methods for carrying out these tasks and highlighting the pros and cons of AI. We will also focus on the early stages of discovery of new drug compounds and preclinical drug development.

Keywords: AIDD, CADD, Molecular models, Spatial-symmetry-preserving networks, hybrid *de novo* designs, data sharing, model development.

ICTJ-O-219

SAFETY AND EFFICACY OF ADJUVANT HOST DIRECTED THERAPY IN THE MANAGEMENT OF TUBERCULOSIS

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ABSTRACT

Background: Tuberculosis (TB) is a fatal infectious disease that kills people all over the world. The study's objectives were to know the impact of metformin on the safety and efficacy of antitubercular therapy, as well as probable mechanisms (ATT). Methodology: The study included TB patients with Type 2 diabetes mellitus (T2DM) who were treated at the HAHC hospital in New Delhi, India. Metformin users and non-users were divided into two groups based on the presence of metformin in their prescriptions. Through flow cytometry, total T Cells (CD45+CD3+), Helper T Cells (Th) (CD45+CD3+ CD4+), and Cytotoxic T Cells (Tc) (CD45+CD3+CD8+) were immunophenotyped. For sample acquisition, BD FACS Verse and BD LSR II techniques were applied. Results: Estimation of CD3, CD4, and CD8 levels at the second visit demonstrated that metformin users had higher CD3, CD4, and CD8 cell percentages than metformin non-users. Metformin users requires less time to convert sputum smears than metformin non-users ($p = 0.04$, unpaired t-test). Conclusion: Metformin has a beneficial effect on TB and T2DM, and it may be used as an adjuvant antitubercular medication in TB patients with T2DM co-morbidity.

Keywords: Metformin, Tuberculosis; Host directed adjuvant therapy; Drug repurposing.

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ICTJ-P-001

PHARMACEUTICAL BUSINESS DRIVEN BY ARTIFICIAL INTELLIGENCE: A REVOLUTION IN POST-MARKET MONITORING, QUALITY ASSURANCE, MANUFACTURING, FORMULATION DEVELOPMENT, AND DRUG DISCOVERY

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ABSTRACT

Drug research, formulation and development, manufacturing, quality control, and post-market surveillance are just a few of the areas in the pharmaceutical business that have seen a paradigm shift as a result of the introduction of artificial intelligence (AI). This thorough analysis looks at the various ways that AI-driven technologies affect every phase of the pharmaceutical life cycle. It talks about how machine learning algorithms, data analytics, and predictive modeling can be used to improve formulation development, speed up drug discovery, increase manufacturing efficiency, guarantee strict quality control procedures, and transform post-market surveillance techniques. This study provides important insights into the changing dynamics of drug development and regulatory practices in the age of AI-driven innovation by outlining the developments, difficulties, and potential applications of AI in the pharmaceutical industry.

Keywords: Artificial intelligence (AI), Machine learning, Drug discovery, Dosage form testing, Pharmacokinetics, Pharmacodynamics.

ICTJ-P-002

HEPATOPROTECTIVE ACTIVITY OF *VITEX NEGUNDO* AND *HYGROPHILA AURICULATA* EXTRACTS IN COMBINATION

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ABSTRACT

The hepatoprotective potential of *Vitex negundo* and *Hygrophila auriculata* extracts, either individually or in combination, was investigated to evaluate their efficacy in protecting the liver against oxidative stress-induced damage. The study utilized animal models of liver damage induced by hepatotoxic agents, such as carbon tetrachloride (CCl_4). The animals were treated with various doses of *Vitex negundo* and *Hygrophila auriculata* extracts, both separately and in combination, and assessed for liver function and histopathological changes. The biochemical markers of liver function, including serum transaminases (ALT, AST), alkaline phosphatase (ALP), total bilirubin, and total protein levels, were measured. The results demonstrated that the combination of *Vitex negundo* and *Hygrophila auriculata* extracts provided significant protection against elevated liver enzymes and oxidative stress markers compared to the individual treatments. Histological examination showed a marked reduction in liver damage, with less inflammation, necrosis, and fibrosis in the combined extract treatment group. The combined extract exhibited superior hepatoprotective activity, suggesting a synergistic effect between the two plants. This study highlights the potential of *Vitex negundo* and *Hygrophila auriculata* extracts as natural hepatoprotective agents and their possible therapeutic application in managing liver-related disorders.

Keywords: *Vitex Negundo*, *Hygrophila auriculata*, Hepatoprotective, Antioxidant, Liver regeneration, Phytochemicals.

ICTJ-P-003

FORMULATIOM AND EVALUATION OF ORAL TABLETS OF MEROPENEM AND AZITHROMYCIN DRUG COMBINATION

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ABSTRACT

The formulation and evaluation of an oral dosage form combining *Meropenem* and *Azithromycin* were undertaken to explore a novel treatment strategy for infections requiring broad-spectrum antibacterial coverage. Meropenem, a carbapenem antibiotic, is effective against a wide range of bacterial pathogens, while Azithromycin, a macrolide antibiotic, targets both Gram-positive and Gram-negative bacteria. The objective of this study was to develop a stable and effective fixed-dose combination (FDC) tablet of these two antibiotics and evaluate its pharmaceutical properties. Various formulations were prepared using appropriate excipients, and the resulting tablets were subjected to a series of pre-formulation and post-formulation evaluations, including content uniformity, dissolution testing, hardness, friability, and disintegration time. The FDC tablets were characterized for their physicochemical properties, and in-vitro dissolution studies were conducted to ensure rapid and complete release of both drugs. The formulations complied with the compendia specifications for weight uniformity, hardness, disintegration, and dissolution. Stability studies conducted at accelerated conditions confirmed the stability of the tablets over a specified period. The combination of *Meropenem* and *Azithromycin* in the oral dosage form demonstrated promising results in terms of bioavailability, stability, and ease of administration, suggesting its potential clinical utility for treating a wide array of bacterial infections. The study concludes that the developed FDC tablet of *Meropenem* and *Azithromycin* is a viable and effective oral dosage form for combined antibacterial therapy.

Keywords: Meropenem, Azithromycin, Oral Dosage Form, Fixed-Dose Combination, Antibiotics, Pharmaceutical Formulation, Dissolution Testing.

ICTJ-P-004

EXTRACTION AND PHARMACOLOGICAL EVALUATION OF *PLUMBAGO ZEYLANICA* EXTRACTS

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ABSTRACT

Plumbago zeylanica, commonly known as Ceylon leadwort, is a widely used medicinal plant with significant pharmacological properties, including anti-inflammatory, antimicrobial, and anticancer effects. This study aimed to evaluate the phytochemical profile, biological activity, and sustainable production methods for *Plumbago zeylanica* extracts. Standardized extracts were prepared using solvents like ethanol and methanol, and their phytochemical constituents were analyzed using high-performance liquid chromatography (HPLC) and gas chromatography-mass spectrometry (GC-MS). In terms of biological activity, organic cultivation resulted in extracts with up to 25% higher antioxidant activity (DPPH assay) and a 30% increase in antimicrobial activity against *Staphylococcus aureus* and *Escherichia coli* compared to conventionally grown plants. The cytotoxic effects of the extracts were evaluated on human cancer cell lines (A549 and MCF-7), and the organic extracts exhibited a significant reduction in cell viability, with an IC_{50} of 25 µg/mL for A549 cells. Sustainable production methods, such as organic farming and hydroponics, not only enhanced the bioactive yield but also demonstrated reduced environmental impact by minimizing the use of chemical fertilizers and pesticides. This study highlights the potential of *Plumbago zeylanica* extracts as a source of bioactive compounds and advocates for sustainable cultivation practices that could enhance both the ecological and economic viability of producing medicinal plants.

Keywords: *Plumbago zeylanica*, Antidiarrhoeal activity, Phytochemicals, Plumbagin, Traditional medicine, Therapeutic potential

ICTJ-P-005

FORMULATION DEVELOPMENT, PHARMACOLOGICAL EVALUATION AND CHARACTERIZATION OF *ECLIPTA ALBA* PHYTOSOMES

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ABSTRACT

Eclipta alba, a traditional medicinal herb, has been extensively studied for its hepatoprotective, anti-inflammatory, and antioxidant properties. This study aimed to develop a novel formulation of *Eclipta alba* extracts, evaluate its pharmacological effects, and characterize the active constituents responsible for its therapeutic properties. The formulation of *Eclipta alba* was developed into a phytosomes, with various excipients tested for compatibility through pre-formulation studies. The phytosomes were evaluated for physicochemical properties, including dissolution profile. The optimized formulation showed a uniform weight (± 5%) and dissolution, with 85% of the active ingredients releasing within 8hrs. Pharmacological evaluations were conducted on the optimized formulation, including in-vitro and in-vivo studies. In-vitro antioxidant activity was measured using the DPPH (2,2-diphenyl-1-picrylhydrazyl) assay, with the formulation demonstrating an IC_{50} value of 28 µg/mL, indicating significant antioxidant potential. Anti-inflammatory activity was evaluated using the protein denaturation method, where the formulation exhibited a 40% reduction in denaturation at 100 µg/mL. Hepatoprotective activity was tested using a CCl_4-induced liver toxicity model in rats, with the formulation showing a 35% decrease in serum ALT and AST levels compared to the control group. Histopathological analysis revealed significant protection against liver damage.

Keywords: *Plumbago zeylanica*, Antidiarrhoeal activity, Phytochemicals, Plumbagin, Phytosomes, Therapeutic potential

ICTJ-P-006

DESIGN AND DEVELOPMENT OF IN SITU GELLING SYSTEMS FOR THE TREATMENT OF OCULAR PAIN AND INFLAMMATION

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ABSTRACT

This study focuses on designing and developing in situ gelling formulations for ocular administration that can effectively alleviate pain and inflammation associated with various eye conditions. The gelling system was evaluated for physicochemical properties including gelation time, viscosity, drug release profile, and pH. The gelation was confirmed to occur upon instillation into the eye, with an optimal gelation time of approximately 5 seconds. The gel formulations exhibited controlled drug release over a period of 12 hours, with an initial burst release followed by sustained drug release, which is ideal for reducing the frequency of administration. The viscosity of the formulations was optimized to ensure easy instillation and comfort upon application. The pH of the formulations was maintained between 6.5 and 7.4, ensuring compatibility with the ocular environment. In-vitro drug release studies were conducted using a modified Franz diffusion cell, showing a sustained release pattern, with more than 80% of the drug released within 12 hours. *In-vivo* studies were carried out using a rabbit model to assess the ocular irritation, retention time, and therapeutic efficacy. The in situ gels demonstrated no significant ocular irritation and were retained in the eye for an extended period compared to conventional eye drops. Therapeutic efficacy was evaluated through a reduction in ocular inflammation (using a conjunctival edema model) and pain (using a corneal pain model). The in situ gelling system significantly reduced both ocular inflammation and pain, with results comparable to those of commercially available eye drop formulations.

Keywords: *In Situ* Gelling Systems, Ocular Pain, Inflammation, Controlled Drug Release, Sodium Alginate, Carbopol, Hydroxypropyl Methylcellulose (HPMC).

ICTJ-P-007

DEVELOPMENT AND CHARACTERIZATION OF MULTIFUNCTIONAL NANOTHERANOSTIC DENDRIMERS

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ABSTRACT
This study focuses on the design, synthesis, and characterization of dendrimer-based nanotheranostic platforms for targeted drug delivery, aiming to enhance the specificity, efficacy, and imaging capabilities for breast cancer therapy. The dendrimers were synthesized using a poly (amidoamine) (PAMAM) core, which was modified with doxorubicin and gadolinium for MRI imaging. The conjugation of these agents was confirmed using various spectroscopic techniques. The resulting nanotheranostic dendrimers were characterized for their size, surface charge, drug encapsulation efficiency, and stability. In vitro cytotoxicity studies demonstrated that the drug-loaded dendrimers showed a dose-dependent reduction in cell viability, with significantly higher cytotoxicity in HER2-positive breast cancer cell lines (e.g., SK-BR-3) compared to HER2-negative cell lines, indicating the targeted delivery capability of the system. The release profile of doxorubicin from the dendrimers exhibited a sustained release pattern over a period of 48 hours, with a higher release rate in acidic environments, mimicking the tumor microenvironment. Imaging studies using fluorescence and magnetic resonance imaging (MRI) revealed that the dendrimers were effectively internalized by the cancer cells and could be tracked *in vivo,* offering both diagnostic and therapeutic benefits.
Keywords: Nanotheranostics, Dendrimers, Breast cancer, Targeted delivery, HER2, Doxorubicin, Imaging, Fluorescence, MRI.

ICTJ-P-008

DESIGN, DEVELOPMENT AND EVALUATION OF NANOSTRUCTURED LIPID CARRIERS OF ANTICANCER DRUG

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ABSTRACT
This study aims to design, develop, and evaluate NLCs loaded with an anticancer drug for the treatment of skin cancer. The NLCs were formulated using a solvent diffusion technique, optimized for particle size, drug encapsulation efficiency, and release rate. The resulting NLCs were characterized for their physicochemical properties, including particle size, surface charge (zeta potential), morphology, drug loading, and encapsulation efficiency. The particle size was found to be approximately 150-200 nm, with a narrow size distribution, which is ideal for dermal application, enhancing drug deposition in skin layers. Drug loading and encapsulation efficiency were determined to be 85% and 90%, respectively, indicating a high potential for effective drug delivery. In vitro release studies showed that the NLCs exhibited a sustained drug release over a 48-hour period, with an initial burst release followed by a slow and controlled release phase, which is favorable for prolonged therapeutic action in the treatment of skin cancer. The cytotoxicity of the NLC formulation was evaluated using human skin cancer cell lines (A431) in vitro. The results demonstrated a dose-dependent reduction in cell viability, with the NLC formulation showing enhanced anticancer activity compared to free doxorubicin. The cell uptake of the NLCs was confirmed using fluorescence microscopy, revealing effective internalization by the cancer cells.
Keywords: Nanostructured Lipid Carriers (NLCs), Doxorubicin, Skin Cancer, Drug Delivery System, Drug Encapsulation, Sustained Release.

ICTJ-P-009

NANOSPONGE-LOADED GELS FOR TOPICAL DRUG DELIVERY: A REVIEW OF FORMULATION STRATEGIES AND CLINICAL POTENTIAL

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ABSTRACT

To explore the development, formulation, and therapeutic applications of nanosponge-loaded gels, with a focus on their advantages over conventional topical delivery systems, and to identify challenges and future prospects in this field. This review consolidates data from recent research articles, patents, and clinical studies to evaluate the formulation principles of nanosponge gels. Key aspects covered include nanosponge synthesis, gel matrix integration, drug loading, release mechanisms, and skin permeation characteristics. Nanosponge-loaded gels demonstrate significant advantages in enhancing drug solubility, controlled release, and site-specific delivery for treating dermatological conditions. Studies reveal promising applications in managing skin disorders such as psoriasis, acne, and fungal infections, with reduced systemic side effects. Advances in polymer selection, particle size optimization, and biocompatibility have further improved the clinical potential of these systems. Nanosponge-loaded gels represent a promising platform for topical drug delivery, combining the benefits of nanotechnology and gel-based formulations. While preclinical studies are encouraging, challenges related to large-scale production, regulatory approval, and long-term safety need to be addressed for their widespread clinical adoption.

Keywords: Nanosponge, gel, Topical drug delivery, Controlled release, Dermatological applications.

ICTJ-P-010

ROLE OF THE PHYTOCONSTITUENTS IN THE MANAGEMENT OF HYPERLIPIDEMIA

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ABSTRACT

Hyperlipidemia is an abnormal increase in lipid levels in the plasma due to an anomaly in lipid metabolism or transport. This can result in several consequences, including arteriosclerosis, coronary heart disease, cerebral infarction, and eyesight impairment, among others. Diabetes, insulin resistance, and obesity are all associated with hyperlipidemia, which is a substantial risk factor for coronary heart disease. Statins, fibrates, and nicotinic acid are commonly used as anti-hyperlipidemic drugs with liver damage as a common side effect. Plant-derived bioactive chemicals provide a natural substitute for traditional therapies and are often linked to fewer adverse effects than conventional drugs. For these reasons, investigation of phytoconstituents has come to light as a possible therapeutic agent. Because phytochemicals have several mechanisms of action that target distinct aspects of lipid metabolism, it is feasible to attribute the success of phytochemicals in the therapy of hyperlipidemia to the fact that they target these aspects. Constituents that may lower blood glucose levels have been found in several investigations. These bioactive compounds include alkaloids, polysaccharides, polyphenols, flavonoids, and steroidal saponins. The primary objective of this study is to explore natural products and the mechanism by which they reduce lipid levels. By providing an overview of these bioactive components and their mode of action, this review provides a point of reference for the continued research and development of phytoconstituents.

Keywords: Hyperlipidemia, Cardiovascular disease, Cerebro-vascular diseases, Bio-active substances.

ICTJ-P-011

DEVELOPMENT AND EVALUATION OF ISONIAZID AND PYRIDOXINE ORAL DISPERSIBLE TABLETS

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ABSTRACT
A fixed-dose combination (FDC) tablet of oral dispersible isoniazid 50 mg/pyridoxine 6.25 mg was developed for Isoniazid Preventive Therapy. Nine batches of isoniazid/pyridoxine FDC tablets, each with an average weight of 125 mg and varying in the composition of three superdisintegrants, were formulated. Pre-formulation studies were conducted on the powder blend using Fourier transform infrared spectroscopy before the blend was directly compressed. Pharmaceutical parameters of the tablets were evaluated against compendial standards. The pre-formulation studies indicated no significant incompatibilities between the drugs and excipients. All batches met compendial specifications for weight uniformity, hardness, and disintegration, while three batches passed the friability test. Only Batch Nine, containing croscarmellose and sodium starch glycolate superdisintegrants in a 3:5 ratio, met the assay specification. Batch Nine tablets contained 96% of isoniazid and 95% of pyridoxine, both within the United States Pharmacopeia (USP) Citation2016 monograph limits of 90–110% for isoniazid and 95–115% for pyridoxine. In in-vitro dissolution studies, 88.7% of isoniazid and 105.3% of pyridoxine from Batch Nine tablets dissolved within 30 minutes, adhering to the USP Citation 2016 dissolution specifications. The isoniazid/pyridoxine FDC with croscarmellose sodium and sodium starch glycolate superdisintegrants was the most successful formulation, as it met all evaluated compendial criteria, suggesting its potential clinical utility.
Keywords: Isoniazid, Pyridoxine, Fixed-Dose Combination, Oral Dispersible Tablets.

ICTJ-P-012

DIGITAL TWIN TECHNOLOGY: SHAPING THE FUTURE OF CARDIOVASCULAR HEALTH INTERVENTIONS

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ABSTRACT
Digital twin technology is an innovative approach revolutionizing cardiovascular health interventions by creating dynamic virtual replicas of an individual's cardiovascular system. Integrating real-time data from imaging, wearable devices, and electronic health records, digital twins enable precise simulations of physiological functions, disease progression, and responses to interventions. This patient-specific technology provides clinicians with a powerful tool to predict outcomes, personalize treatment plans, and optimize surgical and therapeutic interventions, addressing the complexities of cardiovascular diseases (CVDs)—the leading cause of global mortality. Applications extend from pre-surgical planning and chronic disease management to accelerating drug discovery and enhancing clinical trials by simulating drug effects with unparalleled accuracy, reducing the reliance on traditional testing methods. This poster explores the underlying principles, current advancements, and future prospects of digital twin technology in cardiovascular care, emphasizing its transformative potential in advancing precision medicine. By bridging the gap between virtual and real-world healthcare, digital twins promise to shape the future of CVD management, offering more efficient, patient-centric, and predictive healthcare solutions.
Keywords: Digital twin technology, Cardio-vascular health, Precision medicine, Predictive modeling, Personalized healthcare.

ICTJ-P-013

A SYSTEMIC OVERVIEW OF ETHOSOMES: AN ADVANCED FORM OF LIPOSOMES

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ABSTRACT

Ethosomes are advanced and modified form of liposomes which are used as carriers for transdermal targeted drug delivery. These are firstly developed by Touitou et al to enhance the delivery of both hydrophilic and hydrophobic drugs. These are soft and flexible lipid vesicles containing phospholipids, water; and alcohol in high concentrations of about 20-45% approximately. Ethosomes are easy to prepare through three different methods named as cold method, hot method and thin film hydration method which provides enhanced permeation of drugs, high drug loading capacity, better control over drug release, non-invasive drug delivery and are able to encapsulate a broad range of molecules. Another key advantage of ethosomes is that they provide excellent patient compliance since ethosomes can be used in a semi-solid form, such as gel or cream. Ethosomes demonstrated positive results and the capability to enhance the distribution of both hydrophilic and lipophilic drug molecules. The current study provides a comprehensive review of ethosomes including their distinctive properties, composition, methods of preparation, physicochemical properties, methods of penetration and the areas of their application in pharmaceutical and cosmeceutical industries. This study examines the objectives of ethosomal research as one way of achieving the goal of developing non-invasive drug delivery systems and reports on recent advancements, issues and future prospects. Thus there is sufficient evidence of the effectiveness of ethosomal therapy in being viable nanocarriers for drug delivery.

Keywords: Ethosomes, Topical formulations, Transdermal drug delivery, Nano Vesicles, Novel drug delivery system.

ICTJ-P-014

THE HEALTH BENEFITS OF BILBERRY

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ABSTRACT

Bilberry (*Vaccinium myrtillus*) is a nutrient-rich berry known for its potential health-promoting properties. Rich in anthocyanins, vitamins, and antioxidants, bilberry has been studied extensively for its effects on various aspects of human health. According to studies, bilberries may improve blood vessel function, lower cholesterol, and reduce oxidative stress and inflammation, all of which may contribute to cardiovascular health. Its higher anthocyanin content has also been associated with improved retinal health and vision, especially in lowering eye strain and delaying the onset of age-related macular degeneration. Bilberry is a promising immunological and digestive health agent because it has antibacterial and anti-inflammatory properties. By reducing oxidative damage in the brain, it may help postpone neurodegenerative disorders like Alzheimer's. This is supported by emerging research. Additionally, studies have shown that it improves glucose metabolism, which may help manage type 2 diabetes. Bilberry's effectiveness varies according to preparation, dosage, and individual health circumstances, despite encouraging results. To validate its advantages and create uniform standards for its application, more clinical research is required. To sum up, bilberry exhibits great promise as a natural dietary supplement to support general health and fend off chronic illnesses.

Keywords: Bilberry, Anthocyanin, Health benefit, Diabetes, Anti-Inflammatory, Anti-oxidant.

ICTJ-P-015

CURRENT TRENDS ON SOLID DISPERSION TECHNIQUE

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ABSTRACT

Solid dispersion is the dispersion of one or more hydrophobic active substances in a hydrophilic inert carrier at a solid state made using a solvent, melting solvent technique, or melting (fusion) method. Improving the solubility of these BCS II and IV class medicines is the most difficult task. Solid dispersion, particle size reduction (Micronization and Nanonization), salt production, pH adjustment, polymorph and pseudo-polymorph formation, complexation method, surfactant, and co-solvent are some of the methods utilized for this aim. Pharmaceutical excipients that are utilized to make solid dispersions come in a wide variety of hydrophilic and hydrophobic carriers. It is possible to develop controlled release solid dispersions or instantaneous release solid dispersions based on the kind of carriers. At first, crystalline carriers were employed, which later gave way to amorphous solid dispersions with improved characteristics. Poorly soluble medications can have their oral bioavailability increased via amorphous solid dispersions (ASDs). However, because of a lack of fundamental knowledge about the mechanisms driving drug release and absorption in vivo, their utilization in drug development is rather uncommon. Enhancing the solubility of BCS II medications by a variety of techniques and assessing it for a range of parameters is the goal of the current effort.

Keywords: Solid dispersion techniques, BCS II, amorphous solid dispersions, hydrophilic and hydrophobic carriers.

ICTJ-P-016

EXPLORING THE POTENTIAL OF HERBAL NANOGEL IN EYE DISORDER MANAGEMENT: A NOVEL THERAPEUTIC STRATEGY

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ABSTRACT

Eye disorders encompass a broad spectrum of problems that impact the anatomy or function of the eye, resulting in discomfort or impaired vision. Common conditions include glaucoma (high eye pressure that can harm the optic nerve), diabetic retinopathy (diabetic retinal damage), cataracts (clouding of the eye lens), refractive defects (such as nearsightedness and farsightedness), and dry eye syndrome. Although many potent drugs are available to treat most of ocular complaints, there are many ocular barriers such as tear film, corneal, conjunctiva, and blood-ocular barriers that hinder their therapeutic efficacy. Conventional eye drops are wasted by blinking and tear flow. Therefore, their bioavailability is minimized to less than 5% .The limitations of conventional ocular delivery systems, can be greatly overcome by nanotechnology. Nanogel emerged as an innovative approach over the conventional treatment for ocular drug delivery, by providing dual benefits of hydrogels and nanoparticles (NPs) in one dosage form. Many illnesses and conditions have been treated with natural medicines that contain active pharmaceutical substances with different molecular compositions. They are thought to be efficient treatments and preventative measures for a number of eye conditions. Many efforts have been made to find novel herbal treatments from a variety of sources because of their effectiveness, low cost, and lack of adverse effects.

Keywords: Nanotechnology, Ocular Drug Delivery, Retinopathy, Bioavailability, Ocular barriers.

ICTJ-P-017

DEVELOPMENT AND CHARACTERIZATION OF A HERBAL NANOEMULGEL FOR EFFECTIVE PSORIASIS MANAGEMENT

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ABSTRACT
Psoriasis is an auto-immune and chronic inflammatory disease affecting 2-3% population of the world. It is a skin disease with a strong genetic predisposition. It can be mild-moderate or severe depending on the area affected of the skin. UV spectrophotometric method was developed for the quantitative estimation of herbal drug in formulation. FTIR was used to assess drug excipient compatibility. High Speed Homogenization method was used in the formulation for nanoemulgel by integrating a nanoemulsion system comprising oil, surfactant, and co-surfactant with a gelling agent for enhanced topical delivery. Box-Behnken design, were used to optimize these variables and achieve desired outcomes such as particle size, Polydispersity Index, Entrapment Efficiency. The optimized nanoemulgel exhibited a particle size below 200 nm, enhanced skin permeation, gel showed excellent spreadability and patient compliance potential. From this it can be concluded that topical nanoemulgel is a convenient drug delivery system. As it increases skin permeability and also helps in controlled release of the drug. Synthetic drugs used for Psoriasis treatment lead to severe unwanted adverse effects. The use of herbal therapy in the developed region enhanced to a great extent and showed better efficacy towards psoriasis management.

Keywords: Nanoemulgel, Spreadability, Drug delivery system, Psoriasis, Box-Behnken design.

ICTJ-P-018

CHITOSAN HYDROGELS: A NOVEL APPROACH TO ACCELERATED WOUND HEALING

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ABSTRACT
Wound healing is a complex physiological process involving hemostasis, inflammation, proliferation, and remodeling. Wound dressings are necessary to protect the wound sites and speed up the healing process. Hydrogels have become one of the most promising options for treating wounds. Hydrogel may absorb and hold onto more water without dissolving or losing its three-dimensional structure, preventing secondary damage and accelerating wound healing when compared to conventional wound dressings like gauze and bandages. Chitosan, a natural polysaccharide derived from chitin, is known for its excellent biocompatibility, biodegradability, and antimicrobial properties. Its intrinsic ability to accelerate wound healing stems from its role in promoting cell adhesion, migration, and proliferation while reducing inflammation and bacterial infections. When formulated into a hydrogel, chitosan's structural characteristics allow for superior moisture retention and controlled drug delivery, further enhancing its therapeutic potential. This study focuses the potential of chitosan hydrogels as a novel and effective approach to accelerate wound healing through their unique biocompatible, antimicrobial, and regenerative properties. Future studies can focus on optimizing chitosan hydrogels, incorporating therapeutic agents and exploring their potential in diverse wound healing applications.

Keywords: Wound healing, Hydrogels, Chitosan, Tissue Regeneration.

ICTJ-P-019

GENETIC MODIFICATION OF STARCH FOR SUSTAINABLE DRUG DELIVERY SYSTEM

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ABSTRACT

Starch, a natural polymer widely available in plants, is gaining attention as a key material for sustainable drug delivery systems rely on its compatibility with biological systems, ability to degrade naturally, and lack of toxicity. However, native starch has significant limitations, including low mechanical strength, poor thermal stability, and inconsistent drug release profiles, which hinder its effectiveness in advanced drug delivery applications. By modifying starch biosynthetic pathways in plants, we can regulate the amylose-to-amylopectin ratio. These modifications enhance starch's solubility, thermal stability, and controlled release capabilities, making it more suitable for drug delivery applications. For example the genetic modification of maize starch by manipulating the expression of key genes in starch biosynthesis, including *granule-bound starch synthase I (GBSSI)* and *starch branching enzyme IIb (SBEIIb)*. Using RNA interference (RNAi) and CRISPR/Cas9 genome editing, researchers successfully increased the amylose content of maize starch while maintaining agricultural productivity. This study highlights how tailored genetic modifications can unlock the full potential of starch as a versatile and eco-friendly material for next-generation drug delivery systems, reducing dependency on synthetic polymers.

Keywords: Genetic modification, Starch modification, Drug delivery, Crosslinking.

ICTJ-P-020

IN-SILICO EVALUATION OF PHYTOCHEMICALS AS POTENTIAL TREATMENTS FOR TYPE 2 DIABETES

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ABSTRACT

Type 2 diabetes (T2D) is an archetypic chronic metabolic disease characterized by insulin resistance and glucose intolerance. Peroxisome proliferator-activated receptor (PPARγ) is a nuclear receptor involved in glucose and lipid metabolism and is an important target for T2D therapy. In the study, molecular docking of 176 phytochemicals was done against the PPARγ receptor and binding affinities were evaluated. Molecular docking is an *in-silico* approach that aims to predict the preferred orientation of a ligand when bound to a target receptor of a known 3D structure; a lower docking score corresponds to a higher binding affinity. Well-established phytochemicals, including flavonoids, phenolic compounds, and alkaloids, for antidiabetic effect were taken. 'idock' was used for molecular docking analysis and some of the potential phytochemicals were identified to show high binding efficiency to the PPARγ receptor. Among the various phytochemicals, Silybin, Baicalin, Silymarin, and Salvianolic acid B showed the highest docking score out of the rest. Such phytochemicals are potentially interesting entities to be evaluated on pharmacological activities for treatments of T2D. The *in-silico* findings from this study demonstrate that various phytochemicals effectively bind to PPARγ, as a therapeutic target for the treatment of T2D and lay the groundwork for developing novel, targeted drug delivery of natural pharmaceutical compounds.

Keywords: Type 2 diabetes, PPARγ, Molecular Docking, Targeted Drug Delivery, Phytochemicals.

ICTJ-P-021

LIPOSOME-BASED TARGETED THERAPIES FOR CARDIOVASCULAR DISEASES: A NOVEL APPROACH

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ABSTRACT

Liposomes are spherical vesicles composed of phospholipid bilayers that have the ability to encapsulate either hydrophilic or hydrophobic drugs, shielding them against degradation, reducing systemic toxicity, and allowing for controlled and sustained delivery. We have harnessed the use of liposomes to tackle major cardiovascular diseases, such as atherosclerosis, myocardial infarction, and hypertension. Functionalized liposomes with targeting ligands such as peptides, antibodies, or aptamers are directed to specific biomarkers on diseased cardiovascular tissues, enhancing specificity in treating the disease. Moreover, stimuli-responsive liposomes that release drugs upon environmental triggers such as pH changes, enzymatic activity, or heat activation ensure the drug's activation in pathological sites, which amplifies treatment efficacy. This has led to important progress, including liposomal carriers of anti-inflammatory drugs, statins, and genetic therapies, directed to atherosclerotic plaques, with effective reduction of side effects and better therapeutic outcomes. Additionally, the delivery of liposomes with regenerative molecules such as growth factors or stem cell-derived exosomes could prove beneficial in repairing myocardial tissue post-infarction. Despite these promising developments, scalability, storage stability, and clinical translation remain to be overcome. We have discussed the potential of liposome-based targeted therapies for CVDs, highlighting their design, functionality, and translational applications for the improvement of cardiovascular health outcomes.

Keywords: Cardiovascular diseases (CVDs), Liposome-based drug delivery, Targeted therapy, Functionalized liposomes.

ICTJ-P-022

ORGANS ON CHIPS: BETTER UP BRINGS OF DRUG

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ABSTRACT

Organs-on-chips (OoCs) are cutting-edge, micro-engineered devices designed to replicate human organ functions on a miniature scale. By mimicking the architecture and conditions of human tissues, OoCs provide a more accurate platform for studying organ function, disease mechanisms, and drug responses, offering a better alternative to traditional cell cultures and animal models. Using microfluidic technology, these chips create tiny channels that control the flow of fluids and nutrients, simulating human body conditions. The key objectives of Organs-on-chips (OoCs) are to replicate human organ function, enhance drug testing, improve disease modeling, enable personalized medicine, reduce animal testing, study multi-organ interactions, and accelerate preclinical research, advancing biomedical research and drug development. Recent advancements show that OoCs can replicate human organ functions with high precision, predicting drug toxicity, assessing metabolic responses, and studying diseases. This technology has the potential to reduce animal testing. Despite these limitations, ongoing research suggests a promising future for OoCs in improving drug testing, personalized medicine, and disease research.

Keywords: Organs-on-chips, Microfluidic technology, Drug testing, Disease modeling.

ICTJ-P-023

ELECTROSPINNING NANOFIBERS: METHOD AND APPLICATIONS

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ABSTRACT

Electrospinning is a highly adaptable technique used to produce ultrafine fibers with diameters ranging from nanometers to micrometers. This method utilizes a high-voltage electric field to stretch a polymer solution or melt into fine fibers, which can then be infused with active pharmaceutical ingredients (APIs). During electrospinning, the polymer solution or melt is subjected to an electric field, which causes the charged polymer to elongate into fibers that are collected onto a surface, forming nonwoven mats. Key process parameters such as polymer concentration, voltage, and the distance between the needle and collector influence the resulting fiber size and shape. The primary aim of this work is to explore the electrospinning process and its capability to generate fibers with specific attributes, such as controlled diameter, morphology, and mechanical strength, for diverse industrial and medical uses. The findings indicate that factors like polymer concentration, solvent choice, applied voltage, and collector distance have a significant impact on fiber formation, affecting characteristics such as porosity, alignment, and fiber diameter. By fine-tuning these parameters, this study demonstrates the successful creation of electrospun fibers with tailored structural features and functional properties, opening up new opportunities for advanced material development.

Keywords: Electrospinning, Nanofibers, Polymer solutions, Fabrication.

ICTJ-P-024

POLYMER BASED NANOTHERANOSTICS FOR DIAGNOSIS AND TREATMENT OF CANCER

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ABSTRACT

Nanotheranostics is an emerging field that combines therapeutic and diagnostic capabilities in one platform, a nanoscale-based one, allowing the grand potential of nanomedicine. The integration of therapeutic delivery with the real-time monitoring of responses to treatments by nanotheranostics minimizes the danger of overdosing or under-dosing and will make it possible to establish more precise and effective healthcare solutions. Among many, polymer-based nanomaterials have gained increasing interest in recent years because of their potential in carrying therapeutic agents as well as imaging probes. Such materials allow the development of multi-functional theranostic systems to address complex medical challenges. We discuss recent advances in polymer-based nanotheranostics with an emphasis on their applications in cancer research. Polymer nanomaterials are widely applied in drug and gene delivery, photodynamic therapy, and therapy where improvements in therapeutic efficacy are needed, taking into account their ability to be compatible with biological systems, and their properties are easily modified. Polymer-based nanotheranostic platforms represent a big leap forward in personalized medicine, allowing multifunctionality with the possibility of real-time feedback for enhancing patient outcome and advancing nanomedicine.

Keywords: Drug delivery, Imaging, Polymer, Nanomedicine, Cancer, Theranostics.

ICTJ-P-025

IMMUNOLOGICAL IMPACT OF HISTOTRIPSY IN CANCER TREATMENT

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ABSTRACT

Cancer is still the second biggest killer in the world. Despite all the progress made in diagnosing and treating cancer in the last century, it is hard to overestimate the effect of metastatic disease and the importance of developing drugs that not only target and shrink primary tumors but also address circulating tumor cells and distant metastases. Immune-modulating therapies have thus become an integral part of the cancer treatment arsenal to fulfill this need. Focal ablation therapies, which include several methods using physical or mechanical techniques for destroying tumors, are the newest promising approach. The ablation technology known as histotripsy has demonstrated potential as a debulking therapy in the past decade. This technology is non-invasive, non-ionizing, and non-thermal, and it is guided by ultrasound. With the advancement in histotripsy techniques, researchers have discovered a whole array of immune responses that accompany the treatment including release of DAMPs and anti-tumor mediators, shifts in local immune cell populations, development of systemic immune responses, and even a synergistic effect when combined with checkpoint inhibitors. These findings indicate that histotripsy may provide beneficial immune effects across multiple murine tumor models and might have the potential to replicate this outcome in a clinical scenario. In summary, these therapies based on histotripsy seem to modulate immunity positively and offer hope in treating cancer.

Keywords: Cancer, Tumor cells, Ablation therapies, Histotripsy, Checkpoint inhibitors, Immunity.

ICTJ-P-026

NANOPARTICLE - DRUG DELIVERY SYSTEM IN CANCER TREATMENT

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ABSTRACT

Nanoparticle-based drug delivery systems have a number of advantages compared to traditional drugs, including greater stability, improved biocompatibility and better targeting. Such systems make use of the enhanced permeability and retention (EPR) effect which enables the tumor site to be targeted effectively because of the relatively leaky blood vessels within tumors. The emergence of hybrid nanoparticles that integrate different types of nanoparticles has revolutionized drug delivery technology, enhancing the accuracy and effectiveness of treatment even further. In terms of cancer therapy, nanoparticle-based systems may be beneficial in the treatment of drug resistance, which is a common hurdle associated with chemotherapy. Factors that contribute to the cancer drug resistance mechanisms are the overproduction of drug efflux transporters, impairment of the apoptotic pathways and the tumor's microenvironment which is usually low in oxygen levels. As more drug resistance mechanisms have been elucidated, there is a convergence trend where peek nanoparticles are targeting these specific systems more accurately. Also, there is an increasing concern on nanoparticles use in immunotherapy which is becoming a significant cancer treatment modality.

Keywords: Cancer treatment, Targeted drug delivery, Nanoparticles, Controlled release.

ICTJ-P-027

CHITOSAN NPS APPLICATION AS NANOCARRIER THAT ENHANCE THE THERAPEUTIC POTENTIAL FOR TREATING INFLAMMATORY BOWEL DISEASE

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ABSTRACT

Inflammatory bowel disease (IBD), which encompasses ulcerative colitis (UC) and Crohn's disease (CD), is a chronic condition characterized by the persistence of gastrointestinal inflammation and results in considerable morbidity for the patient. Traditional treatments, including antibiotics, NSAIDs, biological agents, and immunomodulators, have provided symptomatic relief of acute manifestations but often lose efficacy over the long term and are marred by side effects secondary to cumulative toxicity. In response to these challenges, nanoparticle (NP)-based drug delivery systems have emerged as promising alternatives for IBD management. This review examines the emerging role of chitosan NP-mediated drug delivery in IBD therapy, focusing on various strategies such as microbiota targeting, ligand-receptor interactions, pH sensitivity, biodegradability, and optimization of size and charge properties. The most recent advancements in animal models are promising; however, there are some challenges regarding stability, *in vivo* performance, and scalability. Moreover, this review will cover future directions in which chitosan NP-based systems could be further developed to overcome the present limitations, opening new avenues toward more effective, targeted, and personalized IBD therapies.

Keywords: Chitosan nanoparticle, Ulcerative colitis, Crohn's disease, Nanocarriers.

ICTJ-P-028

TISSUE ENGINEERING AND REGENERATIVE MEDICINES

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ABSTRACT

In this "Year in Review," we highlight key innovations and trends that are shaping the future of TERM. Building from past analyses, we highlight five major themes that represent the forefront of the field: pluripotent stem cells—efforts to translate them into therapies, tissue engineering—development of complex scaffolds and advanced materials, directing cell phenotype—using growth factors and biomolecules to guide cell behavior, characterization—advancements in imaging technologies, and translation—from preclinical research to clinical implementation. This review provides a comprehensive overview of TERM research-from established applications to early-stage prototypes-it points out key issues and opportunities for future development. This review also references studies that have yet to gain wide citation but are poised to make important contributions to TERM. As can be seen in the timeline provided below, TERM has emerged from a concept in its infancy to an interdisciplinary work of scientists and engineers and physicians working toward creating biological substitutes for tissue repair and replacement over the past few decades. Successes have been attained such as skin replacement and cartilage repair, but a long way still needs to be covered to translate these developments into clinically available treatments.

Keywords: Artificial organs, Cartilage, Liver, Skin, Stem cells.

ICTJ-P-029

THE EVOLUTION OF AI IN ONCOLOGY: SHAPING THE FUTURE OF ADVANCED CANCER THERAPY

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ABSTRACT

Artificial intelligence (AI) is revolutionizing the field of cancer nanotechnology, offering innovative solutions to address the challenges of conventional cancer treatments. While nanomedicine advancements have shown promise, concerns over potential side effects and increasing healthcare costs remain significant. AI enhances nanotechnology by enabling the collection and analysis of massive datasets, facilitating the design of precision nanomedicines tailored for cancer treatment. Through optimizing the drug development pipeline, improving drug synergy, and reducing nanotoxicity, AI-driven approaches enhance molecular profiling and improve the accuracy of early diagnosis. The study explores how AI optimizes the drug development pipeline by reducing nanotoxicity, improving drug synergy, and personalizing dosing regimens. A review of current patents and clinical trials highlights the real-world application of AI-driven nanotechnology in cancer care. Results demonstrate that AI enhances targeting capabilities and therapeutic efficacy while reducing treatment-related side effects.

Keywords: Artificial intelligence, Machine learning, Cancer therapy, Polymer, Nanomedicine, Targeted delivery, Nanotoxicity

ICTJ-P-030

SMART AND TARGETED DRUG DELIVERY SYSTEMS

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ABSTARCT

Delivering therapeutic compounds to targeted sites is challenging in the treatment of a wide range of diseases. Poor bio-distribution and lack of selectivity often plague conventional chemotherapy. These issues may be dealt with by the innovative strategies, smart drug delivery systems, which would effectively deliver drugs to the target site while protecting them from quick degradation or clearance and thus increased drug concentration in target tissues and reduced dosages required. Different types of smart drug delivery systems are active targeting, passive targeting, and dual targeting. A good smart drug delivery system that efficiently transports and distributes drugs consists of three main parts: drug delivery vehicles, therapeutic drugs, and targeting moieties. The most important part of the system is the drug delivery vehicles, which include liposomes, dendrimers, and viral vectors, among others, responsible for transporting the loaded drug effectively. Targeting moieties can be antibodies, polyethylene glycol, and other proteins that help in recognizing and selectively binding to the target cells for the drug to be released into the desired organs, tissues, or cells. However, the effectiveness of smart drug delivery systems can be influenced by several factors, such as pH, glucose levels, low oxygen availability, ions, enzymes, biological membranes, and the extracellular matrix at the target site. Therefore, to enhance the efficiency and clinical applicability of these smart drug delivery systems, further research is required, focusing on carefully selecting and designing and optimizing drug delivery vehicles, therapeutic drugs, and targeting moieties.

Keywords: Drug delivery vehicle, Smart drug delivery, Targeting moiety, Therapeutic drug.

ICTJ-P-031

HEALTHCARE REVOLUTION: ROBOTICS' CONTRIBUTION TO MEDICAL INNOVATION

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ABSTRACT

Robotics' incorporation into healthcare is transforming medical procedures by providing accuracy, effectiveness, and safety in telemedicine, diagnosis, surgery, and rehabilitation.. Healthcare institutions can increase patient throughput and maximize resource usage by implementing robotics to streamline operational procedures. This effectiveness improves the functioning of the healthcare system as a whole in addition to helping patients by cutting down on wait times. Healthcare robotics has several benefits, but its implementation requires addressing several issues and concerns. First and foremost, pricing is a major consideration because robotics systems might have high initial and ongoing costs. To properly justify these expenses, healthcare facilities must assess the return on investment. Second, to operate and smoothly incorporate robotic technologies into current medical practices, healthcare workers must receive specific training. Through this training, the robotic systems are used to their full potential, and their benefits for patient care are maximized. Thirdly, adherence to ethical principles and legal requirements is crucial. To ensure patient safety, data privacy, and ethical technology use, healthcare practitioners must ensure robotics systems comply with strict regulatory criteria. Lastly, robotics and automation play a major role in improving patient safety. Through precise surgical methods, sterile environment maintenance, and effective drug delivery, they help lower the risk of medication errors, infection, and consequences.

Keywords: Medical practices, Patient safety, Robotics, Telemedicine.

ICTJ-P-032

EXTRACTION OF PECTIN FROM BANANA PEEL FOR SUSTAIN AND CONTROLLED RELEASE DOSAGE FORMS FOR ANTICANCER ACTIVITY

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ABSTRACT

The use of natural biopolymers in drug delivery systems has attracted a lot of interest, particularly when it comes to controlled and sustainable drug release. With an emphasis on its anticancer properties, this study investigates the potential of pectin produced from banana peels as a biopolymer for applications requiring regulated and prolonged release. An abundant agricultural waste, banana peels are high in pectin, a polymer with gelling and biocompatibility qualities. Banana peel pectin was used to deliver anticancer drugs in a way that allowed for a slow and steady release over time. Optimizing the controlled release profile reduced side effects and increased therapeutic efficacy. The formulation showed notable cytotoxic effects when evaluated for anticancer efficacy against a variety of cancer cell types. By guaranteeing extended exposure to the medication at the intended location, the sustained release mechanism raises the therapeutic index of the medication. The promise of drug delivery systems based on banana peel pectin as an economical, effective, and environmentally friendly method of cancer treatment is highlighted by this study. Although more research is required to examine in vivo efficacy and optimize release kinetics, the findings offer a potential basis for the creation of long-lasting, natural polymer-based drug delivery systems for the treatment of cancer.

Keywords: Banana peel, Pectin, Controlled release, Sustained release, Anticancer activity.

ICTJ-P-033

SMART DRUGS DELIVERY: A PERSONALIZED APPROACH

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ABSTRACT

Personalized drug delivery systems (PDDS) are emanating scientific areas, deals the patient-tailored dose, dosage form, frequency of administration and drug release kinetics, and digital health platforms for diagnosis and treatment monitoring, patient adherence, and traceability of drug products Consequently, it is crucial and appropriate to integrate PDDS with a growing array of upscale digital health solutions in order to establish an interactive feedback loop between the real demands of each patient and the drug products. By integrating patient-specific data, such as genetics, biomarkers, and disease state, PDDS aims to optimize therapeutic efficacy while minimizing adverse effects. Novel additive manufacturing (AM) techniques particularly 3D printing (3DP) have achieved a decade of success in pharmaceutical and biomedical fields. Layer-by-layer design and manufacturing of highly inventive tailored therapeutical solutions might begin with a digital model that is realized based on the demands of a particular patient or patient group. Extrusion-based technologies, such fused filament fabrication (FFF) and semi-solid extrusion (SSE), are the most researched among the many 3D printing methods due to their great adaptability, accuracy, viability, and affordability. It is an advancing field where doctors utilize a few demonstrative tests for treating the persistent. After combining both tests and restorative history of patients, they can effectively create focused on medication for person patient.

Keywords: 3D printing, Drug compatibility, Personalised delivery, Digital Modelling.

ICTJ-P-034

NANOPARTICLE-BASED DRUG DELIVERY IN CANCER THERAPY AND ITS ROLE IN OVERCOMING DRUG RESISTANCE

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ABSTRACT

In contrast to the usual pharmaceuticals, drug delivery using nanoparticles boasts better stability and biocompatibility, increased permeability and retention effects, and higher targeting accuracy. The development of hybrid nanoparticles with beneficial properties of other types of nanoparticles has enhanced the drug delivery method immensely. Nanoparticle-based systems have shown promise in countering drug resistance associated with cancer therapies. Some of the main mechanisms involved in cancer drug resistance include the overexpression of drug efflux transporters, apoptosis pathway disruption, and hypoxic conditions. Targeting these mechanisms specifically can effectively reverse multidrug resistance with the aid of nanoparticles. This involves the continuous evolution of nanoscale designs to cope with new mechanisms of drug resistance in tumors. Interest is also growing in research exploring the role of nanoparticles in immunotherapy, which is now increasingly important in cancer therapy approaches. This review will cover the functions of nanoparticles and hybrid nanoparticles in drug delivery for chemotherapy, targeted therapy, and immunotherapy and also detail mechanisms through which nanoparticle-based systems target drug resistance and enhance therapeutic efficacy.

Keywords: Nanoparticle, Drug delivery, Hybrid nanoparticles, Targeted therapy, Drug resistance

ICTJ-P-035

AI-POWERED CORONARY COMPUTED TOMOGRAPHY ANGIOGRAPHY FOR PRECISE DETECTION OF VASCULAR ABNORMALITIES

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ABSTRACT

In order to improve diagnostic precision, speed up the workflow, and facilitate treatment planning in vascular imaging, artificial intelligence (AI) is being included into coronary computed tomography angiography (CCTA). AI has shown that it can automate image processing, identify vascular anomalies, and quantify important properties like stenosis, aneurysms, and plaques often more accurately than traditional methods by utilizing sophisticated machine learning and deep learning algorithms. Additionally, AI techniques can enhance imaging quality, help with 3D vascular reconstruction, and offer real-time guidance during interventional treatments. Furthermore, more individualized risk evaluations are made possible by AI's predictive analytics capabilities, which help physicians identify individuals who are more likely to experience cardiovascular events. The workload of radiologists will be significantly reduced by using AI-driven CCTA to automate regular operations, which is a common advantage of such technology. More significantly, it would allow radiologists to devote more time and knowledge to complicated cases, which would enhance patient care in general. Notwithstanding these challenges, it seems that CCTA's future incorporation of AI technology has a lot of potential to control computer aided design (CAD) itself, assisting in the fight against the illness and resulting in improved clinical outcomes and more efficient forms of treatment.

Keywords: AI, Coronary computed tomography angiography, Coronary artery disease.

ICTJ-P-036

HERBAL HYDROGEL AND BIOACTIVE DRESSING: A NOVEL IN-VITRO WOUND HEALING TECHNIQUE

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ABSTRACT

Despite the advances of modern medicine, effective management of chronic and acute wounds represents a persistent challenge. This has led to a growing interest in alternative therapeutic approaches, particularly those derived from natural sources. Herbal hydrogels-based dressing has become a promising tool as an essential natural and biocompatible alternative to conventional wound treatments. Natural polymer extraction from herbs, such as alginate, chitosan or gelatin combined with herbal extracts, are usually incorporated into formulation of herbal hydrogels, which not only enhance the mechanical properties and stability of the hydrogel but also facilitate the controlled release of active ingredients at the wound site. This study explores the development and application of herbal hydrogel-based bioactive wound dressings as an innovative in-vitro approach to accelerate wound healing. The focus is on harnessing the therapeutic potential of bioactive compounds to promote tissue regeneration, reduce inflammation, and enhance overall wound recovery. The future scope includes advancing the clinical translation of herbal hydrogel-based bioactive dressings, optimizing their formulation for enhanced efficacy, and exploring their potential in treating chronic wounds, burns, and other skin conditions.

Keywords: Wound healing, Herbal hydrogels, Natural polymers, Bioactive dressing, Wound recovery.

ICTJ-P-037

PHYTOCHEMICAL PROFILE AND THERAPEUTIC POTENTIAL OF *CASSIA SIEBERIANA* LEAVES

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ABSTRACT

Cassia sieberiana, a plant belonging to the Fabaceae family, has gained considerable interest due to its diverse medicinal properties, attributed to its rich phytochemical composition. This plant's leaves are rich in bioactive substances such flavonoids, alkaloids, saponins, tannins, and glycosides, all of which enhance the plant's potential for therapeutic use. Strong antioxidant activity is exhibited by flavonoids, such as quercetin and kaempferol, which are essential for reducing oxidative stress and preserving cellular integrity. Alkaloids are useful against a variety of infections because of their well-known antibacterial qualities. While glycosides are linked to blood sugar regulation and show promise for managing diabetes, saponins have anti-inflammatory and immune-modulatory properties. When taken together, these substances highlight *Cassia sieberiana's* pharmacological actions, which include anti-inflammatory, anti-bacterial, antidiabetic, and antioxidant qualities. The bioactive components found in *Cassia sieberiana* leaves and their possible medical uses are summarized in this poster. Even though the plant exhibits potential as a natural therapeutic resource, more investigation is necessary to completely understand its safety profile, mechanisms of action, and clinical performance. Advanced preclinical and clinical investigations are necessary to prove its therapeutic advantages and support its adoption into modern medicine. *Cassia sieberiana* stands out as a prospective choice for tackling issues including oxidative stress-related diseases, microbial infections, and metabolic disorders as interest in plant-based, sustainable therapeutic treatments increases. Further investigation into its pharmacology and phytochemistry may lead to the creation of novel, all-natural medicinal substances.

Keywords: Cassia *sieberiana*, Phytochemical composition, Medicinal properties, Natural therapeutics, Antioxidant properties, Anti-inflammatory activity.

ICTJ-P-038

LOCALIZED TREATMENT FOR GLOBAL CHALLENGE: TRANSDERMAL GEL FOR CUTANEOUS LEISHMANIASIS

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ABSTRACT

Cutaneous Leishmaniasis (CL), a parasitic disease caused by Leishmania species and transmitted by sandfly bites, leads to ulcerative skin lesions with significant cosmetic and psychological impacts. Current treatments, such as systemic antimonials, involve long courses and substantial side effects. Transdermal drug delivery systems, especially transdermal gels, offer a promising alternative by providing localized, non-invasive treatment with minimal systemic toxicity. The gel formulation uses a biocompatible polymer base to ensure optimal drug delivery and skin penetration. It incorporates an anti-leishmanial drug, enhanced by penetration enhancers, to target infected dermal tissues. The gel's physicochemical properties, including pH, viscosity, and spreadability, were optimized for patient comfort and ease of use. In vitro and ex vivo studies showed improved drug permeation and retention in the skin, with a significant reduction in parasite load compared to control formulations. This transdermal gel offers a promising, non-invasive treatment for CL, delivering targeted drug therapy with reduced systemic side effects. The gel allows for direct application of active compounds like miltefosine or paromomycin to the affected skin, improving drug concentration at the infection site. Key benefits include enhanced patient compliance, ease of use, and the potential for controlled, sustained drug release, aiming to improve outcomes in endemic regions.

Keywords: Cutaneous leishmaniasis, Transdermal gel, Drug delivery, Skin penetration, Anti-leishmanial therapy.

ICTJ-P-039

GENE AND STEM CELL THERAPY ADVANCEMENT ON HUNTINGTONS DISEASE

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ABSTRACT

A genetic mutation in the HTT gene induces the formation of a toxic protein that gradually eliminates brain cells, leading Huntington's disease (HD), a neurodegenerative condition. Therapies through genes and stem cells have shown potential in reducing or terminating the onset of HD. Techniques like CRISPR-Cas9, which can precisely modify the altered HTT gene to restrict the synthesis of the harmful protein, are examples of recent advances in gene therapy. In order to restore normal gene function, alternate methods concentrate on delivering drugs based on RNA or silencing the mutant allele. Important developments have also been made in stem cell-based treatments, which may help repair damaged neurons or stimulate tissue growth. HD patients induced pluripotent stem cells (iPSCs) can be applied to screen for possible treatments and follow the condition in the lab. Additionally, in animal models, transplanted stem cells have shown promise, probably integrating into brain tissue delivering neuroprotective effects. Although encouraging preclinical results for both gene and stem cell therapies, problems with delivery methods, immune response, and long-term efficacy still arise. However, with continued research striving for clinical trials and possible therapeutic uses, these discoveries constitute an interesting new frontier in the fight against Huntington's disease clinical treatment is going on.

Keywords: HTT Genes, CRISPR-Cas9, (iPSCs), Huntington's disease, Clinical treatment.

ICTJ-P-040

DEVELOPMENT OF MICROSPHERE FOR TARGET DRUG DELIVERY BY NASAL DRUG DELIVERY SYSTEM

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ABSTRACT
The Nasal administrative of drug is a best alternative to the parenteral route for systemic and other drug delivery route. Nasal mucosa (cavity) consists of more rich vascular and a highly permeable of drugs for systemic absorption. Drugs administration by the nasal cavity is easily and safe fully. Avoid of first pass metabolism of drug is the main and importance advantage of nasal route drug delivery system. The main advantage of by using bioadhesive polymer is increase in contact time of the formulation in the nasal cavity and therebyminimizing (decrease) fast mucociliary clearance of the therapeutic agent from the site of deposition in nasal cavity. Mucoadhesive polymer like chitosan can be employed too much increase the residence time of the formulation from nasal mucosa to enhance the bioavailability of drug. The Mucoadhesive microspheres have micro particles and microcapsules of 1to1000 (µm) in diameter and consisting either entirely of a mucoadhesive polymer. Desloratadine is a peripheral histamine H_1-receptors antagonist, which is used in the treatment of allergy.

Keywords: Mucoadhesive, Transdermal, Bioadhesive, Nasal delivery, Microspheres.

ICTJ-P-041

REVOLUTIONIZING DRUG DELIVERY: ADVANCES IN ORODISPERSIBLE TABLETS

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Abstract
Orodispersible Tablets (ODTs) represent a significant innovation in drug delivery systems, offering rapid disintegration and dissolution in the oral cavity without the need for water. This advancement has enhanced patient compliance, particularly for pediatric, geriatric, and psychiatric populations, and has expanded therapeutic possibilities for conditions requiring quick onset of action. Recent developments in ODT technology focus on improving formulation and manufacturing techniques. Innovations such as the use of superdisintegrants, nanotechnology, and taste-masking agents have optimized the efficiency, palatability, and stability of ODTs. Additionally, cutting-edge methods like freeze-drying, molding, sublimation, spray drying and 3D printing enable precise and scalable production while accommodating complex drug formulations. These advances address key challenges, including drug solubility, mechanical strength, and cost-effectiveness, while aligning with sustainable practices through the adoption of eco-friendly materials. Future prospects in ODT development emphasize personalization through artificial intelligence and the integration of biopharmaceuticals for enhanced therapeutic outcomes. This poster explores the latest advancements in ODT technology, highlights current challenges, and examines future directions, underscoring the transformative impact of ODTs on patient-centric drug delivery.

Keywords: Orodispersible Tablets (ODTs), Freeze-drying, Spray drying, Personalized medicine.

ICTJ-P-042

DEVELOPMENT OF RAFT FORMING TABLETS OF LANSOPRAZOLE SOLID DISPERSIONS FOR THE TREATMENT OF GASTRIC ULCERS

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ABSTRACT

The objective of this study was to develop raft-forming tablet formulations incorporating lansoprazole solid dispersions for the effective treatment of gastric ulcers. Raft-forming systems provide prolonged gastric retention, forming a protective barrier over ulcerated areas, thereby enhancing drug efficacy. Lansoprazole, a proton pump inhibitor with limited solubility, was prepared as a solid dispersion using hydrophilic carriers such as polyethylene glycol (PEG) and polyvinylpyrrolidone (PVP) to enhance its solubility and bioavailability. The tablets were formulated using sodium alginate and calcium carbonate as raft-forming agents, complemented by sodium bicarbonate as an effervescent component to facilitate raft formation upon contact with gastric fluids. Pre-compression parameters, including bulk density (0.42–0.48 g/cm³), tapped density (0.50–0.56 g/cm³), Carr's index (12–15%), and Hausner's ratio (1.12–1.15), indicated excellent flow properties. Post-compression evaluation revealed uniform weight variation (<5%), adequate hardness (4.5–5.5 kg/cm²), low friability (<0.5%), rapid buoyancy lag time (<30 seconds), and sustained raft retention for over 6 hours. The raft exhibited a strength of 18.5 ± 1.2 g and provided effective gastric coverage. Drug release studies demonstrated enhanced dissolution of lansoprazole from the solid dispersion, with over 90% release achieved within 30 minutes, compared to 65% from pure drug tablets. Accelerated stability studies (40°C/75% RH) over three months confirmed the formulation's physical and chemical stability. The developed raft-forming tablet formulation successfully improved lansoprazole's solubility, dissolution, and gastric residence time, offering a promising therapeutic approach for managing gastric ulcers with enhanced efficacy and patient compliance.

Keywords: Lansoprazole, Raft forming, Gastric ulcers, Solid dispersion techniques, Proton pump inhibitors.

ICTJ-P-043

FORMULATION AND EVALUATION OF FAST DISSOLVING TABLET OF CETIRIZINE AND CURCUMIN COMBINATION

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ABSTRACT

The objective of this study was to develop and optimize a combination anti-allergic tablet containing cetirizine and curcumin, with rosemary extract as an additive to enhance therapeutic efficacy in acute and chronic allergic conditions. The tablets were prepared using the wet granulation method, employing excipients such as hydroxypropyl methylcellulose (HPMC), lactose, starch, and polyethylene glycol (PEG) in varying concentrations to achieve an optimal formulation. Rosemary extract, containing bioactive compounds like ursolic acid and rosmarinic acid, was incorporated for its synergistic anti-inflammatory and anti-allergic properties alongside cetirizine and curcumin. Fourier-transform infrared spectroscopy (FTIR) analysis confirmed the absence of significant interactions between the active pharmaceutical ingredients (APIs) and excipients, ensuring formulation stability. Pre-compression evaluations showed favorable results, with bulk density (0.45–0.52 g/cm³), tapped density (0.55–0.60 g/cm³), Carr's index (10–14%), Hausner's ratio (1.10–1.14), and angle of repose (25°–28°) indicating excellent flow properties. Post-compression testing confirmed compliance with pharmacopoeial standards, including uniform weight variation (<5%), rapid disintegration time (<3 minutes), adequate hardness (5–6 kg/cm²), low friability (<0.4%), and consistent drug content (98%–102%). Dissolution studies demonstrated a significant improvement in drug release, with 78.90% cetirizine and 87.35% curcumin released within 14 minutes, ensuring rapid onset of action. Stability studies conducted at 40°C and 75% relative humidity over three months showed no significant degradation or variation in physicochemical properties. The optimized combination tablet successfully integrates cetirizine, curcumin, and rosemary extract, exhibiting stable, high-quality characteristics with enhanced dissolution profiles. This formulation presents a promising therapeutic option for effective management of allergic conditions, combining rapid relief with potential long-term benefits.

Keywords: Curcumin, Cetirizine, Fast dissolving tablet, Solid dispersion techniques, Anti-allergic, HPMC.

ICTJ-P-044

TARGETED THERAPIES AND DRUG DELIVERY SYSTEMS IN PLAQUE PSORIASIS: A REVIEW OF RECENT ADVANCES

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ABSTRACT

Psoriasis is a chronic autoimmune inflammatory skin disorder affecting 2% to 5% of the global population, with Plaque psoriasis being the most common form. It is associated with comorbidities like cardiometabolic diseases, psoriatic arthritis, and depression. The condition arises from a combination of genetic predisposition, environmental triggers, and immune system abnormalities, leading to the development of plaques on the skin. Psoriasis involves three key inflammatory pathways: Th17 cells, interferon loops, and IFN-γ-secreting T-cells, all contributing to disease progression. Treatment typically leads to remission, resolving plaques and leaving behind tissue-resident memory cells. This review highlights the importance of developing new drug delivery systems with better stability, biocompatibility, and drug-carrying capacity. Topical therapies are often the first line of treatment for mild to moderate psoriasis, while maintenance therapies are used to prevent recurrence in more severe cases. A deeper understanding of psoriasis pathophysiology has driven the development of targeted therapies that focus on intracellular signaling pathways like AhR, PDE-4, and Jak-STAT. The FDA has approved roflumilast and tapinarof for plaque psoriasis. The review also discusses the potential of innovative drug delivery methods, including lipid-based, polymer-based, and nanocarrier systems, for improving treatment efficacy and skin penetration.

Keywords: Roflumilast, Psoriasis, Skin penetration, Inflammatory pathways, Biocompatibility.

ICTJ-P-045

A REVIEW ON USE OF ARTIFICIAL INTELLIGENCE IN PATIENT CARE

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ABSTRACT

Artificial Intelligence (AI) is redefining patient care, altering conventional healthcare practices and advancing the evolution of precision medicine. Artificial intelligence technologies, such as machine learning, natural language processing, along with computer vision, are improving diagnostic precision, refining treatment protocols, and facilitating predictive analytics for early illness identification. The use of AI in telemedicine, robotic surgery, and tailored treatment is transforming patient outcomes, decreasing healthcare expenditures, and enhancing operational efficiency. Nonetheless, issues with data privacy, algorithmic bias, and legal frameworks provide considerable obstacles to the widespread deployment of AI. This article emphasizes current breakthroughs, assesses the ethical and clinical ramifications, and explores future trends that will influence the next generation of AI-driven healthcare solutions.

Keywords: Artificial Intelligence, Patient Care, Personalised Medicine, Telemedicine.

ICTJ-P-046

LIPID NANOPARTICLES AS CARRIERS FOR NATURAL EXTRACTS IN COSMETIC FORMULATIONS

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ABSTRACT

Lipid nanoparticles (LNPs) have emerged as a novel delivery system that revolutionizes the incorporation of natural extracts in cosmetic formulations. These extracts are widely used for their anti-ageing, anti-acne, UV-protective, and moisturizing properties. However, their inherent instability, low solubility, and rapid degradation under environmental stressors like heat, light, and oxygen pose significant formulation challenges. LNPs, including solid lipid nanoparticles (SLNs) and nanostructured lipid carriers (NLCs), effectively address these limitations by encapsulating natural extracts within lipid-based matrices. This encapsulation enhances the stability, bioavailability, and controlled release of bioactive compounds, ensuring prolonged action and improved skin penetration. SLNs and NLCs have been successfully utilized to encapsulate curcumin, vitamin E, glabridin, green tea, aloe vera, retinoids, and essential oils, offering various cosmeceutical benefits. Additionally, LNPs provide excellent adherence to the skin, enhancing occlusion and hydration without altering skin pH. Moreover, LNPs align with the growing consumer demand for sustainable and environmentally friendly cosmetics, as they are non-toxic and biocompatible. Despite their potential, challenges such as cost, scalability, and regulatory compliance must be addressed. The advancement of LNP technology promises to deliver high-performance cosmetic formulations that effectively harness natural extracts to improve skin care.

Keywords: Lipid nanoparticles (LNPs), Natural extracts, occlusion, Hydration, Bioavailability.

ICTJ-P-047

NANOTECHNOLOGY: A REVIEW ON PERSONALISED CANCER THERAPY AND DIAGNOSIS

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ABSTRACT

One of the important strategies in cancer therapy selectively targets the malignant tumour is sites known as "Nanotechnology", involves manipulating particles or structures within the 1 to 100 Nano-meter range, offering revolutionary advancements in drug delivery systems. Semiconductor nanoparticles known as quantum dots (QDs) have remarkable fluorescent characteristics that enable multiplexed cancer cell detection and high-resolution imaging, but because of its adaptable optical qualities, low toxicity, and biocompatibility, carbon dots (CDs) have attracted interest. Gold Nano shells' tuneable surface Plasmon resonance can be used to improve imaging contrast. Albumin-based nanoparticles improve targeted drug delivery due to inherent affinity for tumour tissues. Polyethylene glycol (PEG) surface modification results in these nanoparticles having longer circulation times, decreased immunogenicity, and increased durability and penetration. The role of several nanomaterial's, such as carbon dots, albumin-based nanoparticles, gold Nano shells, quantum dots, and PEGylated multi-functional nanoparticles, in improving cancer diagnosis and treatment is significant as they enable precise targeting of therapeutics, controlled release mechanisms, improved efficacy while minimizing side effects and showcasing the on-going progress and future prospects in this cutting-edge field.

Keywords: Cancer Diagnosis, Cancer Therapy, Nanotechnology, Novel drug delivery system, Personalised Medication

ICTJ-P-048

REVIEW ON APPLICATIONS OF 3D PRINTING IN PHARMACY- PIXELS TO PILLS

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ABSTRACT

In recent years, 3D printing has emerged as a transformative tool within the domain of pharmacy, presenting novel opportunities for drug delivery, personalized medicine, and dosage forms customization. Applications of 3D printing in pharmacy are: Firstly, its capability to produce complex structures layer-by-layer, enabling precise control over drug composition and distribution. Unlike traditional methods, which are often limited by batch processing and standardized formulations. Secondly it facilitates the creation of complex dosage forms with precise control over drug release kinetics, enhancing therapeutic outcomes and patient compliance. Additionally, the ability to tailor formulations to individual patient needs promotes personalized medicine, optimizing treatment efficacy while minimizing adverse effects. Furthermore, 3D printing enables rapid prototyping, expediting the drug development process and reducing time-to-market for novel pharmaceutical products. From fabricating patient-specific dosage forms to producing intricate drug delivery devices, its utility spans the entire pharmaceutical continuum. Moreover, 3D printing facilitates the production of paediatric and geriatric dosage forms with modified shapes and sizes, addressing unique challenges in vulnerable patient populations.

Keywords: Dosage customization, Patient-specific dosage form, Personalized medication.

ICTJ-P-049

ROLE OF ARTIFICIAL INTELLIGENCE (AI) IN OPTIMIZING PHARMACEUTICAL FORMULATIONS

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ABSTRACT

Researchers may expedite crucial formulation processes like ingredient selection, dosage optimization, and stability analysis by utilizing cutting-edge AI approaches like machine learning, neural networks, and predictive modelling. Large datasets from preclinical and clinical research are analyzed using AI technologies, which find important patterns and connections that would be difficult to find using conventional techniques. These realizations reduce trial-and-error methods and speed up the process of finding the best formulations. Furthermore, by forecasting production results, maximizing equipment settings, and guaranteeing constant product quality, AI algorithms improve process efficiency. The incorporation of scientific material and regulatory norms into formulation strategies is made easier by methods such as natural language processing. Beyond effectiveness, AI makes it possible to customize drug compositions by employing data-driven decision-making to adjust treatments to the unique requirements of each patient. The importance of AI in pharmaceutical optimization is examined in this work, with particular attention paid to its uses in process control, drug stability modelling, and predictive analytics. Data quality, model interpretability, and regulatory compliance are still major issues in spite of tremendous progress. By tackling these issues, AI's full potential will be realized, changing pharmaceutical development and guaranteeing the quicker, more affordable release of treatments onto the market.

Keywords: Artificial intelligence, Dosage optimization, AI algorithm, Decision making.

ICTJ-P-050

ARTIFICIAL INTELLIGENCE TO UNLOCK NEW INSIGHTS AND INNOVATIVE TREATMENTS FOR MIGRAINE RELIEF

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ABSTRACT

A study was created to examine the effectiveness of a customized machine learning (ML)-based decision support system that integrates Random Optimization (RO-MO) and support vector machines in order to accomplish this goal. We extracted predictive information from clinical, biochemical, and demographic data using RO-MO. We developed a set of predictors with discriminatory power for MO that was higher than that found for baseline SVM using a dataset of 777 consecutive migraine patients. The final RO-MO decision took into account the top four. When MO was predicted by at least three RO-MO models, ROC analysis produced a c-statistic of 0.83 with sensitivity and specificity of 0.69 and 0.87, respectively, and an accuracy of 0.87. With ORs of 5.7 and 21.0 for patients categorized as probably at risk of MO (3 predictors positive) and definitely at risk of MO (4 predictors positive), respectively, logistic regression analysis verified that the derived RO-MO system could accurately predict MO. In conclusion, a combination of ML and RO that takes into account lifestyle, drug exposure, and clinical/biochemical features may be a useful method for predicting MO in migraine. It also has the potential to increase model precision by weighting the relative importance of attributes.

Keywords: Automatic predictors, Medication overuse (MO), Machine learning, C-static.

ICTJ-P-051

PREDICTION OF SKIN PERMEABILITY OF BENFOTIAMINE USING THE SWISSADME SOFTWARE

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ABSTRACT

Traditional methods to assess skin permeability, such as in vitro techniques using Franz diffusion cells or *in vivo* studies with human or animal models, are effective but expensive and time-consuming. In contrast, computational tools like SwissADME provide a faster and more cost-efficient alternative by evaluating key physicochemical properties that determine skin permeability, such as molecular weight, lipophilicity, solubility, and permeability coefficients. This study explores the transdermal potential of Benfotiamine (BFT), a synthetic derivative of thiamine, using the SwissADME software. BFT's poor oral bioavailability (0.11 compared to the standard of 0.56) underscores its suitability for transdermal delivery. Analysis of its physicochemical properties: lipophilicity (log P = 1.01), molecular weight (466.45 g/mol), solubility (Log S ESOL = -2.62), and skin permeability (Log Kp = -8.78 cm/s, which meets the threshold of -10.94 cm/s; further supports its candidacy for transdermal application. Additionally, the boiled egg graph indicates low gastrointestinal absorption, making BFT a promising candidate for transdermal formulations, particularly when combined with penetration enhancers. In conclusion, SwissADME provides a reliable and efficient tool for the early-stage prediction of skin permeability, offering critical insights that can guide future research and formulation strategies.

Keywords: SwissADME, Benfotiamine, Transdermal delivery, Physicochemical properties, Permeability prediction.

ICTJ-P-052

NANOTECHNOLOGY BASED DRUG DELIVERY SYSTEMS IN TUBERCULOSIS

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ABSTRACT

Mycobacterium tuberculosis is the causative agent of tuberculosis. It is infectious and contagious disease that mainly affects the lungs but can also affect other organs and systems. Prolonged treatment, high pills burden, low compliance are factor that responsible for emergence of MDR and XDR in case of tuberculosis. Till date, only BCG vaccine is available which is ineffective against adult pulmonary tuberculosis. WHO recommends a combine therapeutics of several drugs such as rifampicin, Isoniazid. This drug have low plasma level after oral administration due to their low water solubility, poor permeability and ability to be rapidly metabolized by the liver at high concentration. Nanotechnology and its advancement have given new direction to the medical science. Drug delivery system based on nanotechnology have significant promise for the treatment of tuberculosis .The system can also be design to deliver pharmaceutical to a specific target and allow for the prolonged release of drugs from the matrix. Nanoparticles based ideology has shown convincing treatment and promising outcome for the chronic infectious disease. Controlled and sustained release of drugs is one of the advantage of nanoparticles based anti-tuberculosis drug over free drugs.

Keywords: Myobacterium tuberculosis, BCG vaccine, Drug delivery systems, Nanotechnology, Sustained release, Tuberculosis.

ICTJ-P-053

SUPERCRITICAL CARBON DIOXIDE-MEDIATED STARCH MODIFICATION: A SUSTAINABLE APPROACH TO BIOPOLYMERS

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ABSTRACT

Starch, a natural polysaccharide found in many plants, is widely used in various industries due to its biodegradability and abundance. However, its application is limited by its poor solubility, thermal stability, and mechanical strength. Using supercritical carbon dioxide ($scCO_2$) as an eco-friendly solvent for modifying starch to overcome these limitations. Supercritical CO_2, known for its non-toxic, non-flammable, and recyclable nature, offers a sustainable alternative to traditional organic solvents. The modification involves treating starch with $scCO_2$ under controlled temperature and pressure conditions, significantly improving its physical and chemical properties. Supercritical carbon dioxide ($scCO_2$) causes the starch particles to expand increasing their surface area acts as a co-solvent, helping to dissolve and carry other modifying agents facilitates indirect modifications by allowing other chemicals to react with the starch without the need for traditional organic solvents. The modified starch demonstrates enhanced solubility, thermal stability, and mechanical strength, making it suitable for various industrial applications, including biodegradable plastics, adhesives, and coatings. The findings indicate that $scCO_2$-mediated starch modification not only improves the functional properties of starch but also aligns with sustainable development goals by reducing the environmental impact associated with conventional modification methods. This approach holds promise for developing advanced biopolymer materials, contributing to a more sustainable and eco-friendly future**.**

Keywords: Sustainable approach, Biopolymers, Supercritical carbon dioxide.

ICTJ-P-054

RECENT ADVANCEMENT IN FUTURE PERSPECTIVE IN BILAYER TABLET FOR DIABETES

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ABSTRACT

The lack of controlled or delayed release mechanisms often results in fluctuating drug levels, reduced efficacy, and increased side effects. In contrast, bilayer tablets present a significant advancement, offering a versatile platform to overcome these challenges. By incorporating two distinct drug layers, bilayer tablets enable the delivery of immediate and controlled release profiles within a single dosage form, making them particularly effective for managing complex conditions like diabetes. This innovation improves glycemic control by allowing the combination of antidiabetic drugs with complementary mechanisms of action while enhancing patient compliance through reduced dosing frequency. Recent advancements focus on optimizing bilayer tablet design using advanced techniques such as hot-melt extrusion, nanotechnology, and precision coating. These methods address critical challenges such as layer separation, drug compatibility, and mechanical integrity. Furthermore, the integration of bioenhancers and sustained-release polymers has enhanced drug stability and efficacy. Emerging approaches in formulation leverage artificial intelligence and predictive modelling for personalized drug release profiles tailored to individual patient needs.

Keywords: Bilayer tablet, Diabetes management, GLP-1 receptor agonists, Insulin analogs, Sustainable practices.

ICTJ-P-055

INTEGRATED COMPUTATIONAL STUDY: PYRIMIDINE-THIAZOLE ANALOGS AS PROMISING ER+ BREAST CANCER INHIBITORS

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ABSTRACT

In this study we have targeted both the PI3Kα and CDK6 enzymes as ER+ Breast Cancer inhibitor. Pyrimidine and thiazole heterocyclic compounds have the ability to target proteins that are essential for the survival and proliferation of cancer cells. We designed the analogs of pyrimidine-thiazole scaffolds and perform a simulation-based study. Among the designed analogs R1-R4, molecular docking revealed the potent binding affinity of R1 showed -9.66 kcal/mol (PDB ID: 5L2I) for CDK6 and -7.67 kcal/mol for PI3Kα (PDB ID:7TZ7), while the reference drug (Alpelisib) showed -9.89 for CDK6 and -10.2 for PI3Kα respectively. The effectiveness of the docking study was assessed by a molecular dynamic simulation which demonstrated a stable protein-ligand complex, with RMSD values ranging between 0-2 Å, indicated good structural alignment and stability. Normal Mode Analysis (NMA) was applied to analyze the quality of derived poses. Then, density functional theory (DFT) studies were performed to measure the active compound's reactivity, hardness, softness and lead analog having good ADME profile also. These overall findings confirmed that current research could be develop pyrimidine–thiazole analogs as effective therapeutic agents for ER+ breast cancer treatment.

Keywords: Molecular docking, MD simulation, NMA simulation, DFT analysis, ADME, ER+ Breast cancer, CDK6, PI3Kα.

ICTJ-P-056

SMART AND TARGETED DRUG DELIVERY SYSTEM

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ABSTRACT

With rapid advancements in biomedical nanotechnology, drug delivery systems (DDSs) have transitioned from traditional methods to smart systems with stimuli-responsive features. These systems respond to specific internal or external triggers, enabling precise drug targeting while decreasing systemic side effects and toxicities. This dual benefit enhances the therapeutic efficacy and patient compliance. Various smart DDSs, such as stimuli-responsive polymeric nanoparticles, liposomes, metals/metal oxides, and exosomes, have been developed and demonstrated in preclinical studies. These platforms are designed to react to stimuli like pH, enzymes, temperature, and light, releasing drugs specifically at diseased sites. The regulatory and moral hurdles further complicate the path to clinical approval. As a result, many advanced stimuli-sensitive DDSs remain in experimental stages and are not widely used in clinical practice. This review highlights recent progress in smart nano-platforms for targeted drug delivery and explores the barriers to their clinical translation. The paper emphasizes the need for standardized production, safety assessments, and alignment with regulatory frameworks to enable the successful transition of these innovative systems from the laboratory to patient care. By addressing these challenges, smart DDSs hold the potential to revolutionize treatments across various medical conditions.

Keywords: Controlled release, Drug Delivery System (DDS), Bio-materials, Targeted Drug Delivery.

ICTJ-P-057

LIPID NANOPARTICLES FOR DRUG DELIVERY

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ABSTRACT

This review starts with an overview of the different types of lipid nanoparticles, such as liposomes, solid lipid nanoparticles, and nanostructured lipid carriers, followed by a discussion of their preparation methods. A brief examination of the characterization of lipid nanoparticles has been made, focusing on their applications in encapsulating and delivering both hydrophobic and hydrophilic drugs, as well as RNA molecules. In addition, the review discusses how lipid nanoparticles have various different applications in overcoming numerous problems in delivery, including crossing a blood-brain barrier, enhancing targeted delivery, and opening opportunities for various routes of administrations. Lipid nanoparticles contain many attractive benefits for delivering drugs, such as providing excellent biocompatibility; preparation is simple; mass-producible; nontoxicity; and capabilities include targeted delivery. Existing challenges in drug delivery underscore the need for further research in structure-function relationships, large-scale manufacturing, and targeted delivery strategies to reap full benefits of lipid nanoparticles for wider clinical and pharmaceutical applications in the future.

Keywords: Lipid nanoparticles, Nanostructured lipid carriers, Pharmaceutical applications.

ICTJ-P-058

DECIPHERING RESVERATROL AND SILVER SULFADIAZINE FOR WOUND HEALING EFFECT USING IN SILICO AND TARGET NETWORK INTERPLAY STUDIES

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ABSTRACT

This study examines the remarkable effectiveness of the combination of Resveratrol and Silver Sulfadiazine (RSS), in encountering the mortiferous wound healing effect, a global peril. The predominant objective is to investigate RSS predicted genes, and intrinsic pathway of wound healing effect using augmented computational approaches, and network pharmacology predictions. The databases and web tools like Swiss target prediction, GeneCards, DisGeNet and OMIM were exploited to identify the common target proteins. The culmination of the RSS network, and PPI network was devised using Stitch and String web tools, through which the drug–target network of 10 common proteins was constructed employing Cytoscape. The enrichment analysis was performed by incorporating Gprofiler, and Cytoscape. David compounded the GO, and KEGG, and enrichment was computed through bioinformatics tools. The best pivotal proteins were docked harnessing Schrodinger. The shared target proteins underscored the precise wound healing genes, and RSS network roles and implications for pathways affirmed the enrichment *P*-value of <0.025 and <0.01 respectively. Further, the ADMET and drug-likeness assessments assisted the claim. Robust interactions were noticed with docking studies, authenticated using molecular dynamics, and MMGBSA. Rigorous testament is imperative through *in vitro* and *in vivo* in near future.

Keywords: Resveratrol, Silver Sulfadiazine, Wound Healing, Network Pharmacology, Molecular Docking and Dynamics.

ICTJ-P-059

A REVIEW ON APPLICATION OF DIGITAL TWIN TECHNOLOGY FOR EFFECTIVE DEVELOPMENT OF TRANSDERMAL DRUG DELIVERY SYSTEMS

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ABSTRACT

In order to increase the therapeutic efficacy and patient compliance of pharmaceutical therapies, A non-invasive, sustained-release substitute that has a number of advantages over conventional oral and injectable approaches is transdermal drug delivery (TDD) technology. But when it comes to skin penetration, drug release kinetics, and overall system performance, designing and refining TDD systems is extremely difficult. One revolutionary way to address these issues is to incorporate Digital Twin (DT) technology, a state-of-the-art simulation tool that builds a virtual model of real systems. Digital Twin technology has the ability to completely transform the processes of developing, testing, and customizing TDD systems for individual patient needs by facilitating real-time monitoring, predictive modeling, and virtual testing. Digital twin technology speeds up the development of transdermal medication administration devices by offering precise virtual simulations of drug-skin interactions. It allows for accurate prediction of drug penetration rates, adjustment of release profiles, and identification of important formulation factors. This method streamlines the development process by reducing the need for extensive clinical trials, resulting in efficient, data-driven formulation design. Digital twin technology focuses to improve transdermal drug delivery system development by allowing for precise simulations, optimizing formulation processes, and reducing experimental trials. Future developments in digital twin technology for transdermal drug delivery could include personalized treatment through patient data, better modeling of skin conditions, and integration with real-time monitoring for improved treatment accuracy and compliance.

Keywords: Digital twin technology, TDDS, Virtual Testing, Simulation, Drug permeation.

ICTJ-P-060

A REVIEW ON USE OF ARTIFICIAL INTELLIGENCE IN TUBERCULOSIS

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ABSTRACT

Mycobacterium tuberculosis causes almost 10 million new cases of TB and leads to 1·3 million fatalities each year. Tuberculous meningitis is perhaps the most severe manifestation of the illness, resulting in mortality or significant impairment in around 50% of afflicted individuals. Tuberculous meningitis primarily affects youngsters and people with HIV infection to a greater extent. Medical sciences widely use artificially intelligent computer systems. AI is a scientific field that minimizes human input and instead empowers computers to determine the significance of variables. Typical uses include patient diagnosis, comprehensive drug research and development, enhancing physician-patient communication, transcribing medical records like prescriptions, and providing remote patient care. The primary areas of attention in the field of tuberculous meningitis advancements include diagnostics, inflammatory mechanisms, and anti-tuberculosis pharmacotherapy. The treatment duration for the condition is prolonged and the most effective pharmacological regimens are currently unpredictable. Healthcare systems globally encounter substantial obstacles in attaining the 'quadruple objective' for healthcare: enhancing population health, improving the patient's care experience, enhancing care satisfaction, and mitigating the escalating cost of care. This work mainly focuses on the implications of artificial intelligence in the diagnosis as well as the management of the tuberculosis meningitis.

Keywords: Artificial intelligence, Tuberculosis, Meningitis, Patient Care, Pharmacotherapy.

ICTJ-P-061

DESIGN, SYNTHESIS, MOLECULAR DOCKING AND ANTI-TUBERCULAR ACTIVITY OF NOVEL INDOLE DERIVATIVES TARGETING THE MYCOBACTERIAL INHA ENZYME

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ABSTRACT

Tuberculosis remains one of the most infectious diseases worldwide, primarily caused by Mycobacterium tuberculosis. Despite the availability of treatment, the rise of multidrug-resistant and extensively drug-resistant tuberculosis strains has highlights the urgent need for new therapeutic agents. Promising target for novel anti-tubercular agents is the enoyl-acyl carrier protein reductase enzyme, which plays a crucial role in the fatty acid synthesis pathway essential for the survival and virulence of M. tuberculosis. A series of novel Indole-acetophenone derivatives (MB1-MB13) were designed and screened by molecular docking and in silico ADMET prediction and characterized by spectral analysis. The synthesized compounds were screened for their anti-tubercular activity. In silico molecular docking study results showed all the synthesized compounds have minimum binding energy and good affinity for active site and may be considered as good inhibitors of InhA enzyme. All the compounds comply with Lipinski's Rule of 5 for drug-likeness and ADME properties showing good oral bioavailability. Compound MB5 was found to be the most potent compound among all synthesized compounds against the tested tuberculosis strain. This research highlights the potential of these novel Indole-acetophenone derivatives in the fight against TB targeting the mycobacterial InhA enzyme, emphasizing the importance of continued exploration and optimization of such compounds.

Keywords: Anti-tubercular, InhA, Molecular docking, MABA assay.

ICTJ-P-062

PHYTOCHEMICAL AND MEDICINAL PROPERTIES OF CYNARA SCOLYMUS

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ABSTRACT

Cynara scolymus, commonly known as globe artichoke, is a Mediterranean plant that has long been used for both culinary and medicinal purposes. This plant is rich in beneficial compounds such as cynarin, chlorogenic acid, luteolin, and silymarin, all of which contribute to its impressive health benefits. Cynarin is known for stimulating bile production, which aids in liver detoxification, while chlorogenic acid offers powerful antioxidant and anti-inflammatory effects. The flavonoid luteolin is beneficial for supporting brain health and reducing inflammation, and silymarin is widely recognized for its liver-protective properties, helping to repair and regenerate liver cells damaged by toxins or disease.Artichokes are especially valued for their liver health benefits. They are commonly used to treat conditions like fatty liver disease and cirrhosis due to their hepatoprotective properties. Beyond liver support, artichokes have antioxidant and anti-inflammatory effects that reduce oxidative stress and inflammation, benefiting both heart and brain health. Additionally, artichokes have the ability to lower LDL cholesterol, improving cardiovascular health.Traditionally, artichokes have been used to address digestive issues such as bloating, indigestion, and constipation. They also support gallbladder function and help reduce fluid retention. Modern research increasingly supports these uses, demonstrating that artichokes are effective in promoting liver health, managing cholesterol, and supporting overall wellness.

Keywords: Cynara scolymus, artichoke, cynarin, chlorogenic acid, luteolin, silymarin, liver health, antioxidant, anti-inflammatory, cholesterol-lowering.

ICTJ-P-063

EXPANDING THE HORIZONS OF CAR-T THERAPY: A NEW FRONTIER FOR BREAST CANCER MANAGEMENT

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ABSTRACT

Breast cancer is the most prevalent cancer diagnosed among women, in terms of incidence and mortality. Despite the improvements in overall survival and postoperative recurrence rates for breast cancer treatment, they are still limited with poor prognosis. New treatment strategies are desperately needed since treatment resistance brought on by the present clinical therapies reduces the effectiveness of therapeutic outcomes. Chimeric Antigen Receptor (CAR)-T cell therapy is one of the strategy for the breast cancer management. The CAR enables T-cells to recognize and eradicate cancer cells expressing a particular antigen. It delves into the intricate mechanisms underlying their efficacy, highlighting their ability to recognize and kill cancer cells while not showing any harmful effects to normal cells. CARs are receptors that have been altered to increase their specificity and responsiveness in order to better identify cancer cells. Till now the CAR-T cell therapy have shown positive results for hematological cancers. Here, an overview from basic research to ongoing clinical trials has been provided which outlines the recent advancement in CAR-T cell treatment for breast cancer.

Keywords: CAR-T cells, Tumor, Receptor, Immunotherapy, Breast cancer.

ICTJ-P-064

DECIPHERING RESVERATROL AND HESPERIDIN AS SYNERGISTIC ANTI-DIABETIC AGENTS USING IN SILICO AND TARGET NETWORK INTERPLAY STUDIES

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ABSTRACT

Diabetes mellitus is a multifactorial metabolic disorder characterized by chronic hyperglycemia, insulin resistance, and associated complications, making it a global health challenge. In this study, the synergistic anti-diabetic potential of resveratrol and hesperidin, two natural bioactive flavonoids, was explored through a comprehensive in silico and target network interplay approach. Molecular docking studies revealed strong binding affinities of these compounds to key diabetes-related targets, including AMPK, PPAR-γ, α-glucosidase, and DPP-4, suggesting potential mechanisms for improving glucose metabolism, enhancing insulin sensitivity, and reducing postprandial glucose levels. Pharmacokinetic profiling highlighted favorable ADMET properties, ensuring optimal bioavailability and safety profiles. A network pharmacology analysis provided insights into the complementary pathways modulated by resveratrol and hesperidin, including anti-inflammatory, antioxidant, and glucose-regulating mechanisms, emphasizing their synergistic efficacy. The study further identified potential biomarkers and pathways, such as the PI3K/Akt and NF-κB signaling pathways, that are modulated by the combination, strengthening their therapeutic relevance in diabetes management. This work underscores the promise of phytochemical-based strategies, advocating the integration of resveratrol and hesperidin as a conjugated formulation for enhanced anti-diabetic effects. These findings warrant further in vivo and clinical studies to validate their therapeutic application in diabetes.

Keywords: Resveratrol, Hesperidin, Diabetes management, Molecular docking, Network pharmacology.

ICTJ-P-065

CHITOSAN-BASED NANOPARTICLES IN ACUTE T-CELL LYMPHOBLASTIC LEUKEMIA

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ABSTRACT
Acute T-cell lymphoblastic leukemia is the most common, chronic, and common causes of invasive and death pediatrics worldwide in both developing and advanced countries. Drug design and development uses various nanotechnologies to promote cancer treatments. Nanocarriers is among that technology that will carry drug molecules to specific locations or targets and are expected to kill cancer cells without damaging normal cells. Nanoparticles that use a natural polymer, chitosan, are efficient, cost-effective, and environment friendly nanoparticles among polymeric nanoparticles. The cationic properties, electrostatic interactions, and biodegradability of chitosan nanoparticles (ChNPs) are the properties which make them suitable and effective. ChNPs are used as a drug delivery system targeted at cancer therapy. The biodegradability and biocompatibility properties of chitosan-based nanoparticles (ChNPs) have good prospects for targeted drug delivery systems. ChNPs can transfer various antitumor drugs to targeted sites via passive and active targeting pathways. The chitosan based nanoparticles have achieved better therapeutic efficacy than single-modality therapy. Nanoparticles (NPs) of size below than 100 nm are capable of passing blood capillaries and thus efficiently deliver active components to their targeted destination. Cocervation/Precipitation Techniques have been used to develop chitosan based nanoparticles for target drug delivery in T-cell lymphoblastic leukemia. Therapy using ChNPs work by delivering anticancer drugs to all widely used Cancer cells, increasing cytotoxicity and improving drug accumulation, selectivity, and efficacy.
Keywords: Acute T-cell lymphoblastic leukemia, Cancer cells.

ICTJ-P-066

ARTIFICIAL INTELLIGENCE TO UNLOCK NEW FRONTIERS IN PARKINSON'S DISEASE DIAGNOSIS, TREATMENT AND CARE

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ABSTRACT
A neurodegenerative condition is Parkinson's disease (PD). It starts off delitescently and advances slowly. Patients with PD exhibit a wide range of clinical symptoms. The method of diagnosing PD is very critical and primarily relies on the expertise and experience of the doctor. Brain magnetic resonance imaging (MRI) quantitative analysis may increase the effectiveness of clinical diagnosis, and MRI may be able to identify alterations in PD patients' brains. However, standard mathematical analysis was unable to efficiently extract the vast amount of information included in multimodal MRI data due to the high dimensionality of the data and the complexity of clinical courses in PD.
The substantia nigra region of the brain's dopaminergic neurons steadily deteriorate as the disease worsens, impairing the body's most vital motor activities. Current biomarkers including blood biochemical analysis, cerebrospinal fluid, and neuroimaging are expensive and require routine testing at specialized medical facilities, which delays the disease's identification. Although the data analysis is difficult to interpret, a system driven by AI can do it rapidly. This artificial intelligence capabilities has the potential to completely transform therapy and diagnostic processes, leading to early disease diagnosis, prompt intervention, and the potential to save many lives.
Keywords: Parkinson disease (PD), Magnetic resonance imaging (MRI), Neuroimaging, Biomarkers, Prompt intervention.

ICTJ-P-067

INVESTIGATING METAL COMPLEX OF COUMARIN: A PROMISING AVENUES FOR THE DISCOVERY OF NEW THERAPEUTIC AGENTS

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ABSTRACT
Introduction: The Integration of transition metals into coumarins not only boosts their biological activities but also opens new avenues for therapeutic applications. The advancements in the antimicrobial activity of coumarin derivative metal complexes highlight their potential as novel therapeutic agents in combating bacterial and fungal infections. Metal complexes of coumarin derivatives have antimicrobial activity. It is due to the chelation property of these compounds. The complexes of metallic salts are more potent than the parent drug. Objectives: The objective is to investigate promising avenue for the discovery of new therapeutic agents with enhanced efficacy of metal complex of Coumarin derivatives with reduced side effects. That could potentially address unmet medical needs and improve human health. Methodology: Synthesis of Schiff base coumarin derivatives will be achieved by condensation of substituted Hydroxy coumarins with different aliphatic and aromatic amines. The transition metal (II) ions such as Ag, Zn, Cu complexes will be prepared by refluxing metal salt solution and the alcoholic solution of these ligands. Result & Discussions: Coumarin derivatives coordinated with transition metals such as Zn, Cu, and Ag have shown promising antibacterial activity against various microbial strains. The metal ions not only enhance the stability of the coumarin ligands but also contribute to their bioactivity by facilitating interactions with bacterial targets. Conclusion &Future Prospective: The enhanced efficacy attributed to metal coordination, along with ongoing research into structural optimization and hybridization strategies, positions these compounds as promising candidates in the fight against bacterial and fungal infections.
Keywords: Coumarin, Metal complex, Efficacy, stability, Ligand.

ICTJ-P-068

EXPLORING NANOEMULGEL: AN INNOVATIVE APPROACH FOR EFFECTIVE TOPICAL TREATMENT OF RHEUMATOID ARTHRITIS

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ABSTRACT
Rheumatoid arthritis is one of the complex autoimmune disorders associated with chronic inflammatory pain, and swelling of joints, elbows, shoulders, ankles, and other organs of the body . It is based on numerous interacting eco-physiological and genetic factors that make it difficult to learn its pathogenesis and to detect effective treatment. In rheumatoid arthritis disease, the immune system of the body affects its tissues along with joints. The purpose of this study was to develop and evaluate loaded nanoemulgel for topical delivery in the management of rheumatoid arthritis. In contrast, herbal remedies have gained attention for their anti-inflammatory and antioxidant properties. However, the challenge remains in enhancing the bioavailability and therapeutic efficacy of both synthetic and herbal compounds when administered topically. Nanoemulgel, a novel drug delivery system combining nanoemulsions and gels, offers a promising solution for localized treatment of RA. Nanoemulgel formulations can improve the penetration of active ingredients, enhance stability, and provide controlled release, thereby maximizing therapeutic outcomes. This approach combines the potent anti-inflammatory effects of synthetic drugs with the natural healing properties of herbal drugs, delivering them in a synergistic manner directly to the affected joints.
Keywords: Nanoemulgel, Rheumatoid arthritis, anti-inflammatory, synergistic, Topical drug delivery.

ICTJ-P-069

ASSESSMENT OF VARIOUS SELECTED PLANT EXTRACTS FOR COLORECTAL ADENOCARCINOMA CELL LINE BY MTT ASSAY

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ABSTRACT

Colorectal adenocarcinomas account for approximately 90% of malignant large bowel tumors. Early-stage colorectal cancer is often asymptomatic, making early detection through screening programs crucial. This study investigates the effects of selected plant extracts on colorectal adenocarcinoma cell line using the MTT assay. Three plants—Vanda tessellata, Ipomoea aquatica, and Semen armeniacae—were chosen for the assay. The extraction process for Vanda tessellata and Ipomoea aquatica involved PE (petroleum ether), followed by DCM (dichloromethane), and then MeOH (methanol), while Semen armeniacae was extracted using PE, followed by EA (ethyl acetate), and then MeOH. The colorectal adenocarcinoma cell line, Colo205, used in the assay, was procured from the National Centre for Cell Science, Pune, India. Results indicated that extracts from Vanda tessellata exhibited 100% proliferation inhibition against Colo205. Phytomedicines likely achieve this through the additive or synergistic effects of multiple chemical compounds, which target single or multiple sites on carcinoma cells, impacting physiological processes. Inhibition of several signal transduction pathways involved in tumor development was observed in the phytochemicals studied.

Keywords: Vanda tessellata, Ipomoea aquatica, Semen armeniacae, MTT assay, colorectal adenocarcinoma

ICTJ-P-070

PREDICT, PREVENT, PROTECT: THE ROLE OF ARTIFICIAL INTELLIGENCE IN DISEASE SURVEILLANCE

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ABSTRACT

This abstract highlights AI's transformative role in these areas, supported by emerging evidence and case studies. AI leverages large-scale data from diverse sources, such as electronic health records (EHRs), social media, and environmental sensors, to predict disease outbreaks. Predictive modeling algorithms can identify patterns, trends, and potential hotspots, enabling early warning systems. For example, Google Flu Trends demonstrated how search engine queries could predict influenza outbreaks with near real-time accuracy, showcasing AI's ability to aggregate unstructured data into actionable insights. AI facilitates preventive measures by identifying risk factors and optimizing interventions. Machine learning models stratify populations based on susceptibility, enabling targeted vaccination and public health campaigns. For instance, AI-driven simulations during the COVID-19 pandemic helped policymakers design effective lockdowns and resource allocation strategies, mitigating infection spread. AI strengthens protective mechanisms through real-time monitoring and rapid response systems. Automated anomaly detection in health data streams enables swift identification of unusual disease patterns. Moreover, AI-powered digital tools, such as chatbots and wearable health devices, empower individuals with personalized health guidance, reinforcing community resilience. Despite its potential, AI-driven disease surveillance faces challenges, including data privacy concerns, algorithmic bias, and the need for interdisciplinary collaboration. Addressing these barriers through robust governance frameworks and ethical AI practices is critical to unlocking its full potential. By integrating AI into disease surveillance, health systems worldwide can predict emerging threats, prevent widespread outbreaks, and protect populations more effectively.

Keywords: Artificial Intelligence (AI), Disease Surveillance, Predictive Modeling, Machine Learning (ML), Early Warning Systems.

ICTJ-P-071

EVALUATING 2-[(E)-2-SUBSTITUTED-ETHENYL]-1,3-BENZOXAZOLES AGAINST PHOTOSYNTHESIS INHIBITION ACTIVITY

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ABSTRACT

The total twelve compounds 2-[(E)-2-substituted-ethenyl]-1,3- benzoxazoles were tested for the capacity to block photosynthetic electrons transport (PET) in chloroplasts of spinach. 2, 8, and 4 had the strongest activity against M. TB, M. Kansai, and M. avium, and it was much more effective against M. avium than isoniazid. The most potential ortho-substituted molecule, 2-[(E)-2-(2-methoxyphenyl) ethenyl], inhibited PET. It took 76.3 mol/L of -1,3- benzoxazole to block PET, but much less of the para-substituted compounds were able to do this. The inhibitory location of the investigated chemicals is on the donor side of photosystem II. The links between structure and their activity are examined. II. The links between structure and their activity are examined. As the development of novel chemicals to target mycobacteria, fungi, and resistant bacteria has become one of the most critical study fields pertaining to antimicrobials, the development of novel chemicals to combat pathogenic bacteria resistance to currently available antimicrobial medications is swiftly becoming a global health crisis. Benzoxazoles are nucleotide-structural bio isosteres such as guanine and adenine. This improves their interaction with the biopolymers found in living systems. Furthermore, it has been discovered that benzoxazoles block important bacterial enzymes such as isocitrate lyase and hyaluronan lyase, as well as bacterial two-component systems. While certain herbicidal benzoxazoles and benzothiazoles can inhibit fatty acid synthesis, more than half of commercially available herbicides inhibit photosynthesis via reversible binding to photosystem II (PS II), which is a complex of embrace proteins found inside the membranes of thylakoids. PS II catalyses two functions: the reduction of plastoquinone and the oxidation of water. Both medications and pesticides, "including herbicides, are intended to impede particular biological activities, and the cellular sites of action of these two types of substances are frequently identical to one another. Almost every pharmaceutical company maintained an agrochemical division for many years Occasional lead times for pesticides and medications result in the use of identical chemicals for vegetation control and human health. Herbicides of diverse classes and with multiple activities exhibit potential medicinal properties, functioning as anti-infective agents and therapeutic medications that target human molecular targets .Moreover, a robust correlation was observed between herbicidal effects and antibacterial activity as prospective antimycobacterial agents, the synthesized 2-styrylbenzoxazole-like chemicals were evaluated against 3 mycobacterial species. In spinach chloroplasts, each of the chemicals that were produced was examined to see whether or not they have the capacity to impede photosynthetic electrons transport, as various antimicrobial compounds have photosynthesis-suppressing activity via bonding to PS II. The structures and antimycobacterial or inhibitory effects of the new compounds on photosynthetic electrons transport in spinach chloroplasts are discussed

Keywords: Antibacterial, bacterial, Photosynthesis inhibition, benzoxazole.

ICTJ-P-072

ASCERTAINING ROLE OF AI IN PERSONALIZED MEDICINE

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ABSTRACT

Personalized medicine also known as precision medicine streamlines treatment plans and enhances results by considering lifestyle, environmental, and genetic factors into account. Precision medicine combined with artificial intelligence may be the next major breakthrough in both managing chronic illnesses and developing treatment regimens. The incorporation of artificial intelligence (AI) into tailored medication improves treatment plan with more accurate medication selection, dose optimization, and result prediction. These are made possible by the ability of AI to evaluate large and complex datasets, including genetic profiles, clinical histories, and lifestyle data. Patients can get customized, cutting-edge care that improves their general health, reduces the negative effects of therapies or treatments and improve overall health. It contributes to customized medicine through predictive modeling, real-time treatment modifications, multi-omics integration, and genetic data analysis. However, the integration of AI has certain challenges like data privacy concerns, the need for system compatibility, and addressing ethical considerations. Resolving these problems is challenging and requires collaboration between clinicians, data scientists, and legislators to guarantee that AI-powered precision medicine is both beneficial and accessible to everyone.

Keywords: Artificial Intelligence, Personalized medicine, Predictive modelling, Genetic data.

ICTJ-P-073

DEVELOPMENT OF TRANSFEROSOMES LOADED ANTIDIABETIC PATCH USING NATURAL BIOACTIVE i.e. SILYMARIN

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ABSTRACT

Millions of people suffer from type 2 diabetes mellitus, requiring efficient and patient-compliant treatments. Transdermal delivery improves patient adherence and lowers systemic adverse effects by providing a non-invasive substitute for traditional oral or injectable techniques. The purpose of this research is to create and assess a new transdermal patch that uses transferosomes loaded with natural bioactive, Silymarin for improved treatment. The goal of this study is to create a transdermal patch that uses transferosomes loaded with silymarin, a naturally occurring bioactive compound for long-lasting and efficient antidiabetic treatment. The thin-film hydration approach was used to create silymarin-loaded transferosomes, which were then evaluated for encapsulation efficiency, size, and zeta potential. The improved transferosomes were integrated into a hydrogel patch made of polyvinyl alcohol. The patch's physical characteristics, skin penetration, and in vitro and in vivo antidiabetic effectiveness were assessed. High encapsulation efficiency and sustained release were demonstrated using silymarin-loaded transferosomes. When compared to free silymarin, in vitro permeation experiments revealed noticeably improved skin penetration. According to in vivo research using diabetic animal models, the transdermal patch successfully raised insulin sensitivity and lowered blood glucose levels.

Keywords: Transferosomes, transdermal patch, antidiabetic, diabetes, natural bioactive.

ICTJ-P-074

ARTIFICAL INTELLIGENCE IN BREAST CANCER: ADVANCEMENTS IN DIAGNOSIS AND THERAPEUTIC STRATEGIES

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ABSTRACT
Globally, breast cancer is the most common cancer to be diagnosed, and both its incidence and death rates are rising annually, particularly in developing nations. The high mortality rates and worldwide effect of breast cancer fuel interest in applications of artificial intelligence (AI). The emergence of artificial intelligence (AI) has brought about significant breakthroughs in breast cancer early diagnosis, prevention, detection and personalized medicine which helps in limiting recurrence, and reducing treatment adverse effects. AI is transforming the treatment of breast cancer by improving pathology, imaging, and individualized care. AI has the potential to match skilled radiologists in imaging by improving the identification of cancer in mammograms, MRIs, and ultrasounds. AI improves biomarker detection in pathology, leading to better evaluations of HER2. However, there are some drawbacks like data privacy, regulatory, variability of AI. Despite of it AI is transforming the breast cancer management by lowering the healthcare expenses while increasing accuracy, decreasing errors, and improving patient outcomes. Here, the applications and developments of AI in breast cancer management which can improve patient care.
Keywords: AI, breast cancer, diagnosis, detection, imaging.

ICTJ-P-075

DESIGN, SYNTHESIS AND BIOLOGICAL EVALUATION OF BACPROTACS

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ABSTRACT
Tuberculosis is a global health challenge and one of the leading causes of death worldwide to tackle this there is need of different clinical approaches for combating the disease. The concept of targeted protein degradation by PROTACS has been widely explored in the field of Oncology and holds potential to be applied for treatment of infectious disease like TB. However, mycobacteria use a similar system i.e Caseinolytic protease proteolytic (CIpCP) system which may help in target degradation of TB cells thus, the targeted proteins will be degraded by PROTAC which in turn may help in the treatment and management of tuberculosis. The aim of the following research to design, synthesize novel BacPROTAC's and further it's in vitro antitubercular activity.In the following study two novel BacPROTAC's namly Isoniazide tagged biotin and Pyazinamide linked biotin were designed and synthezied. Chemical structure of the synthesized compounds were validated by IR, MASS, NMR. Synthesized compounds were further evaluvated for its anti-tubercular potential by REMA protocol. From molecular docking data we found that dock score of PROTAC is -8.3kcal/mol. It shows that BacPROTAC has good binding affinity with the target. IR spectra of synthesized product was recorded and interpreted. Mass spectrometry of PROTACS was recorded. NMR spectrometry of PROTACS was recorded. All BacPROTAC molecules were synthesized by Amidation reaction and were confirmed by spectral techniques. Molecular docking of all analogues, revealed excellent binding affinity and were stable in dynamic condition of 100ns. The designed BacPROTACs portrayed potential anti- TB activity.
Keywords: Protacs, antitubercular activity, amidation.

ICTJ-P-076

CURRENT THERAPEUTIC APPROACHES FOR CUTANEOUS CANDIDIASIS

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ABSTRACT

Cutaneous candidiasis a fungal infection mostly caused by Candida albicans which presents a serious problem since it is linked to underlying medical disorders such diabetes, immunosuppression and obesity. A thorough awareness of treatment choices that are adapted to the severity of the infection and patient-specific characteristics is necessary for effective management. The current therapeutic options for cutaneous candidiasis are examined in this poster, including adjuvant therapy, topical and systemic antifungal medications, and new developments. For localized infections, topical antifungal medications like azoles (like, clotrimazole, miconazole and sertaconazole nitrate) and allylamines (like terbinafine) are the first line of treatment since they are effective and have little systemic side effects. Systemic antifungals, such as fluconazole or itraconazole, are used to treat extensive infections. Furthermore, non-pharmacological treatments including better hygiene and lifestyle choices are essential for avoiding recurrences. The necessity of targeted therapy informed by fungal culture and susceptibility testing is highlighted by the rising incidence of antifungal resistance, especially in non-albicans Candida species. Results could be improved by recent developments like the creation of new antifungal drugs, combination treatments, and methods to prevent the production of biofilms. With an emphasis on a multidisciplinary approach to maximize patient care, this talk explores the future trends in the management of cutaneous candidiasis while highlighting the advantages and disadvantages of the available therapeutic choices for treatment of cutaneous candidiasis.

Keywords: Cutaneous candidiasis, candida albicans, antifungal therapy, topical treatments, systemic antifungals, sertaconazole nitrate, antifungal resistance.

ICTJ-P-077

HYALURONIC ACID ANCHORED BOVINE SERUM ALBUMIN NANOPARTICLES FOR TARGATED DELIVERY OF GEMCITABINE

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ABSTRACT

Gemcitabine (Gem) is a well-known antineoplastic drug used for several solid tumors. In present work, Gem loaded bovine serum albumin nanoparticles (Gem-BSANPs) have been prepared by using desolvation cross-linking method and coated with hyaluronic acid (HA-Gem-BSANPs) to target the CD44 receptor which overexpressed on several solid tumors. The developed NPs were characterized by particle size, zeta potential, Transmission Electron Microscopy (TEM) and Differential Scanning Calorimetry (DSC). The mean particle size, PDI and zeta potentials were observed to be 120.9±5.87 *vs* 144.7±5.67 and 28.66±1.10 *vs* -45.72±3.24, for Gem-BSANPs and HA-Gem-BSANPs, respectively. The TEM analysis confirmed HA coating and thermal analysis (DSC) indicated that Gem was entrapped into NPs as an amorphous form. Significantly low hemolysis was observed after encapsulation of Gem in the NPs. The developed NPs were evaluated for cytotoxicity on A549 and MCF-7 cells, which exhibited high and low levels of CD44 expression, respectively. HA-Gem-BSANPs exhibited higher cytotoxicity and apoptosis on both the tested cell lines. However, better cell killing ability was observed on A549 due to CD44 expression. The present work demonstrated that HA-Gem-BSANPs may be a potential strategy to improve therapeutic efficacy of Gem by selective targeting to the tumor site.

Keywords: Gemcitabine, Hyaluronic Acid, Anticancer, Nanoparticles.

ICTJ-P-078

OVERVIEW OF STIMULI-RESPONSIVE SYSTEMS IN DRUG

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ABSTRACT
Stimuli-responsive drug delivery systems (SRDDS) is a novel method in a pharmaceutical field which provide accurate and regulated release of therapeutic drugs in response to particular triggers. To accomplish spatiotemporal regulation of drug release, these systems make use of internal or external stimuli, such as pH shifts, temperature fluctuations, enzyme activity, light exposure, magnetic fields, or ultrasound. Stimuli-responsive polymer is very important in drug delivery system for treatment of various disease and stimuli-responsive also improve treatment efficacy, reduce systemic side effects, and improve drug targeting by reacting to pathogenic or environmental cues. An overview of SRDDS is given in this abstract, emphasizing its various applications, methods, and design principles. Smart materials including hydrogels, polymers, and nanomaterials—which alter structurally or chemically in response to stimuli—are the main materials used in the systems' engineering. Applications include precise treatment of chronic illnesses, infection prevention, and tailored cancer therapy. Additionally, developments in bioengineering and nanotechnology are spurring creativity in stimuli-responsive systems, opening the door for next-generation treatments. Issues including scalability, biocompatibility, and regulatory approval still exist despite their potential.
Keywords: Stimuli-responsive, regulated drug release, nanotechnology, smart materials, stimuli-responsive drug delivery, and precision medicine.

ICTJ-P-079

EXPLORING THE ROLE OF HERBAL DRUG TECHNOLOGY IN DIABETES MANAGEMENT

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ABSTRACT
Diabetes, a chronic metabolic disorder characterized by high blood sugar levels, poses a significant global health challenge. While conventional treatments rely on insulin therapy and oral hypoglycemic drugs, there is growing interest in herbal drug technology as an alternative or complementary approach. As medicinal plants have been used for therapeutic purposes due to their bioactive compounds, which can regulate blood glucose, enhance insulin sensitivity, and mitigate complications. Herbal drug technology emphasizes the extraction, formulation, and standardization of these compounds to ensure precise dosages, better bioavailability, and consistent therapeutic effects. Advanced techniques in herbal drug development have led to safer, more effective formulations. Plants such as Ginseng, Berberis, Gymnema sylvestre, and Fenugreek have shown hypoglycemic properties in studies by enhancing insulin secretion, improving glucose uptake, and reducing oxidative stress. However, challenges like inconsistent product quality, lack of standardization, and limited large-scale clinical trials remain. Addressing these through rigorous research is crucial for establishing the reliability of herbal therapies. Here we aim to explore the potential of herbal drug technology in providing effective, accessible, and holistic solutions for diabetes management, supporting improved patient outcomes and global health.
Keywords: Herbal drug technology, Bioactive compounds, Bioavailability, Hypoglycemic properties, Insulin sensitivity.

ICTJ-P-080

MITIGATION OF RHEUMATOID ARTHRITIS BY MANGIFERIN LOADED NANOTRANSETHOSOMES

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ABSTRACT

The present study aimed to develop the MNF loaded transethosomes (MNF-TE) for transdermal delivery for mitigation of rheumatoid arthritis. MNF-TE was formulated using thin-film hydration method and optimization was done using Box-Behnken design (BBD). The optimized formulation (MNF-TEopt) was characterized for Polydispersity index (PDI), vesicle size, entrapment efficiency, zeta potential and in vitro MNF release. For further evaluation, Pharmacokinetic study, Transmission electron microscopy (TEM), Skin permeation study and Confocal scanning laser microscopy (CLSM) were performed. The MNF-TEopt presented spherical and sealed shape vesicles with particle size of 148.6m, entrapment efficiency of 74.23%, PDI of 0.1139 and in vitro release of 65.32%. The CLSM images showed that the developed formulation has greater permeation of MN across the skin layers in comparison with the MNF suspension gel. The pharmacokinetic study demonstrated C_{max} and $AUC_{0\text{-}24h}$ of 6.94 0.51 µg/ml and 43.92 ± 7.90 µg/h/ml via transdermal route in comparison to C_{max} and $AUC_{0\text{-}24h}$ of 3.74 ± 7 1.91 µg/ ml and 22.96 ± 9.76 µg.h/ml presented by MNF-TE oral administration. The in vivo study revealed that the MNF-TE gel has good anti-arthritic potential in comparison to the standard diclofenac gel as displayed by radiographic analysis and histopathological studies. Skin irritation study on wistar albino rats confirmed that the developed MNF-TE formulation is safe for skin application. The current investigation indicated that the prepared TE vesicle formulation is a potential carrier for transdermal delivery of mangiferin for the management of rheumatoid arthritis.

Keywords: Mangiferin, transethosomes, transdermal.

ICTJ-P-081

THERAPEUTIC POTENTIAL OF TIGER GRASS: ADVANCES IN DERMATOLOGY, NEUROPROTECTION, AND NANOTECHNOLOGY APPLICATIONS

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ABSTRACT

Tiger grass or Centella asiatica is valued as a medicinal herb due to its anti-inflammatory and antioxidant properties which aid in the healing of wounds. Among its other active ingredients are the triterpenoids, asiaticoside and madecassoside which support collagen synthesis, vascular health and skin care. Traditional applications include skin condition management and tissue regeneration. Clinical research is continuing to expand its potential uses in neuroprotection and chronic wound care in dermatology. Recent developments have drastically altered nanotechnologys efficacy and delivery. Therapeutic outcomes are improved by two nanoparticle-based systems—polymeric nanoparticles and liposomes—that increase the stability bioavailability and targeted delivery of the bioactive ingredients in tiger grass. These advancements make it possible to apply more precisely to diseases like eczema, psoriasis and chronic wounds. Its neuroprotective potential in treating neuroinflammatory diseases like Alzheimers disease and cognitive decline is also being investigated in recent studies. Along with its anti-cancer properties tiger grass is being studied for its ability to strengthen vascular structures reduce varicose veins and enhance circulatory health. Tiger grass helps bridge the gap between traditional herbal therapy and modern therapeutic advancements by ensuring better patient outcomes and efficacy in nanoparticle formulations. Tiger grass holds great promise for dermatological and systemic treatments.

Keywords: Nanoparticle, Traditional Medicine, Neuroprotective, Medicinal Potential, Wound Healing.

ICTJ-P-082

NANO DRUG DELIVERY OF PHYTOCONSTITUENT FOR TREATMENT OF RHEUMATOID ARTHRITIS

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ABSTRACT
Rheumatoid arthritis (RA) is a systemic autoimmune and chronic inflammatory condition. It is identified by joint dysfunction, extra-articular organ damage, bone erosion and cartilage degradation. The current traditional treatment such as NSAIDs, immunosuppressive drugs etc. shows unwanted side effects. According to literature, numerous phytoconstituents obtained from herbal drugs have the potential for treatment of RA with broad range of therapeutics effects, less toxic and side effects. Several herbal phytoconstituents were found to have anti-inflammatory, immunoregulation, antioxidative properties and anti-angiogenesis that improved RA disease. However, these phytoconstituent have a number of drawbacks, numerous studies in the literature, demonstrate the use of nano drug delivery for target specific delivery of phytoconstituents by the use of various nanocarriers such as liposomes, exosomes, nanoemulsion, nano micelles, polymeric nanoparticles and solid lipid nanoparticles. Therefore, these nanocarriers overcome the drawbacks and improved solubility, bioavailability and drug localization for the treatment of RA. It can also be improved the therapeutic efficacy and pharmacological effects of herbal drugs as well as deliver the drug to the target specific site and protect it from degradation. Furthermore, these nanocarriers have the potential to replace current methods as the preferred means of delivery of phytoconstituents for improved RA management.
Keywords: Rheumatoid arthritis, Nano drug delivery, Phytoconstituent, Nanocarriers, liposomes.

ICTJ-P-083

IMMUNOGENICITY: TRIGGERED BY CELL THERAPIES

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ABSTRACT
Cell-based therapies represent a transformative approach in regenerative medicine, offering potential solutions for various diseases by either replacing damaged or dysfunctional cells or by enhancing endogenous tissue repair mechanisms. These therapies utilize a diverse range of cell types, including pluripotent stem cells, progenitor cells, and differentiated primary cells. These cells shows prominent results in the treatment of cardiovascular, neurodegenerative, autoimmune, ophthalmologic, renal, hepatic, and musculoskeletal disorders. A number of cell-based therapies, particularly those involving mesenchymal stem cells (MSCs), have advanced into late-stage clinical trials, with several on the verge of market approval. These therapies function primarily through two mechanisms: direct cellular replacement via engraftment into damaged tissue, or paracrine effects, wherein transplanted cells secrete cytokines and growth factors to stimulate endogenous repair processes. This immunogenic potential is driven by factors such as protein structure, post-translational modifications, and the presentation of novel epitopes. Antigen-presenting cells (APCs), including dendritic cells, macrophages, and B lymphocytes, play a central role in this process, interacting with CD4+ T cells via the major histocompatibility complex class II (MHC II). Given the protein-based nature of these therapies, immunogenicity must be carefully evaluated. Especially in the context of long-term treatment, to ensure sustained efficacy and safety.
Keywords: Cell-based therapies, immunogenicity, mesenchymal stem cells, antigen-presenting cells, and cytokines.

ICTJ-P-084

A REVIEW ON BIOSTATISTICAL METHODS FOR PHARMACEUTICAL SCIENCE

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ABSTRACT

Pharmaceutical science researcher may sometimes wonder "why statistical methods are so important in research?" Simple answer is that, statistical methods are used throughout a study that includes planning, designing, collecting data, analyzing and drawing meaningful interpretation and report the findings. Hence, it is important that a researcher knows the concepts of at least basic statistical methods used at various stages of a research study. This helps the researcher in the conduct of an appropriately well-designed study leading to valid and reliable results that can be generalized to the population. A well-designed study possesses fewer biases, which intern gives precise, valid and reliable results. There are many statistical methods and tests that are used at various stages of a research. In this communication, we discuss the overall importance of statistical considerations in pharmaceutical research with the main emphasis on estimating minimum sample size for different study objectives. The teaching of biostatistics be intensified to students of Pharmaceutical sciences and allied courses, both at undergraduate and postgraduate levels. Further, investigators should consult biostatisticians at the design stages of their research work. Any article containing even the most elementary statistical procedure should be reviewed by a competent biostatistician. Finally, wherever possible editorial boards of medical journals should include a biostatistician as an associate editor. In this communication, we discuss the overall importance of statistical considerations in pharmaceutical research with the main emphasis on estimating minimum sample size for different study objectives.

Keywords: Statistics, research, sampling, study designs.

ICTJ-P-085

TARGETING NEUROINFLAMMATION: A NEW HORIZON IN ALZHEIMER'S THERAPEUTICS

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ABSTRACT

The onset of many neurological and behavioral disorders is associated with inflammation. An early and important phase in the development of Alzheimer's disease (AD) is the accumulation of amyloid-β peptides. A major component in the development of Alzheimer's disease is neuroinflammation, which includes Aβ plaques and neurofibrillary tangles. Chronic neuroinflammation causes memory loss and cognitive decline. Even though a lot of work has gone into studying Alzheimer's disease in the last ten years, there is still no effective medicine that can stop the condition from progressing. All living organisms include the enzyme soluble epoxide hydrolase (sEH), which takes epoxy fatty acids (EpFAs) and changes them into 1,2-diols by adding a water molecule. Evidence suggests that sEH is involved in inflammation and polyunsaturated fatty acids (PUFAs) metabolism. Three drugs involving the sEH enzyme are now undergoing clinical trials to treat peripheral inflammatory disorders.

Keywords: Soluble epoxide hydrolase; Alzheimer's disease; neuroinflammation; therapeutic strategies; neurotoxicity.

ICTJ-P-086

PERSONALIZED HEALTH MONITORING AND MANAGEMENT: A SYSTEMATIC REVIEW OF WEARABLE TECHNOLOGIES AND MOBILE APPS

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ABSTRACT

The increasing prevalence of chronic diseases and need of proactive health management, leading to the development of wearable technologies and mobile health (mHealth) applications. This systematic review evaluates the effectiveness of these technologies in facilitating personalized health monitoring and management. Findings indicate that wearable devices and mHealth apps significantly improve health outcomes, enhance patient engagement, and enable tailored health management strategies. However, challenges remain, including the need for advanced data analytics, improved user experience, and robust security measures to protect sensitive health information. This review provides valuable insights into the current landscape of wearable technologies and mHealth applications, highlighting their potential to revolutionize healthcare through proactive and personalized care. Future research should focus on integrating these technologies within existing healthcare systems, conducting longitudinal studies, and addressing the diverse needs of various populations.

Keywords: personalized health monitoring, wearable technologies, mobile apps, systematic review.

ICTJ-P-087

NEUROINFLAMMATION AND NEURODEGENERATION: MECHANISTIC INSIGHTS AND EMERGING THERAPEUTIC STRATEGIES

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ABSTRACT

Neurodegenerative diseases such as Alzheimer's disease, Parkinson's disease, amyotrophic lateral sclerosis, and frontotemporal lobar dementia present significant health challenges in aging populations. While neurons are vital for signal transmission and network integration in the central nervous system, the surrounding environment—comprising glial cells and the blood-brain barrier—plays a pivotal role in disease progression. Increasing evidence highlights the involvement of neuroinflammation, a complex immune response triggered by factors such as trauma, infections, or neurodegenerative conditions. This process, characterized by glial activation, the release of inflammatory mediators, and the production of reactive oxygen and nitrogen species, can shift from a protective mechanism to the cause of neuronal damage when dysregulated. This presentation delves into major neuroinflammatory pathways linked to neurodegeneration and examines emerging therapeutic approaches, including stem cell therapy, genetic techniques, and nanotechnology, aimed at regulating inflammation and slowing disease progression. Understanding the intricate relationship between neuroinflammation and neurodegeneration is essential for developing effective treatments to reduce the impact of these conditions.

Keywords: Neuroinflammation, Neurodegenerative diseases, Glial cells, inflammatory pathways.

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FORMULATION AND EVALUATION OF MICROEMULGEL OF QUERCETIN SOLID DISPERSION FOR THE TREATMENT OF PAIN AND INFLAMMATION

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ABSTRACT

Pain and inflammation are significant clinical challenges, often requiring targeted and efficient therapeutic strategies. Quercetin, a naturally occurring flavonoid, exhibits potent anti-inflammatory and analgesic properties but suffers from low aqueous solubility and poor bioavailability. This study aimed to formulate and evaluate a microemulgel of quercetin solid dispersion to enhance its therapeutic efficacy for pain and inflammation management. Quercetin solid dispersion was prepared using a solvent evaporation technique with polyvinylpyrrolidone (PVP) as the carrier in varying drug-to-polymer ratios (1:1, 1:2, and 1:3). Characterization using differential scanning calorimetry (DSC) and powder X-ray diffraction (PXRD) revealed an amorphous transformation of quercetin, which correlated with enhanced solubility (up to 6-fold) and dissolution rates. The solid dispersion with the highest solubility was incorporated into a microemulsion system consisting of oil (Capryol 90), surfactant (Tween 80), and cosurfactant (Transcutol P). Pseudoternary phase diagrams were constructed to identify the optimal composition, and the resulting microemulsion was transformed into a gel using Carbopol 940. The formulated microemulgel was evaluated for physicochemical properties, including pH (6.3 ± 0.2), viscosity (3200 ± 150 cps), and spreadability (6.8 ± 0.4 cm). Drug release studies demonstrated a sustained release pattern, with 78.6% drug release over 12 hours, following a Higuchi diffusion model. Ex vivo skin permeation studies using Franz diffusion cells showed a flux of 38.4 µg/cm²/h, indicating enhanced permeation. The anti-inflammatory efficacy was assessed using a carrageenan-induced paw edema model in rats, where the microemulgel exhibited a 72% reduction in paw volume compared to 46% for the standard quercetin gel. Pain-relieving activity was evaluated using the tail-flick test, with a significant increase in tail-flick latency ($p < 0.01$).

Keywords: Quercetin, microemulgel, solid dispersion, anti-inflammatory, pain management.

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DESIGN DEVELOPMENT AND EVALUATION OF CURCUMIN AND HYALURONIC ACID HYDROGEL FOR THE WOUND HEALING

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ABSTRACT

This study aimed to develop and evaluate a hydrogel containing curcumin and hyaluronic acid for enhanced wound-healing efficacy. Curcumin was solubilized using a nanoemulsion-based approach with optimized oil (Capryol 90), surfactant (Tween 80), and co-surfactant (Transcutol P) compositions derived from pseudoternary phase diagrams. The nanoemulsion was incorporated into a hyaluronic acid hydrogel base (0.5% w/v). The formulation was evaluated for physicochemical properties, including pH (6.8 ± 0.1), viscosity (4200 ± 200 cps), and spreadability (7.5 ± 0.3 cm). Drug release studies exhibited a sustained release profile, with 82.5% of curcumin released over 24 hours, following a Korsmeyer-Peppas model. In vitro biocompatibility assessed via an MTT assay on L929 fibroblast cells confirmed non-cytotoxicity, with over 90% cell viability after 24 hours. The hydrogel's wound-healing efficacy was evaluated using an excision wound model in Wistar rats. The hydrogel-treated group showed a significant reduction in wound area (92% closure) by day 14 compared to the control group (65% closure) and curcumin solution group (78% closure) ($p < 0.05$). Histological analysis revealed enhanced granulation tissue formation, re-epithelialization, and collagen deposition in the hydrogel-treated group.

Keywords: Curcumin, hyaluronic acid, hydrogel, wound healing, sustained release, biocompatibility.

ICTJ-P-090

IN-SILICO AND *IN-VIVO* ASSESSMENTS OF CANNABICHROMENE

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ABSTRACT

Cannabichromene, a cannabinoid known for its antioxidant and neuroprotective properties, is posited to have antidepressant potential. Employing a combination of in-silico and in-vivo methods, this study sought to assess the depression-relieving effects of cannabichromene in mice exposed to chronic unpredictable mild stress and unstressed mice. SwissTargetPrediction was used to predict the target genes for cannabichromene, while GeneCards was used to identify gene targets linked to major depressive disorder. Venny software was used to visualize overlapping targets, and the STRING database was used to build protein-protein interaction networks. One important common target was the cannabinoid receptor2 (CNR2) gene, which codes for the cannabinoid2 receptor (CBD 2 receptor). According to molecular docking experiments, cannabichromene had a higher binding affinity for cannabinoid2 receptors than cannabidiol (-8.8) and Δ9-tetrahydrocannabinol (-9.1). Male Swiss albino mice underwent three weeks of chronic unpredictable mild stress (CUMS) to induce depression-like behavior for in-vivo analysis. Cannabichromene (10 and 20 mg/kg) and imipramine (15 mg/kg) were administered for 21 days. At 20 mg/kg, cannabichromene significantly reduced immobility in stressed mice, comparable to imipramine, without affecting locomotion. Both treatments lowered elevated plasma nitrite and corticosterone levels, inhibited brain monoamine oxidase-A activity, and cannabichromene also restored catalase activity suppressed by stress. Abridged glutathione levels by stress also recovered moderately via this cannabinoid. This highlights cannabichromene's potential as a promising therapeutic agent for depression. However, its efficiency and safety/toxicity must be authenticated via supplementary *in-vitro* and full clinical studies across varied populations and models.

Keywords: Cannabichromene, Depression, Antidepressant, Unpredictable stress, Docking, Network Pharmacology.

ICTJ-P-091

FORMULATION AND CHARACTERIZATION OF NUCLEOSIDE REVERSE TRANSCRIPTASE INHIBITOR LOADED NANOFORMULATION FOR THE MANAGEMENT OF HIV INFECTION IN BRAIN

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ABSTRACT

According to the World Health Organization (WHO) approximately 39.9 million people are affected with HIV globally, with an estimated 1.3 million people newly infected in 2023. The aim is to design and optimize a nanoemulsion-based delivery system to overcome the challenges faced by nucleotide reverse transcriptase inhibitors (NRTIs) in HIV treatment. NRTIs are essential in controlling HIV replication, but they often face issues such as poor oral bioavailability and limited absorption. The nanoemulsion will be prepared using an ultrasonication method. The designed formulation will be assessed for various characterization parameters including globule size, zeta potential, pH, viscosity, percentage transmittance as well as surface morphology (transmission electron microscopy). This study will also focus on assessing the *in vitro* drug release profile of the nanoemulsion, determining how the drug is released over time. To evaluate its effectiveness, *in vivo* pharmacokinetic studies will also be conducted to examine the drug concentration in plasma and brain. This proposed nanoemulsion-based delivery system helps in improving HIV treatment by increasing drug absorption, reducing viral load, and providing a more convenient and patient compliance method for drug delivery.

Keywords: Nanoemulsion, HIV, NRTIs.

ICTJ-P-092

OPTIMIZING AND EVALUATION OF ANTIRETROVIRAL DRUG LOADED NANOFORMULATION FOR THE MANAGEMENT OF HSV-2 INFECTION IN BRAIN

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ABSTRACT

According to the World Health Organization (WHO), approximately 491 million people are affected by HSV-2 infection globally. The aim is to optimize and evaluate nanoemulsion formulations loaded with antiretroviral drugs for the management of HSV-2 infection. Advanced techniques such as ultrasonication will be employed to achieve stable and efficient nanoemulsions. The physicochemical properties, including globule size, zeta potential, and encapsulation efficiency, will be chosen as parameter to ensure maximum drug stability. *In vitro* release studies will be conducted to carry out the release profile of the nanoemulsions. The antiviral efficacy of the optimized formulations will be tested against HSV-2 in cell culture models, with enhanced viral inhibition compared to conventional drug delivery systems. Future *in vivo* studies will focus on pharmacokinetics, biodistribution, and therapeutic efficacy in animal models, aiming to demonstrate improved bioavailability and targeted delivery to infected tissues. The outcomes include reduced dosing frequency, minimized systemic toxicity, and enhanced patient compliance. This research is to provide a development of next-generation antiretroviral therapies, offering significant advancements in the treatment of HSV-2 infections and improving long-term treatment.

Keywords: HSV, Nanoemulsion, Antiretroviral.

ICTJ-P-093

FATTY ACID VESICLES: A NOVEL APPROACH FOR COMBATING FUNGAL INFECTIONS

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ABSTRACT
Fungal infections are a rising global issue, especially among immunocompromised patients. Poor drug solubility, excessive toxicity, and the rise of drug-resistant fungus strains are some of the issues facing current antifungal treatments. Novel formulations such as niosomes, liposomes, ethosome, micro emulsions, nanoparticles, microspheres, and micelles have been investigated for transdermal delivery of antifungal medications in an effort to reduce these disadvantages of traditional formulations. More sophisticated systems investigated for this purpose are fatty acid vesicles. Ufasomes, which are vesicles made of unsaturated fatty acids like oleic and linoleic acid, are a novel method for localization and transdermal penetration. Their self-assembly capabilities, inherent biocompatibility, and potential for improved drug delivery make them an attractive substitute. Various active moieties such as itraconazole, methotrexate, clotrimazole, terbinafine, dexamethasone and Cinnarizine have been encapsulated in these novel vesicles wherein promising antifungal effect have been demonstrated. Furthermore, a synergistic effect is achieved when ufasome are used with natural antifungal drugs, increasing their effectiveness even further. Overall, ufasomes appear to be a promising remedy for the drawbacks of the existing antifungal treatment. Future antifungal treatments could benefit greatly from their capacity to increase drug efficacy, lower toxicity, and administer medications in a regulated way. Further research is needed to confirm these findings in preclinical and clinical settings. In order to address the growing problem of fungal infections, our main goal was to investigate the possible uses of fatty acid vesicles for transdermal administration of different bioactives.
Keywords: Ufasomes, Nanoparticles, Microspheres, Synergistic, Anti-Fungal.

ICTJ-P-094

RECENT TREATMENT OF NEURODEGENERATIVE DISORDERS

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ABSTRACT
Neurodegenerative disorders are very complex, multifactorial, fatal diseases in which neurons are leading to cognitive and muscular problems. The prevalence of neurodegenerative disorder disease is increasing because of an aging population, a growing number of cases, and public health concerns. Phytochemicals with multifactorial efficacy can be promising substances for the treatment of these diseases neurodegenerative diseases like Alzheimer's disease, Parkinson's disease, and amyotrophic lateral sclerosis. Phytochemicals act by various properties like antioxidant and anti-inflammatory agents thereby reducing oxidative stress and increasing the overall antioxidant load of the nerve cells. It can also restore mitochondrial function, which is known to be disrupted in the case of these diseases. The current research states that multiple clinical investigations have created and validated various exceptional phyto-formulations growth factors are expressed less frequently in the brains of people with Parkinson's or Alzheimer's disease, there is a correlation between poor endogenous protection and decreased neurogenesis and neuroplasticity. For example: Resveratrol acts as an enhancer of mitochondrial biogenesis. They are also reported to have anti-apoptotic effects and have been known to restore neuronal cell death by acting against neurotrophic factors to induce neuroprotection. Other phytochemicals have also been reported to enhance the cell signaling pathways associated with neuronal survival potentially.
Keywords: Neurodegenerative, Alzheimer, Amyotrophic, Dementia, Phyto-formulations, Neurons.

ICTJ-P-095

ARTIFICIAL INTELLIGENCE IN DRUG DISCOVERY: REVOLUTIONIZING THE BIOPHARMACEUTICAL INDUSTRY

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ABSTRACT

Artificial intelligence (Al) is transforming drug discovery, revolutionizing how the biopharmaceutical industry develops innovative therapeutics. This review provides a detailed analysis of Al-driven approaches in drug discovery, focusing on their role in accelerating and enhancing the development of new treatments. Key Al technologies, including machine learning, deep learning, and natural language processing, are explored, alongside their applications across various stages of the drug discovery process, from target identification to clinical trial design. The paper highlights how Al improves efficiency and accuracy while leveraging big data sources such as multi-omics datasets and electronic health records. It also discusses the challenges and opportunities associated with integrating these data sources, including the need for standardization. Ethical considerations and regulatory hurdles in implementing Al within drug development are also addressed. Emerging trends such as collaborative ecosystems and Al-driven personalized medicine are examined, emphasizing their transformative potential in biopharmaceuticals. This review synthesizes current research and industry practices, offering insights into the profound impact of Al on drug discovery and the obstacles that must be overcome to fully harness its capabilities.

Keywords: Artificial Intelligence (AI), Drug Discovery, Biopharmaceuticals, Machine Learning,Electronic health records and Innovative therapeutics.

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NANOPARTICLES BASED DRUG DELIVERY

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ABSTRACT

Nanotechnology refers to the technology that enables control, manipulation, study, and creation of structures and devices at the nanometer scale. Nano-scale structures, such as nanoparticles, exhibit unique properties and functions that are quite different from their larger counterparts made of the same materials. Their small size, customizable surfaces, enhanced solubility, and multifunctional capabilities open new pathways for biomedical applications. The unique properties of nanoparticles afford them unprecedented interaction with subtle cell processes. This is an incredibly dynamic field that requires the combined efforts of interdisciplinary teams and creates prospects for designing multifunctional systems that are aimed at targeting, diagnosing, and treating complex diseases like cancer. This gives a panoramic overview of nanotechnology to the biologist and presents a novel formulation of nanoparticles that demonstrates an ability to treat solid tumors, facilitate single-dose vaccination, and deliver therapeutic proteins orally.

Keywords: Nanotechnology**,** Nanoparticles, Biomedical, Cancer, Targeted drug delivery.

ICTJ-P-097

ROLE OF CREATININE MONOHYDRATE IN RESTRAINT STRESS MICE MODEL

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ABSTRACT

Anxiety is a manifestation of several mental diseases and represents a subjective human experience. It is a type of behavioural inhibition elicited by environmental stimuli. Anxiety diminishes a patient's quality of life and places a strain on family and the community. Stress correlates with irritation, impatience, and difficulty in relaxation, whereas anxiety is associated with skeletal muscular tension and contextual factors. Creatinine monohydrate, a derivative of creatine, is crucial for energy utilisation in skeletal muscle and serves as a dietary supplement that enhances exercise performance and augments fat-free mass. Creatinie, a naturally occurring substance, can avert ATP depletion, enhance protein synthesis, and stabilise cellular membranes when given with exogenous creatine. Research indicates that creatine supplementation enhances muscular strength, power, and hypertrophy, and has been utilised in illness models such as Huntington's disease, Parkinson's disease, Duchenne muscular dystrophy, and in people with diverse conditions. Our research seeks to evaluate the anxiolytic effects of creatine monohydrate in a Restraint Stress-induced murine model. It seeks to examine its physiological reactions to stresses and its neuroprotective characteristics, encompassing antioxidant functions. The study seeks to elucidate therapies that bolster resilience against stress-related diseases and guide future research and therapy approaches.

Keywords: Anxiety, Creatinine monohydrate, Restraint Stress-induced Mice Model.

ICTJ-P-098

NATURAL LANGUAGE PROCESSING (NLP) IN CLINICAL DATA: ENHANCING TRIAL REPORTING AND DOCUMENTATION

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ABSTRACT

Natural Language Processing (NLP) is changing clinical data management and analysis, especially in clinical trial reporting and documentation. NLP extracts, interprets, and organizes unstructured data from medical records, trial reports, and scientific literature using advanced machine learning techniques. This functionality improves the efficiency, accuracy, and comprehensiveness of clinical documentation, which streamlines the trial reporting process. Automating adverse event detection, identifying significant patient outcomes, and extracting key data points from medical text are all examples of NLP uses in clinical trials, which reduce manual work and the possibility of errors. Furthermore, NLP can help with the study of massive datasets, improving the detection of trends and insights that may not be obvious using traditional methods. This technical development promises to speed up clinical trial reporting, ensure regulatory compliance, and improve overall clinical data documentation quality, resulting in more informed clinical research and patient care decisions.

Keywords: Natural Language Processing (NLP), Medical records, Clinical trials, Patient Outcomes.

ICTJ-P-099

EXPLORING THE POTENTIAL ROLE OF ESSENTIAL OIL IN BREAST CANCER

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ABSTRACT

Breast cancer is attributed as the most commonly occurring cancer with being the second-highest cause of cancer related mortalities in women. The current treatment modalities that include chemotherapy, surgery, and radiation therapy are associated with several side effects and multidrug resistance. Thus, the development of novel and better treatment strategies exhibiting promising potential in breast cancer; further capable of addressing the unmet challenges of conventional therapy is highly needed. Essential oils have garnered attention for their potential complementary role in breast cancer management due to their bioactive compounds with anti-inflammatory, antioxidant, and anti- cancer properties. These are a complex of volatile oils that are extracted from aromatic plants; and are widely used for the management of this deadly disease. Several noteworthy studies have depicted the promising potential of essential oils in combating breast cancer. For instance, essential oils such as cineole, limonene, boswellia sacra, β-pinene, β-Bisabolene and α-Bisabolene and so on has demonstrated enhanced anti-proliferative activity in breast cancer. Further clinical trials are necessary to establish standardized guidelines for the therapeutic use of essential oils in breast cancer. This study highlights the recent studies of integrating essential oils into breast cancer care, emphasizing their role in supporting conventional therapies rather than replacing them.

Keywords: Essential oils, anti-proliferative, bioactive compounds, anti-inflammatory, breast cancer.

ICTJ-P-100

A REVIEW ON USE OF ARTIFICIAL INTELLIGENCE IN ONCOLOGY

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ABSTRACT

The use of artificial intelligence (AI) into oncology is revolutionizing cancer care by improving the precision, efficiency, and customization of diagnosis, therapy, and patient management. Machine learning algorithms, especially deep learning, have shown exceptional efficacy in processing intricate datasets, such as imaging, genomic, along with clinical data, to discern patterns and accurately anticipate results. AI-driven instruments are transforming radiology and pathology via automated image processing, enhancing early tumor identification, and diminishing diagnostic inconsistency. In precision oncology, AI facilitates the discovery of new biomarkers, enhances targeted therapy, and forecasts medication responses based on genomic and molecular profiles. Moreover, AI-powered clinical decision support systems are augmenting treatment planning and optimizing patient outcomes via the integration of real-time data via electronic health records. Notwithstanding these developments, the use of AI in oncology encounters obstacles, such as data privacy issues, algorithmic openness, and the need for stringent clinical validation. This study examines the present status of AI in oncology, its capacity to fill existing deficiencies in cancer treatment, and the ethical as well as regulatory factors crucial for its secure and successful use. Focus is directed towards the potential future of AI-driven personalised oncology and its contribution to the advancement of cancer research and enhancement of patient outcomes.

Keywords: Artificial Intelligence, Patient Care, Personalised Medicine, Telemedicine, Oncology.

ICTJ-P-101

ROLE OF AI IN DRUG DISCOVERY AND DEVELOPMENT-STUDY OF RECENT SOFTWARE IN PHARMACY

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ABSTRACT

This paper provides a comprehensive exploration of current and future AI applications in the pharmaceutical industry, with a focus on its integration into critical processes such as target identification and validation, excipient selection, synthetic route prediction, supply chain optimization, continuous manufacturing monitoring, and predictive maintenance. Additionally, the role of AI in nanotechnology and nanomedicine is highlighted.AI-driven approaches offer unprecedented efficiencies in drug discovery, including compound identification, drug target validation, structure optimization, and response prioritization. Furthermore, the paper examines AI applications in drug formulation, delivery, clinical trials, pharmacovigilance, and drug safety assessment, emphasizing their potential to enhance outcomes and streamline operations. The review studies common software used in pharmacy like AIDDISON, Benevolent AI, Deep Affinity and PADM. Future perspectives are presented, focusing on emerging trends, addressing biases and limitations in AI models, and advocating for enhanced collaboration and knowledge sharing within the industry. By analyzing current research trends and case studies, this review underscores AI's transformative impact on the pharmaceutical industry and its broader implications for healthcare.

Keywords: Artificial Intelligence, drug discovery, drug development, AI, target identification.

ICTJ-P-102

GREENING THE MEDICINE CABINET: APPLICATIONS OF GREEN CHEMISTRY IN THE PHARMACEUTICAL INDUSTRY

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ABSTRACT

This review provides an overview of the current state of green chemistry in the pharmaceutical industry, highlighting successful case studies and future directions for research and development. The pharmaceutical industry is a significant contributor to environment pollution primarily due to the use of hazardous chemicals, energy-intensive processes and generation of waste . Green chemistry offers a promising solution to mitigate these environment concerns. This presentation highlights the applications of green chemistry principles in the pharmaceutical industry ,focusing on the design of eco-friendly synthesis routes,use of renewable feedstock,and implementation of sustainable manufacturing processes .The implementation of green chemistry in pharmaceuticals has led to the development of novel ,environmentally benign processes for the synthesis of active pharmaceutical ingredients (APIs) Key strategies include the use of biocatalysts ,solvent-free reactions ,and continuous processing.additionally the adoption of circular economy principles can help reduce waste and promote the reuse and recycling of materials. By adopting green chemistry principles, companies can reduce their environmental quality .Moreover, green chemistry can help address pressing global challenges, such as climate change, water scarcity, and human health disparities.

Keywords: Green chemistry, applications of green chemistry, Medicine cabinet, Hazardous Environment.

ICTJ-P-103

PHARMACEUTICAL CO-CRYSTALS: A GREEN WAY TO ENHANCE DRUG STABILITY AND SOLUBILITY FOR IMPROVED THERAPEUTIC EFFICACY

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ABSTRACT

Pharmaceutical co-crystals have gained significant attention in recent years as a promising green and sustainable method for poorly soluble drugs to improve their solubility, stability, and bioavailability. This review presents a comprehensive investigation into the design, synthesis, characterization, and evaluation of pharmaceutical co-crystals. The study focuses on exploring different strategies for co-crystal formation, including co-grinding, solvent evaporation, and liquid-assisted grinding. Various characterization techniques such as SCXRD, PXRD, FTIR, and DSC were employed to confirm the formation and structural features of the co-crystals. The article also highlights the significance of understanding the intermolecular interactions within co-crystals and their influence on physicochemical properties. Furthermore, the article discusses the potential applications of pharmaceutical co-crystals in enhancing drug solubility, dissolution rate, and oral bioavailability, leading to improved therapeutic efficacy. Overall, this review provides valuable insights into the design and development of pharmaceutical co-crystals, offering a promising avenue for overcoming the difficulties brought on by poorly soluble drugs.

Keywords: Pharmaceutical, co-crystals, co-crystallization, active pharmaceutical ingredient (API).

ICTJ-P-104

NANOMEDICINE-BASED STRATEGIES FOR DIABETES: DIAGNOSTICS, MONITORING, AND TREATMENT

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ABSTRACT

Traditional approaches to diabetes management, such as frequent glucose monitoring (GM) and frequent insulin injections, are cumbersome and severely affect the quality of life of the patients. With the estimated global diabetic population reaching 439 million by 2030, healthcare expenditure is expected to reach an alarming US$490 billion per year, creating a severe challenge to healthcare systems across the globe. These figures highlight the urgent need for innovative approaches to diabetes management. For example, implantable nanosensors are being developed to enable continuous glucose monitoring, eliminating repetitive finger-prick tests. The glucose levels can now be monitored in real-time, hence improving the convenience and patient compliance considerably. Further, new nanoparticle-based imaging techniques have been developed for the detection of minimal alterations in pancreatic β cell mass, which is important for earlier diagnosis and intervention. These imaging modalities enhance our ability to monitor disease progression and tailor treatment plans appropriately. In addition, nanotechnology is creating the way for novel delivery systems of insulin. Nanoparticles can be used as carriers for insulin and provide controlled and sustained release mimicking natural insulin secretion by the body. This reduces the number of injections and optimizes glucose control.

Keywords: Nanomedicine, Diabetes, Glucose Monitoring, Diagnosis, Treatment, Nanotechnology.

ICTJ-P-105

DOCKING STUDY OF VARIOUS NOVEL CHALCONE BASED DERIVATIVES AS DHFR INHIBITORS AGAINST BREAST CANCER

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ABSTRACT

Breast cancer is the second-leading cause of mortality for women and one of the most serious medical concerns, even despite significant advancements in early diagnosis and treatment. Chalcones have valuable structure that has recently drawn more attention in drug discovery because of their extensive pharmacological activity in the treatment of cancer. Dihydrofolate reeducates' (DHFR) play important role in metabolism of folate, and its inhibition can restrict the proliferation and multiplication of cells that are symptomatic of cancer and bacterial infections. One such anticancer agent that inhibits DHFR is methotrexate, a competitive inhibitor of DHFR. This study aimed to optimize the docking study of various novel chalcone based derivatives as DHFR enzyme inhibitors against breast cancer and selection of best hits. Molecular docking studies were performed to understand the binding modes of the chalcone derivatives to the DHFR protein against PDB ID- 4M6J using the AutoDock 4.2. This program allows for determining the most suitable positions of the ligands in the binding site of interest of the protein, considering the total flexibility of the ligand and the best hits were selected.As a result, we have determined that Chalcone based derivatives are the best hits that can serve as molecular targets for DHFR protein in breast cancer as compare to methotrexate as standard drug.

Keywords: Breast cancer, Chacone, DHFR, Molecular docking, Methotrexate

ICTJ-P-106

EMERGING ROLE OF NANOMEDICINE IN CORONARY ARTERY DISEASE: REVOLUTIONIZING DIAGNOSIS, TREATMENT, AND PREVENTION

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ABSTRACT

Cardiovascular disease has become the major killers in today's world, among which coronary artery diseases (CADs) has attributed to morbidity and mortality. For cardiac relate disorder such as coronary artery disorder, designer micro or nanoparticles are often administration into the vasculature or targeted vessel with the hope to circumvent problems associated with conventional drug delivery. Nanotechnology can improve the local and systemic delivery of cargoes, enhances the therapeutic effectiveness and minimize the inflammatory or angiogenic response following intravascular intervention. The controlled-release nanocarriers offers several nanomaterial coatings to enhance the efficacy. In addition to improving local and systematic distribution to atherosclerotic plaques and lowering the inflammatory or angiogenic response following intravascular intervention, nanotechnology can boost the effectiveness of drugs. Imaging and diagnostic agents could be delivered to specific sites using nanocarriers. Therefore, some of these nanomaterials themselves are considered drugs for the treatment of atherosclerosis due to intrinsic antioxidative/anti-inflammatory and photoelectric/ photothermal properties in a sophisticated plaque microenvironment. Here we aim to discuss the primary diagnostic techniques used in the treatment of CAD, as well as the present and potential uses of nanotechnology.

Keywords: Cardiac, coronary artery disease, nanocarriers, nanomedicine, nanotechnology.

ICTJ-P-107

THE ROLE OF PHARMACEUTICAL CARE PROGRAM IN CONTROL AND MANAGEMENT OF TYPE 2 DIABETES MELLITUS: A REVIEW

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ABSTRACT

The prevalence of type-2 diabetes has grown over the past decade. We performed a study to determine whether a patient counseling for Diabetes patients regarding disease, medication, diet/ nutrition and exercise can improve glycemic control, lipid profile and associated complications with an aim to evaluate the impact of pharmaceutical care on the clinical outcomes of patients and the effect of a pharmacist intervention on improving diabetes control. Patients were registered into 'control' and 'intervention' groups by randomization at three primary health centers. Medical records were prospectively reviewed. Capillary blood glucose level, blood pressure and demographic data were collected at baseline and at the follow-up visits. Pharmacists gave counseling to the intervention group during every visit and their health-related quality of life (HRQoL) was assessed with the Ferrans and Powers questionnaire. Statistical Analysis test were used to compare the results. The intervention group (n = 35) showed well-controlled BMI, whereas the control group (n = 15) showed significant increase in the BMI. ANOVA showed that from the second follow-up onward there was significant decrease in blood glucose levels. Overall, the HRQoL scores increased by 45% in the intervention group and decreased by 2% in the control group. The pharmaceutical care program was effective in improving the clinical outcome and HRQoL of diabetes patients.

Keywords: Diabetes, BMI, Pharmaceutical care.

ICTJ-P-108

PHARMACOECONOMICS: CURRENT AND FUTURE PERSPECTIVES IN HEALTH CARE

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ABSTRACT

Phamacoeconomics can aid the policy makers and the healthcare providers in decision making in evaluating the affordability of and access to rational drug use. Efficiency is a key concept of pharmacoeconomics, and various strategies are suggested for buying the greatest amount of benefits for a given resource use. Phamacoeconomic evaluation techniques such as cost minimization analysis, cost effectiveness analysis, cost benefit analysis, and cost utilization analysis, which support identification and quantification of cost of drugs, are conducted in a similar way, but vary in measurement of value of health benefits and outcomes. This article provides a brief overview about pharmacoeconomics, its utility with respect to the Indian pharmaceutical industry, and the expanding insurance system in India. Pharmacoeconomic evidences can be utilized to support decisions on licensing, pricing, reimbursement, and maintenance of formulary procedure of pharmaceuticals. For the insurance companies to give better facility at minimum cost, India must develop the platform for pharmacoeconomics with a validating methodology and appropriate training. The role of clinical pharmacists including PharmD graduates are expected to be more beneficial than the conventional pharmacists, as they will be able to apply the principles of economics in daily basis practice in community and hospital pharmacy.

Keywords: Phamacoeconomics, Efficiency, community, strategies.

ICTJ-P-109

POTENTIAL CAUSES, PROSPECTS OF ARTIFICIAL INTELLIGENCE IN NON-ULCER DYDPEPSIA

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ABSTRACT

The aim of this study to find out potential causes, prospects and new remedies for the treatment of Non Ulcer Dyspepsia (NUD). As per latest survey in India, the prevalence of this disease was more 10-40% sometimes extends to 30-50% but less prevalence seen in western world about 20-25%. Artificial intelligence helped in finding the neurophysiology, etiology, and psychological data using machine learning, deep learning and some algorithm for experimental clinical research. The latest technology involved was DL Deep learning represented by convolutional neural network recently helped for finding prognosis using automatically extract and learn clinical data. The causes of NUDs were functional gastrointestinal disorders, stress, anxiety, alcohol consumption, diet as well as medications. Mostly Women affected more than Men. There are 6 major categories namely H_2-blockers, antidepressants, antacids, proton pump inhibitors, Prokinetic agents and antibiotics. In most of the cases Cimetidine (Tagamet HB), Famotidine (Pepcid AC), Lansoprazole (Prevacid24 HR), omeprazole (Prilosec), Metoclopramide, Cisapride, citrate, Itopride hydrochloride, and Domperidone and Magnesium hydroxide prescribed more often. Pathophysiological mechanisms underlying NUD are impaired gastric accommodation to a meal, hypersensitivity to gastric distension, delayed gastric emptying and many other factors are also involved such as ANS and CNS. The popular management of NUD stress management, Dietary modification, avoiding triggers (Stress, unhealthy lifestyle) and artificial intelligence with endoscopy in major cases.

Keywords: Non ulcer dyspepsia, indigestion, Stress, proton pump inhibitors, Endoscopy.

ICTJ-P-110

MULTIFUNCTIONAL FLAVONOIDS: A CHEMICAL WEAPON AGAINST ALZHEIMERS DISEASES

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ABSTRACT

Alzheimer's disease (AD) is a neurodegenerative disease with high morbidity and mortality, for which there is no available cure. Currently, it is generally believed that AD is a disease caused by multiple factors, such as amyloid-beta accumulation, tau protein hyperphosphorylation, oxidative stress, and inflammation. Multitarget prevention and treatment strategies for AD are recommended. Interestingly, naturally occurring dietary flavonoids, a class of polyphenols, have been reported to have multiple biological activities and anti-AD effects in several AD models owing to their antioxidative, anti-inflammatory, and anti-amyloidogenic properties. In this review, we summarize and discuss the existing multiple pathogenic factors of AD. Moreover, we further elaborate on the biological activities of natural flavonoids and their potential mode of action and targets in managing AD by presenting a wide range of experimental evidence. The gathered data indicate that flavonoids can be regarded as prophylactics to slow the advancement of AD or avert its onset. Different flavonoids have different activities and varying levels of activity. Further, this review summarizes the structure–activity relationship of flavonoids based on the existing literature and can provide guidance on the design and selection of flavonoids as anti-AD drugs.

Keywords: flavonoids, Alzheimer's disease, targets, structure-activity relationship.

ICTJ-P-111

HYDROTROPIC SOLID DISPERSIONS: A PIONEERING TECHNIQUE FOR SOLUBILITY ENHANCEMENT FOR BCS CLASS II DRUGS

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ABSTRACT

The solubility is an inherent property of any solid, liquid or gas. The solubility of drug dictates the ease with which pharmaceutical formulations can be obtained. Nearly 40% of novel drugs comes in pharmaceutical industries are showing poor capability of solubilization in water. The solubility enhancement of various poorly soluble compounds is a challenging task for researchers and pharmaceutical scientists. To improve such solubility issues, hydrotropic solid dispersion (HSD) technique is widely used which enhance solubility to many folds with use of hydrotropes and have many advantages like; it does not require chemical modification of hydrophobic drugs, use of organic solvents or emulsification. Easy recovery of the dissolved solute and the possible reuse of hydrotrope solutions make this method the most effective one particularly at industrial levels. Besides, the advantage of certain properties like the solvent character independent of pH, high selectivity, non-flammability, cheap and easy availability of hydrotropes, makes this technique superior to other solubilization methods.

Keywords: Solubility, chemical modification, Solubilization, Hydrotropic solid dispersion.

ICTJ-P-112

TELEMEDICINE AND DIGITAL HEALTH PLATFORM

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ABSTRACT

Telemedicine and digital health platforms are technologies that use digital communication to improve healthcare. Telemedicine uses digital technologies to provide medical services remotely, such as virtual consultations, diagnostics, and monitoring. Telemedicine can be used for a variety of services, including: Video conferencing, Mobile apps, Email, Remote monitoring devices, Digital health platforms Include components such as: Electronic Health Records (EHR) systems - Store a patient's health information in one place. Health Information Exchange (HIE) - Allows patients and doctors to securely share medical information. Mobile Health (mHealth) applications - Allow patients to monitor their health, book appointments. Wearable devices - Gather health information such as heart rate, activity, and sleep patterns AI. Machine learning - Use health data to find patterns, predict outcomes, and suggest treatments. Cloud computing - Provides storage and computing power for large amounts of data. Telemedicine and digital health platforms can improve access to healthcare, especially in rural or hard-to-reach areas Optimize time and resources for patients and healthcare providers Allow patients to take control of their health Expand geographic reach, increase capacity, and extend service hours.

Keywords: Telemedicine, digital health, cost reduction, patient satisfaction.

ICTJ-P-113

ROLE OF CALCIUM DYSREGULATION IN ALZHEIMER'S DISEASE AND ITS THERAPEUTIC IMPLICATIONS

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ABSTRACT

The increasing incidence of Alzheimer's disease (AD) coupled with the lack of therapeutics to address the underlying pathology of the disease has necessitated the need for exploring newer targets. Calcium dysregulation represents a relatively newer target associated with AD. Ca+2 serves as an important cellular messenger in neurons. The concentration of the Ca+2 ion needs to be regulated at optimal concentrations intracellularly for normal functioning of the neurons. This is achieved with the help of mitochondria, endoplasmic reticulum, and neuronal plasma membrane channel proteins. Disruption in normal calcium homeostasis can induce formation of amyloid beta plaques, accumulation of neurofibrillary tangles, and dysfunction of synaptic plasticity, which in turn can affect calcium homeostasis further, thus forming a vicious cycle. Hence, understanding calcium dysregulation can prove to be a key to develop newer therapeutics. This review provides detailed account of physiology of calcium homeostasis and its dysregulation associated with AD. Further, with an understanding of various receptors and organelles involved in these pathways, the review also discusses various calcium channel blockers explored in AD hand in hand with some multitarget molecules addressing calcium as one of the targets.

Keywords: Alzheimer's disease; calcium channel blocker; calcium homeostasis; channels; endoplasmic reticulum; mitochondria; multifunctional molecules; signaling; synaptic plasticity.

ICTJ-P-114

PEPTIC ULCER: A REVIEW

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ABSTRACT

Peptic ulcer disease is a chronic disease that affects up to 10% of the world's population. The disease is caused by a decrease in mucosal defenses and the presence of gastric juice PH.The two main factors that disrupt the mucosal resistance to injury are non-steroidal anti-inflammatory drugs (NSAIDs) and Helicobacter pylori (H. pylori) infection. The incidence of peptic ulcer disease has decreased due to the introduction of new therapies and improved hygiene. The most common symptom of peptic ulcer disease is epigastric pain. Most cases of peptic ulcer disease are associated with H. pylori infection or the use of NSAIDs. Peptic ulcer management involves a combination of medication and lifestyle changes. These can include: Avoiding foods that make symptoms worse Quitting smoking, Limiting alcohol and caffeine, Avoiding NSAIDs like aspirin.

Keywords: Helicobacter pylori, Peptic ulcer disease, Nonsteroidal Anti-inflammatory Drugs.

ICTJ-P-115

CONGESTIVE HEART FAILURE: A REVIEW

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ABSTRACT

Congestive heart failure is a common clinieal syndrome,with a relatively poor prognosis in its advanced stages. During the development of heart failure, there is a decline in myocardial contractility and activation of neuro hormonal system. An overshoot of some of these compensatory mechanism sets the stage for therapeutic interventions. Any of the three therapeutic classes of drugs (inotropic drugs, diuretics or vasodilation) can be used as first-line therapy. Other classes can be added to produce additive effects on ventricular function. Because vasodilators have been shown to prolong life, CHF used routinely in patients with heart failure. Arrhythmias and sudden death are relatively common in heart failure, although the value of antiarrhythmic therapy is very helpful in patients with heart failure, it is clear that preventive approaches will be more effective in decreasing morbidity and mortality.

Keywords: therapeutic, myocardial contractility, arrhythmias, vasodilators, CHF.

ICTJ-P-116

ALZHEIMER'S DISEASE: A REVIEW

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ABSTRACT

Alzheimer's is a type of dementia that causes problems with memory, thinking and behaviour. Symptoms usually develop slowly and get worse over time, becoming severe enough to interfere with daily tasks. The neurodegenerative disease has affected 50 million people worldwide and around 3 million people in India itself. Till date no medication has been discovered which may cure the Disease but medications relieving the patients with symptoms are being used. Researchers have come up with a non-invasive ultrasound technology that clears the brain of neurotoxic amyloid plaques structures that are responsible for memory loss and a decline in cognitive function in Alzheimer's patients. The study has cleared its preclinical stage and is being shifted to clinical trials it is a non-invasive treatment which may benefit several Alzheimer prone patients. This review highlights the new advancement it the treatment of vastly spreaded disease Alzheimer.

Keywords: Alzheimer's disease, Dementia, Neurodegenerative disease, Amyloid plaques.

ICTJ-P-117

INNOVATIVE NANOCARRIERS IN ARTHRITIS THERAPY: THE ROLE OF HERBAL CUBOSOMES

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ABSTRACT

Nanocarriers facilitate controlled drug release, improving retention time and penetration in the joint environment. The innovative use of herbal cubosomes as advanced nanocarriers for arthritis therapy can be used. Their ability to encapsulate both hydrophilic and hydrophobic drugs allows for improved therapeutic efficacy and targeted delivery to inflamed tissues and they having the various advantages over other nanocarriers.Key herbal components, such as Withania somnifera (Ashwagandha), Boswellia serrata (Frankincense), and Curcuma longa (Turmeric), are highlighted for their anti-inflammatory properties and potential benefits in arthritis management. This review explores the potential of herbal cubosomes as nanocarriers, highlighting their biocompatibility, biodegradability, and ability to target specific joint tissues. The integration of herbal components may also provide additional anti-inflammatory and regenerative benefits, enhancing the overall therapeutic effect. Overall, the integration of herbal cubosomes in arthritis therapy presents a promising approach that could lead to more effective and safer treatment options. The application of herbal cubosomes in arthritis therapy represents a novel approach to address the limitations of conventional treatments for OA and RA.

Keywords: Arthritis, Anti-inflammatory, Herbal Medicine, Nanocarriers, Cubosomes.

ICTJ-P-118

NEEM TREE- A REVIEW

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ABSTRACT

Azadirachta indica is popularly known as Indian neem or margosa tree. It's been extensively. Further the tree is considered as "Sarvaroga nivarini" means cure all ailments. India ranks second in the world in terms of the volume and value of medicinal plants export. Neem is one Of the indigenous medicinal plants of India which possess medicinal properties in each and Every part viz., roots, seeds, flowers, bark, leaves, fruit pulp etc. Neem is one of the examples of complementary medicine through phytotherapy. In Ayurvedic literature neem is well known for its medicinal properties viz., Neem bark is cool, bitter, astringent and acrid. In addition tothis, it is used to cure tiredness, cough, fever, loss of appetite, worm infestation etc. It also heals wounds and vitiated conditions of kapha, vomiting, skin diseases, excessive thirst and diabetes. More than 150 compounds have been isolated from different parts of neem and these have been divided into two major classes' isoprenoids and non-isoprenoids, which are proteins and carbohydrates. Further, it consists of sulphurous compounds, polyphenolic compounds such as flavonoids and their glycosides, dihydrochalcone, coumarin, tannins and aliphatic compounds According to reports, the Azadirachta indica plant has shown to possess immune modulatory,anti- inflammatory, anti hyperglycaemic, antiulcer, antimalarial, antifungal, antibacterial, antiviral, antioxidant, antimutagenic, antidiabetic and anticarcinogenic properties.

Keywords: Azadirachta Indica, Nimbolide, Anti-inflammatory, Antioxidant.

ICTJ-P-119

PHARMACEUTICAL WASTE: A CONCERN

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ABSTRACT

Pharmaceutical waste is defined as hazards, chemical wastes including expired, unused or spilled contaminated pharmaceutical products and discarded items e.g.bottles, gloves, mask etc Main source of pharmaceutical waste are hospitals, industries and research centers. The effects caused by pharmaceutical waste is a growing concern in medicinal and environmental communities. The objective of this review is to make people aware about the harmful effects of pharmaceutical waste, its management and classification of drug hazards, disposal techniques and techniques to minimize waste generation. Normal people in industries drain pharmaceutical waste in sewage system causing soil and water pollution due to which the drugs enter food chain causing harmful effects to human beings. Recycling matters like paper and plastic use for packing can be beneficial for waste prevention. Draining medicine to sewage system is recommended by FDA for certain class of drugs. Special care should be taken for the disposal of inhalers as they contain CFC's/which damage ozone layer. There are many laws and associations for pharmaceutical waste management but it's our duty to make people aware and help government in implementation of such laws to solve this problem.

Keywords: Pharmaceutical Waste, drug hazard, draining medicine, recycling matters, waste prevention.

ICTJ-P-120

INTRACTABLE EPILEPSY: MANAGEMENT AND THERAPEUTIC ALTERNATIVES

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ABSTRACT

Epilepsy is a chronic neurological disorder characterized by recurrent, unprovoked seizures, affecting approximately 50 million people worldwide. While most patients achieve seizure control with antiepileptic drugs (AEDs), a significant subset, known as drug-resistant or intractable epilepsy, does not respond adequately to treatment, posing substantial challenges to healthcare systems and affecting the quality of life of those impacted. Drug-resistant epilepsy affects about 20-40% of individuals with epilepsy, with variations based on age, type of epilepsy, and geographical region. The prevalence is higher in low- and middle-income countries due to limited access to healthcare and delayed diagnosis. DRE is more common in focal epilepsy, particularly temporal lobe epilepsy, compared to generalized epilepsy. The risk of developing DRE increases with the duration of epilepsy, with early treatment resistance often indicating a higher likelihood of intractability. In Conclusion Drug-resistant epilepsy represents a significant clinical challenge due to its complex etiology, varied epidemiological patterns, and the influence of multiple risk factors. Early identification of at-risk individuals is crucial for optimizing treatment strategies, which may include surgical intervention, neurostimulation, or alternative therapies. Further research into the genetic and molecular underpinnings of DRE is essential for developing more effective treatments and improving patient outcomes.

Keywords: Epilepsy, anti-epileptic drugs, Drug resistant epilepsy.

ICTJ-P-121

NANOPARTICLE-BASED IMMUNOENGINEERING STRATEGIES FOR ENHANCING CANCER IMMUNOTHERAPY

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ABSTRACT

Cancer immunotherapy is a groundbreaking strategy that has revolutionized the field of oncology compared to other therapeutic strategies, such as surgery, chemotherapy, or radiotherapy. However, cancer complexity, tumor heterogeneity, and immune escape have become the main hurdles to the clinical application of immunotherapy. Moreover, conventional immunotherapies cause many harmful side effects owing to hyperreactivity in patients, long treatment durations and expensive cost. Nanotechnology is considered a transformative approach that enhances the potency of immunotherapy by capitalizing on the superior physicochemical properties of nanocarriers, creating highly targeted tissue delivery systems. These advantageous features include a substantial specific surface area, which enhances the interaction with the immune system. In addition, the capability to finely modify surface chemistry enables the achievement of controlled and sustained release properties. These advances have significantly increased the potential of immunotherapy, making it more powerful than ever before. In this review, we introduce recent nanocarriers for application in cancer immunotherapy based on strategies that target different main immune cells, including T cells, dendritic cells, natural killer cells, and tumor-associated macrophages.

Keywords: Natural killer cells, Nanocarriers.

ICTJ-P-122

IN SILICO MOLECULAR DOCKING AND IN VITRO ANTIMICROBIAL EVALUATION OF SOME C5-SUBSTITUTED IMIDAZOLE ANALOGUES

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ABSTRACT

Multi-drug resistant pathogens are becoming hard-to-treat causing severe infections in humans across the globe emphasizing the prevailing need to discover new therapeutic agents. Imidazole is an important five membered heterocyclic unit with extensive biological activities in medicinal chemistry, especially as anti-fungal agent. In this context, we report a series of C5-substituted imidazole drug conjugates (synthesized by Van-Leusen method followed by employing Suzuki, Heck and Sonogashira cross coupling reactions in Ionic Liquids [ILs]) which were assessed for their antimicrobial activities along with in silico molecular docking evaluation. Based on the SAR understanding, molecular docking studies and in vitro evaluations of these molecules, together with the resultant inhibitory efficiencies and binding energies, the compounds 2, 8, 16–20, 24 and 27 were found to be excellent antimicrobial molecular entities. However, among these candidates, especially compounds 8, 16 and 20 found to be the most promising antibacterial drug conjugates showing significant inhibitory potential with MICs ranging from 1 to 16 μg/mL against Gram positive strains. In case of antifungal activities, compounds 2, 8, 15–21, 24 and 27exhibited moderate to excellent inhibitions with MIC values in range of 1–16 μg/mL. Perhaps, from the present study compounds 8 and 20 emerge out to be most promising antimicrobial agents with highest binding affinity and maximum inhibition efficiency (1–4 μg/mL).

Keywords: Multi-drug resistant, MIC, coupling reactions, antimicrobial agents

ICTJ-P-123

DEPRESSION: A REVIEW

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ABSTRACT

Depression is a common psychiatric condition that is now recognized as the leading medical cause of functional disability. The high prevalence and its common comorbidity with other medical conditions mean that depression must be recognized and managed by all physicians and health professionals. There are many evidence-based treatments for depression, including psychotherapy, pharmacotherapy, and other somatic treatments. Unfortunately, however, many patients are not able to access treatments because of limitations in healthcare delivery systems. The principles of care for major depressive disorder include: thorough assessment and diagnosis, selection of appropriate and evidence-based treatments, and careful follow up using measurement-based care.

Keywords: collaborative care, measurement-based care, healthcare delivery, principles, assessment, treatment.

ICTJ-P-124

HYPERTENSION – A REVIEW

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ABSTRACT

Hypertension, defined as persistent systolic blood pressure (SBP) at least 130 mm Hg or diastolic BP (DBP) at least 80 mm Hg, affects approximately 116 million adults in the US and more than 1 billion adults worldwide. Hypertension is associated with increased risk of cardiovascular disease (CVD) events (coronary heart disease, heart failure, and stroke) and death. The interrelationships between hypertension and obesity, two common and major health hazards, are reviewed. Comparisons of simultaneous intra-arterial and cuff blood pressure measurements indicate in general that the association between blood pressure and body weight is real and independent of arm circumference. Hypertension is more common among the obese than among the nonobese and, conversely, a significant proportion of hypertensive persons in the population are overweight.

Keywords: Cardiovascular health, treatment, prevalence, awareness.

ICTJ-P-125

ARTIFICIAL INTELLIGENCE IN FIELD OF PHARMACEUTICAL INDUSTRY

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ABSTRACT

The advancement of computing and technology has invaded all the dimensions of science. Artificial intelligence (AI) is one core branch of Computer Science, which has percolated to all the arenas of science and technology, from core engineering to medicines. Thus, AI has found its way for application in the field of medicinal chemistry and heath care. The transformative impact of artificial intelligence (AI) in the pharmaceutical industry is how AI technologies enhance drug discovery, streamline clinical trials, and improve patient outcomes. By analysing big data and utilizing machine learning algorithms, AI aids in predicting drug efficacy, optimising formulations, and personalising treatment plans. Moreover, the integration of AI in pharmaceutical processes can lead to reduced costs and faster time-to-market for new medications, ultimately revolutionising healthcare delivery. The AI is an effective tool for data mining based on the huge pharmacological data and machine learning process. Hence, AI has been used in de novo drug design, activity scoring, and virtual screening and in silico evaluation in the properties (adsorption, distribution, metabolism, exception, and toxicity) of drug molecule. Various pharmaceutical companies have termed up with AI companies for faster progress in the field of drug development along with the healthcare system.

Keywords: Artificial intelligence, Drug Discovery, Pharmaceutical, Drug Design, Machine Learning.

ICTJ-P-126

HAEMOPHILIA – A REVIEW

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ABSTRACT

Hemophilia A and B are rare inherited bleeding disorders characterized by the deficiency of coagulation factor VIII (FVIII) or factor IX (FIX). While the history of hemophilia dates back to the 2nd century AD, a modern description of hemophilia appeared only at the beginning of the 19th century. General pediatricians rarely encounter bleeding in a neonate or a child, so it is important to know the genetics of hemophilia and to be aware of the clinical manifestations of bleeding disorders in order to appropriately identify those children at risk, ensure early diagnosis and treatment, and prevent complications. The hemophilias are the most common X-linked inherited bleeding disorders, which if not properly managed can lead to chronic disease and lifelong disabilities. The challenges and issues in newborns are different from that in older children and adults. Over the past forty years the availability of coagulation factor replacement therapy has greatly contributed to the improved care of people with hemophilia. Following the blood-borne viral infections in the late 1970s and early 1980, caused by coagulation factor concentrates manufactured using non-virally inactivated pooled plasma, the need for safer treatment became crucial to the hemophilia community.

Keywords: hemophilia A, hemophilia Therapy, inhibitors, prophylaxis.

ICTJ-P-127

ANXIETY: A REVIEW

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ABSTRACT

Anxiety referred as worry or angst is defined as a psychological state described by emotional, somatic, behavioral and cognitive components. Anxiety is regarded as standard reaction to the stressor. Anxiety disorders are the most prevalent of psychiatric disorders, yet less than 30% of individuals who suffer from anxiety disorders seek treatment. People with anxiety disorders can benefit from a variety of treatment and services. Anxiety disorders are among the most frequent mental disorders encountered in clinical practice. These represent a heterogeneous group of disorders, probably with no single unifying etiology. It can be characterized by a maladaptive or excessive response to stress primarily involving the neurotransmitters nor epinephrine, serotonin (5-HT), and gamma- amino butyric acid (GABA). In contrast with depression, genetic factors play a modest role. Benzodiazepine, non-benzodiazepine, buspirone, Antidepressant and plant like Salvia officinalis, Aloe barbedensise, Mimusops elengi are used for treatment in Anxiety.

Keywords: Serotonin (5-HT), etiology, buspirone, *Salvia officinalis*, *Mimusops elengi*.

ICTJ-P-128

DIABETES AND IT'S MANAGEMENT

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ABSTRACT

Diabetes is a prevalent systemic disease affecting a significant proportion of the population worldwide. The effects of diabetes are devastating and well documented. There is increasing evidence that in certain pathologic states, especially chronic diseases, the increased production and/or ineffective scavenging of reactive oxygen species (ROS) may play a critical role. Extraordinary advances have been made during the past decade in our ability to treat diabetes in the ambulatory care setting. These improvements in care are based on new technologies and pharmaceutical agents tested in outpatient environments. Diabetes mellitus is the most common metabolic disorder. The major cause of mortality and morbidity here is due to the complications caused by increased glucose concentrations. The growing prevalence of childhood and adult obesity and the metabolic syndrome suggest that the situation could be even worse in the coming years.

Keywords: Diabetes mellitus, insulin, carbohydrates, diabetic neuropathy.

ICTJ-P-129

ROLE OF PHARMACIST IN HEALTHCARE SYSTEM: A REVIEW

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ABSTRACT

Pharmacists play a crucial role in the healthcare system by ensuring that patients receive safe and effective medications. They are responsible for dispensing medication, advising patients on drug interactions and side effects, monitoring medication therapies, and collaborating with other healthcare professionals to optimize patient outcomes additionally, pharmacists provide patient education on disease management, medication compliance, and lifestyle modifications. They also serve as drug information experts, conducting drug utilization reviews and providing guidance on appropriate medication selection and dosing. The role of pharmacists is becoming increasingly important as healthcare systems strive to improve patient safety, reduce medication errors, and control healthcare costs. As medication experts, pharmacists are well-positioned to help address these challenges and improve the overall quality of care provided to patients. As a summary we can say that "Physician gives medicine to the patients but life to medicine given by pharmacist"

Keywords: Healthcare system; Effective medications; Medication compliance; Pharmacists; Patient safety.

ICTJ-P-130

SKIN: A REVIEW

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ABSTRACT

The skin is the largest organ of the human body. It is a complex epithelial and mesenchymal tissue comprising a multilayered stratified epidermis, adnexal structures such as hair follicles, sweat glands and sebaceous glands, a dermis containing collagen and elastic fibres, and underlying subcutaneous fat. More than 1000 disease entities involving the skin have been described, and up to 20% of all patient referrals to general practitioners involve skin pathology. Infections, drug reactions and diseases such as psoriasis, eczema, urticaria and skin cancer impose a considerable burden on healthcare resources and significantly affect patients' quality of life. Knowledge of the structure and function of the skin and its appendages is paramount to understanding the biology of healthy skin and the pathophysiology of skin diseases.

Keywords: Epidermis, anatomy, glands, diseases.

ICTJ-P-131

A THERAPEUTIC APPROACH ON ASTHMA

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ABSTRACT

Asthma is a common chronic inflammatory disease affecting millions worldwide and requires continuous management. It is marked by an inadequate immune response to external triggers, leading to bronchial hyperresponsiveness, airway narrowing, and excessive mucus production. Management follows a stepwise approach to alleviate symptoms, prevent exacerbations, and maintain lung function. Primary treatments include beta-2 adrenergic receptor agonists and inhaled corticosteroids, with additional options like leukotriene receptor antagonists, theophylline, anticholinergics, and monoclonal antibody therapies for more severe cases. Guidelines, such as those from the Global Initiative for Asthma, emphasize inhaled corticosteroids due to their association with reduced asthma-related mortality. However, adherence to inhaled corticosteroids remains low, highlighting the need for improved education and individualized treatment plans. While current treatments effectively control mild to moderate asthma, there is a lack of data on the optimal combination of active ingredients, especially for non-steroidal medications. A stepwise treatment approach suggests that combining inhaled corticosteroids with long-acting beta-2 adrenergic receptor agonists may improve outcomes and reduce steroid use. Treatment choices vary across countries based on convenience, side effects, and reimbursement policies. More real- world, unsponsored studies are needed to compare asthma treatments and guide clinicians in optimizing care.

Keywords: Asthma, lungs, mucus.

ICTJ-P-132

PHARMACIST ROLE IN CHRONIC DISEASE MANAGEMENT

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ABSTRACT

Pharmacists are highly skilled, dedicated and knowledgeable and can utilise their expertise to help patients manage their chronic conditions. Patient-focused programs implemented by pharmacists have proven highly effective and popular with consumers and is continuing to develop services to help deal with chronic conditions. Medicines are a critical component of addressing the burden of premature death from chronic conditions and pharmacists as the medication experts help patients take their medications safely and effectively. Associations of pharmacists, with other health professions associations, should jointly seek methods for developing closer working relationships among the various health care practitioners Providers and health systems should encourage patients with chronic disease to accept responsibility for the management of their own health problems. Health care plans should provide meaningful incentives to assure the acceptance of this personal responsibility. National and local associations of pharmacists should work with national health programmes, patient organizations, managed care organizations or insurers to incorporate management by the pharmacist of medications for chronic diseases into the benefit design and to ensure pharmacists providing these services be fairly compensated.

Keywords: Pharmacist, premature death, practitioner, chronic disease.

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A THERAPEUTIC APPROACH ON ASTHMA

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ABSTRACT

Asthma is a common chronic inflammatory disease affecting millions worldwide and requires continuous management. It is marked by an inadequate immune response to external triggers, Leading to bronchial hyperresponsiveness, airway narrowing, and excessive mucus production. Management follows a stepwise approach to alleviate symptoms, prevent exacerbations, and maintain lung function. Primary treatments include beta-2 adrenergic receptor agonists and inhaled corticosteroids, with additional options like leukotriene receptor antagonists, theophylline, anticholinergics, and monoclonal antibody therapies for more severe cases. Guidelines, such as those from the Global Initiative for Asthma, emphasize inhaled corticosteroids due to their association with reduced asthma-related mortality. However, adherence to inhaled corticosteroids remains low, highlighting the need for improved education and individualized treatment plans. While current treatments effectively control mild to moderate asthma, there is a lack of data on the optimal combination of active ingredients, especially for non-steroidal medications. A stepwise treatment approach suggests that combining inhaled corticosteroids with long-acting beta-2 adrenergic receptor agonists may improve outcomes and reduce steroid use. Treatment choices vary across countries based on convenience, side effects, and reimbursement policies. More real- world, unsponsored studies are needed to compare asthma treatments and guide clinicians in optimizing care.

Keywords: Asthma, lungs, mucus.

ICTJ-P-134

THE USE OF PRESERVATIVES AND THEIR EFFECT ON HUMAN HEALTH

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ABSTRACT

Preservatives are substances added to various pharmaceutical preparations to prevent or inhibit microbial growth. The use of preservatives in not just food but pharmaceutical dosage forms has been prevalent for quite some time now, but it is only in the last decade that they have been studied and researched extensively. These preservatives have been studied for their source, properties, classification, mechanism of action, applications and after all the research, it has been concluded that an ideal preservative should be effective against all possible microorganisms at low concentration, should not be toxic, should not react or show any such effect, whatsoever, with other constituents of the preparation, should remain stable for the shelf life of the preparation. The environment in which the product is stored plays an important role too. Phenols, chlorocresols, methylparabensetc are some of the preservatives recommended by different pharmacopoeias. These have a common property, that is, they are bactericidal rather than being bacteriostatic. Summing up, the preservatives used these days have been approved by the FDA but some may have unhealthy side effects in larger doses. Others, however have benefits that outweigh these concerns when used properly.

Keywords: Microbial growth, preservatives, environment, bacteriostatic, pharmacopoeia.

ICTJ-P-135

THERMOGEL-MEDIATED SUSTAINED DRUG DELIVERY FOR IN SITU CANCER CHEMOTHERAPY

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ABSTRACT

In the past few decades, the in situ sustained drug delivery platforms present fascinating potential in sentinel chemotherapy of various solid tumors. In this work, doxorubicin (DOX), a model antitumor drug, was loaded into the thermogel of poly(lactide-co-glycolide)-block-poly(ethylene glycol)-block-poly(lactide-co-glycolide). The moderate mechanical property of DOX-loaded hydrogel was confirmed by rheological test. In vitro degradation revealed the good biodegradability of thermogel. The DOX-loaded hydrogel exhibited the sustained release profiles up to 30 days without and even with elastase. The improved in vivo tumor inhibition and reduced side-effects were observed in the DOX-incorporated hydrogel group compared with those in free DOX group. The excellent in vivo results were further confirmed by the histopathological evaluation or terminal deoxynucleotidyl transferase-mediated dUTP nick-end labeling assay. The thermogel with great prospect may be used as an ideal controlled drug delivery platform for the designated and long-term antitumor chemotherapy.

Keywords: Thermogel, biodegradable, chemotherapy, controlled drug delivery.

ICTJ-P-136

ROLE OF ARTIFICIAL INTELLIGENCE IN CANCER GENOMICS

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ABSTRACT

Artificial intelligence (AI) offers powerful methods for identifying new anticancer targets and discovering novel drugs by leveraging biological networks. These networks capture and quantify the complex interactions between cellular components, such as proteins and genes that drive diseases like cancer. AI models, particularly network-based and machine learning approaches, help analyse these interactions to reveal key targets for cancer therapy. By using biological networks, AI can study features like connectivity, centrality, and modularity to better understand how cancer progresses and how it might be targeted for treatment. Machine learning models, for instance, can analyse large-scale biological datasets, such as gene expression data, proteomics, and other omics data, to detect patterns related to cancer resistance, susceptibility, or specific molecular mechanisms. AI highlights potential therapeutic targets and predicts how well drugs may interact with them. This accelerates drug discovery and improves the precision of cancer treatments by focusing on the most promising molecular targets.

Keywords: Biological analysis, Disease modelling, Machine learning, Cellular interactions

ICTJ-P-137

APPLICATIONS OF INVASOMAL DRUG DELIVERY SYSTEM

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ABSTRACT

The transdermal route is an important pathway for localized or systemic effects. Recently, different types of nanocarriers have been designed to improve the dermal and transdermal delivery of medicines. Vesicular systems appear to be suitable carriers owing to their physicochemical properties, such as deformability, size, and charge, which can be modified by altering lipid constituents and preparation methods. Invasomes are novel and flexible vesicles containing a mixture of soy phosphatidylcholine (PC), terpenes, lyso PC, and ethanol with improved skin penetration in comparison with liposomes. Furthermore, invasomes have the same structural constituents as liposomes but contain terpene in their structure. Terpenes are hydrocarbon compounds and are known to be the primary constituents of essential oils from many plants. Addition of terpenes creates deformable vesicles, which can increase the fluidity of the lipid bilayers of the skin. The ability to permeate through skin layers enhances the activity of invasomes, which exert their effects by fluidizing the bilayer structure of SC lipids and disturbing lipids and intracellular protein interactions. In this article the structure of invasomes, their applications in drug delivery were discussed in detail.

Keywords: Invasomes, Terpene, Thin film hydration technique, Characterization.

ICTJ-P-138

DESIGN OF NOVEL DERIVATIVES WITH ANTI-CANCER POTENTIAL INHIBITING GSK-3B ENZYME

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ABSTRACT

GSK-3β is a multifunctional serine/threonine kinase that is essential for a number of cellular functions, such as cancer, apoptosis, and cell cycle regulation. Due to its association with many types of cancer, GSK-3β dysregulation is a desirable target for the development of anticancer medications. This study aims to identify and develop new GSK-3β inhibitors with possible anticancer efficacy. To find pharmacophore hits from a virtual chemical library, a structure-based pharmacophore model was developed utilizing recognized GSK-3β inhibitors (PDB id: 1UV5). The binding affinity and interaction of these hits with the ATP-binding pocket of GSK-3β were assessed using high-throughput docking simulations. The derivatives are being synthesized via modular synthetic pathways and structure will be confirmed through NMR, mass spectrometry, and HPLC. The computational research found a number of candidate inhibitors with good drug-like profiles and high binding affinities. Using a variety of cancer cell lines, in vitro anticancer efficacy will be assessed. The strongest inhibitors will show not able growth suppression and triggered apoptosis. According to these findings, the GSK-3β inhibitors that have been found may be excellent candidates for the creation of new anticancer medications. This study confirms the value of computational methods in identifying GSK-3β inhibitors and offers a solid basis for further experimental verification and refinement of these substances for cancer treatment.

Keywords: Apoptosis, cancer.

ICTJ-P-139

ADVANCED TRENDS FOR IMPROVING BIOAVAILABILITY OF THE DRUGS

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ABSTRACT

Bioavailability is described as the rate and extent (amount) of absorption of unchanged drug from its dosage form. It is one of the important parameter to achieve desired concentration of drug in systemic circulation for pharmacological response to be shown. A drug with poor bioavailability is one with poor aqueous solubility, slow dissolution rate in biological fluids, poor stability of dissolved drug at physiological pH, poor permeation through biomembrane, extensive presystemic metabolism. All poorly water soluble drugs often require high doses in order to reach therapeutic concentrations after oral administration. Low aqueous solubility is the major problem encountered with formulation development of new chemical entities. Compounds with poor oral bioavailability tend to have low plasma exposure and high interindividual variability, which would limit their therapeutic usefulness. Any drug to be absorbed must be present in the form of an aqueous solution at the site of absorption. To overcome these tribulations various strategies are exploited including use of surfactant, permeation enhancers, lipids, micronization, cyclodextrin, nanoparticles, solid dispersions etc. The purpose of this review article is to describe the techniques of bioavailability enhancement for the attainment of effective absorption and improved bioavailability.

Keywords: Bioavailability, Bio membrane, Enhancement, Solubility.

ICTJ-P-140

THERAPEUTICS BENEFITS OF NEEM IN VARIOUS DISEASES

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ABSTRACT

Global health and medical practice seek to merge alternative medicine with evidence-based medicine for a better understanding of the metabolic process and its effects in the human body. An example is the use of complementary medicine like phytotherapy. Azadirachta indica (Neem), a tree originally from India and Myanmar, called by many "The village pharmacy" or "Divine tree" because of its many health properties. In recent times, Neem-derived extracts have been shown to work from anywhere from insect repellent, to supplements to lower inflammation, diabetic control, and even to combat cancer. Herein, we state the health benefits found in diverse compounds and extracts derived from Neem, highlighting the mechanisms and pathways in which Neem compounds produce their effects, while warning that the improper and unstandardized conditions to produce extracts can lead to health issues, particularly certain compounds might have damaging effects on the liver and kidneys.

Keywords: Neem extracts; Nutritional components; Systemic diseases.

ICTJ-P-141

A REVIEW ON USE OF ARTIFICIAL INTELLIGENCE IN COVID-19

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ABSTRACT

The COVID-19 pandemic has highlighted the essential function of artificial intelligence (AI) in addressing global health emergencies. AI-driven algorithms, especially those employing machine learning as well as deep learning, have proved pivotal in analysing extensive clinical, imaging, and genetic information to enable swift and precise detection of SARS-CoV-2 infections via radiographs of the chest, CT scans, along with molecular testing. In the field of healthcare, AI has improved real-time monitoring, allowing precise forecasting of disease transmission, identification of at-risk groups, and maximizing the efficiency of resource distribution. AI-driven natural language processing techniques have expedited the extraction of crucial information from scientific literature as well as social media, facilitating medication repurposing and misinformation control. Moreover, AI has been important in vaccine development, facilitating the identification of promising targets and enhancing distribution logistics. Notwithstanding its transformational potential, the incorporation of AI in the COVID-19 response encounters obstacles, such as data privacy issues, algorithmic bias, or the necessity for worldwide standards. This study underscores the present and prospective uses of AI in the aftermath of a pandemic, accentuating its significance in formulating future strategies for controlling epidemics of infectious diseases and bolstering global health resilience.

Keywords: Artificial Intelligence, COVID-19, Precision Medicine, Deep Learning.

ICTJ-P-142

THE TRANSFORMATIVE ROLE OF ARTIFICIAL INTELLIGENCE IN PERSONALIZED MEDICINE

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ABSTRACT

Artificial Intelligence (AI) is revolutionizing personalized medicine by enabling tailored therapies that address individual patient needs.For chronic diseases such as cancer and diabetes, AI customizes treatment plans by integrating tumor profiling, imaging data, and predictive analytics, improving patient outcomes through targeted and adaptive therapies. AI-powered wearables and remote monitoring systems facilitate continuous health tracking, enabling dynamic adjustments in care and promoting medication adherence. Furthermore, AI significantly enhances early diagnosis by analyzing medical imaging, genetic data, and patient histories to detect diseases at their earliest stages, ensuring timely interventions. Despite its transformative potential, challenges such as data privacy, algorithmic bias, and integration into existing healthcare systems remain. Addressing these issues is critical for harnessing AI's full potential in personalized medicine. With continuous advancements, AI is poised to redefine healthcare delivery, making precision medicine accessible, efficient, and effective for a diverse global population. This poster highlights the applications, benefits, and prospects of AI in personalized medicine and tailored therapies, emphasizing its role in shaping modern healthcare

Keywords: Artificial Intelligence, Personalized Medicine, Healthcare, Pharmacogenomics.

ICTJ-P-143

NATURAL ALLIES IN BREAST CANCER TREATMENT: THE ROLE OF NUTRACEUTICALS

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ABSTRACT

Breast cancer is one of the leading causes of cancer-related mortality among women globally. While advances in conventional treatments—such as surgery, chemotherapy, radiation, and targeted therapy—have improved survival rates, these interventions often come with significant side effects and varying success in long-term recurrence prevention. In response, nutraceuticals have emerged as promising complementary agents, offering potential benefits in prevention, adjunctive therapy, and side effect management. Certain nutraceuticals, including curcumin, resveratrol, green tea catechins, and omega-3 fatty acids, have demonstrated anti-cancer properties through antioxidant, anti-inflammatory, and hormonal modulation mechanisms. Additionally, nutraceuticals like probiotics and vitamins D and C are being explored for their ability to reduce common side effects of breast cancer therapies, such as gastrointestinal distress, immune suppression, and fatigue. Although promising, the role of nutraceuticals in breast cancer management remains largely supportive, with more clinical trials needed to establish standardized dosages, safety profiles, and mechanisms of action. Nutraceuticals may provide a beneficial, complementary approach to traditional therapies, improving patient quality of life and potentially contributing to preventive and therapeutic outcomes in breast cancer care.

Keywords: Breast Cancer, Anti-Cancer, Antioxidant, Anti-inflammatory, Vitamins, Nutraceuticals.

ICTJ-P-144

PHARMACEUTICAL PRESCRIPTION

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ABSTRACT

The pharmaceutical market is experiencing significantly amplified research and development costs, as well as increasing price and other competitive pressures.Pharmaceutical companies spent $57.5 billion on pharmaceutical promotion in the United States in 2004. The industry claims that promotion provides scientific and educational information to physicians.To evaluate whether receipt of payments from the drug industry is associated with physician prescribing practices.with PSRs and perceptions of this contact was sent to 1,388 doctors, 11.5% (n=160) of whom completed the survey. 84% of the doctors saw PSR at least once a week, and 14% daily. 69% accepted drug samples, 39% accepted stationery and 37% took part in sponsored continuing medical education (CME) frequently.Anthropologists of medicine and science are increasingly studying all aspects of pharmaceutical industry practices—from research and development to the marketing of prescription drugs. This article ethnographically explores one particular stage in the life cycle of pharmaceuticals: sales and marketing. Drawing on a range of sources—investigative journalism, medical ethics, and autoethnography—the author examines the day-to-day activities of pharmaceutical salespersons, or drug reps, during the 1990s

Keywords: Parts of prescription, medical ethics.

ICTJ-P-145

DRUG DELIVERY SYSTEM: - A CONTROLLED METHOD

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ABSTRACT

During the last two decades, controlled release administration of therapeutic agents from various types of delivery systems has become an important area of research and significant advances in theories and methodologies have been made. These have been reviewed in a number of relatively recent publications. However, even though devices that are capable of releasing therapeutic agents by well defined kinetics are a significant improvement over conventional dosage forms, these devices do not yet represent the ultimate therapy because the agent is released without regard of the need of the recipient. In recent years, there has been an increased activity in this field and it is the purpose of this review to describe this progress in a systematic way in the hopes of perhaps stimulating additional activity. However the major drawback in the development of such delivery system that matches the circadian rhythm requires the availability of precise technology (pulsatile drug delivery). The increasing research interest surrounding this delivery system has widened the areas of pharmaceutics in particular with many more sub-disciplines expected to coexist in the near future. This review on chronopharmaceutics gives a comprehensive emphasis on potential disease targets, revisits the existing technologies in hand and also addresses the theoretical approaches to emerging discipline such as genetic engineering and target based specific molecules. With the biological prospective approaches in delivering drugs it is well understood that safer and more realistic approaches in the therapy of diseases will be achieved in the days to come.

Keywords: Chronopharmaceutics, methodologies, therapeutics agents.

ICTJ-P-146

AI FOR REAL-TIME REGULATORY INTELLIGENCE AND GLOBAL HARMONIZATION: TRANSFORMING COMPLIANCE IN A MULTI-JURISDICTIONAL LANDSCAPE

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ABSTRACT

AI-driven tools offer transformative solutions by enabling real-time regulatory updates, predictive analytics, and automated compliance tracking. These advancements minimize manual intervention, reduce errors, and enhance decision-making processes. This paper explores the role of AI in streamlining regulatory intelligence by leveraging natural language processing (NLP) and machine learning (ML) to analyze and interpret global regulatory databases. AI systems provide actionable insights tailored to jurisdictional needs, ensuring alignment with local, national, and international standards. The discussion also highlights how AI fosters global harmonization by creating unified frameworks that reduce redundancies and streamline cross-border operations. Furthermore, this study evaluates the impact of AI on cost optimization and resource allocation while ensuring adherence to ethical and data protection standards. Case studies and examples illustrate how AI has been effectively implemented in regulatory processes, transforming compliance management from reactive to proactive approach.

Keywords: Global harmonization, multi-jurisdictional compliance, artificial intelligence in pharmaceuticals.

ICTJ-P-147

CIRCULAR ECONOMY IN PHARMA: USING AI FOR LIFECYCLE OPTIMIZATION OF DRUGS AND DEVICES

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ABSTRACT

The integration of Artificial Intelligence (AI) into the pharmaceutical industry is transforming sustainability efforts through lifecycle optimization and the principles of the circular economy. As the industry faces growing pressure to reduce waste, optimize resource utilization, and minimize environmental impact, AI provides innovative solutions to address these challenges. This paper examines how AI supports the circular economy by enabling closed-loop systems that focus on recycling, reusing, and repurposing materials. Key applications include optimizing supply chain logistics, enhancing waste management, and improving energy efficiency in manufacturing processes. AI-driven insights also enable more sustainable drug development by reducing the need for redundant experiments and ensuring adherence to eco-friendly practices. Case studies highlight successful implementations of AI in lifecycle management, including predictive maintenance of equipment, recycling of active pharmaceutical ingredients, and energy-efficient production methods. These approaches demonstrate how AI can drive the pharmaceutical industry toward a more sustainable future while maintaining cost efficiency and regulatory compliance. By embracing AI for lifecycle optimization, the pharmaceutical sector can transition to a sustainable, circular economy model, ensuring environmental responsibility and economic viability.

Keywords: Circular economy, artificial intelligence, lifecycle optimization.

ICTJ-P-148

AI-DRIVEN EARLY DETECTION OF CANCER USING LIQUID BIOPSY

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ABSTRACT

The rapid advancement of artificial intelligence (AI) has introduced transformative potential in the field of drug discovery, particularly in the pursuit of precision medicine. Traditional methods for developing new therapies are often time-consuming, expensive, and fail to account for the complex individual variability of patients. However, AI-powered models offer an innovative approach to accelerate and personalize drug discovery processes, making them more efficient and patient-centric. This paper explores the role of AI in revolutionizing drug discovery, highlighting the use of machine learning algorithms, natural language processing, and data-driven models to analyze vast biological, genetic, and clinical data sets. This promises to significantly improve patient outcomes and reduce adverse drug reactions by providing treatments that are both more effective and safer. The paper also addresses the challenges in integrating AI into drug discovery, such as data quality, interpretability of models, and ethical considerations. Finally, we discuss the future prospects of AI in precision medicine, emphasizing the potential for AI-driven advancements to reshape pharmaceutical research and usher in a new era of personalized therapies. By revolutionizing the drug discovery process, AI promises to accelerate the development of precision medicine, ultimately transforming healthcare and improving the quality of life for patients worldwide.

Keywords: Artificial Intelligence, Liquid Biopsy, Cancer Detection, Early Diagnosis.

ICTJ-P-149

DEVELOPMENT, CHARACTERIZATION, AND IN-VIVO EVALUATION OF POLYHERBAL NANOGEL FOR ENHANCED WOUND HEALING

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ABSTRACT

This work assesses the wound healing efficacy of a polyherbal nanogel composed of *Butea monosperma and Delonix Regia* extract, recognized for its abundant flavonoids, tannins, saponins, and other bioactive constituents. These chemicals are thought to enhance anti-inflammatory, antioxidant, and antibacterial actions, crucial for expediting wound healing. The nanogel was evaluated for its physicochemical qualities, such as pH, spreadability, and homogeneity, with results demonstrating advantageous traits for topical use. The in vivo assessment utilizing an excision wound model in rats indicated that the polyherbal nano gel markedly enhanced wound contraction and diminished the duration necessary for epithelialization compared to the untreated control group. The nano gel demonstrated enhanced efficacy compared to the usual treatment (Povidone-iodine), indicating its potential as a more effective alternative for wound care. Moreover, in vitro drug release investigations demonstrated a sustained release profile, signifying the formulation's capacity to deliver extended therapeutic effects. The findings indicate that Butea monosperma X Delonix Regia polyherbal nano gel exhibits significant potential in promoting wound healing, rendering it a noteworthy candidate for the management of both acute and chronic wounds.

Keywords: Nanogel, wound healing, polyherbal, evaluation, in-vivo activity.

ICTJ-P-150

UNDERSTANDING AND ADDRESSING SENILE DEMENTIA: CHALLENGES AND OPPORTUNITIES

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ABSTRACT

Senile dementia, a progressive cognitive decline associated with aging, presents significant challenges to individuals, families, and healthcare systems. This neurological disorder encompasses a spectrum of conditions, including Alzheimer's disease, vascular dementia, and mixed dementia, each characterized by impaired memory, reasoning, and functionality. Advances in neuroimaging, biomarkers, and molecular studies have elucidated the pathophysiology of dementia, highlighting amyloid plaques, tau tangles, and cerebrovascular abnormalities as key contributors. This paper explores the latest developments in early diagnosis and prevention strategies, focusing on modifiable risk factors such as diet, exercise, and cognitive engagement. Additionally, it evaluates emerging pharmacological and non-pharmacological treatments, including anti-samyloid therapies, neuroprotective agents, and personalized care models. Innovations in artificial intelligence and digital health tools for monitoring and managing dementia symptoms are also discussed. Addressing the socioeconomic burden of senile dementia requires interdisciplinary collaboration and policy reforms to ensure equitable access to care and support for patients and caregivers. This abstract underscores the critical need for a holistic approach to mitigate the impact of senile dementia and improve quality of life for the aging population.

Keywords: Alzheimer's disease, Senile dementia, biomarkers.

ICTJ-P-151

NEUROPROTECTIVE EVALUATION OF A BIOFLAVONOID AGAINST ROTENONE INDUCED DOPAMINERGIC TOXICITY IN RATS

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ABSTRACT

Parkinson Disease (PD) is a neurological disorder which is accompanied by motor deficit. Flavonoid, a member of bioflavonoids with potent antioxidant and anti-inflammatory properties is also reported for in-silico activity against several targets of PD. The present study aims to compare the monotherapy of rutin and 5-HD against the therapeutic effect of their combination therapy in the unilaterally injected rotenone-induced neurotoxicity in the male rats. For the evaluation of the behavioral symptoms of dopaminergic toxicity a series of tests such as locomotar, OFT, bar catalepsy, narrow beam walk, rota rod, grip strength and footprint analysis were performed. Furthermore, mitochondrial evaluation was done to test the mitochondrial functioning and its integrity. The combination therapy significantly improved motor deficits shown by rats in behavioural paradiagrams. Moreover, the combination therapy also increased rotenone-induced decrease in mitochondrial RCR, ADP/O and attenuated the increased level of expression of mitochondria-dependent apoptotic marker and percentage of apoptotic cells in rat SNpc in flow cytometric analysis. Therefore, combination therapy could be considered as an alternative preventive option in the management of PD.

Keywords: Flavonoid, Rotenone, 5-HD, Selegiline, Parkinson's disease, Toxicity.

ICTJ-P-152

NEUROPROTECTIVE EFFECT OF SELECTED PLANT NEOLAMARCKIA CADAMBA RICH IN FLAVONOIDS AND GLYCOSIDE AGAINST NEURODEGENERATIVE DISORDER

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ABSTRACT

In order to better understand Parkinson's disease (PD), a progressive neurodegenerative disease marked by dopaminergic neuronal loss and motor dysfunction, the study looks into the neuroprotective potential of Neolamarckia cadamba, a plant rich in flavonoids and glycosides. The extract of Neolamarckia cadamba was tested for its capacity to lessen Parkinsons-like symptoms in Wistar rats using a rotenone-induced Parkinson's paradigm. Different dosages of the extract were administered to the animals, and the results were contrasted with those of a group that received a typical pharmacological treatment. Important evaluations included dopamine levels in the striatum, pro-inflammatory cytokines (TNF-α, IL-1β), oxidative stress markers (MDA, SOD, and CAT), and motor behavior tests. Neuronal protection was also established by substantia nigra histopathological analysis.The findings showed that the treatment groups' oxidative and inflammatory indicators were decreased and their motor coordination had significantly improved. Additionally, the extract shielded dopaminergic neurons in the substantia nigra and maintained striatal dopamine levels. Neolamarckia cadamba's flavonoids and glycosides were thought to be responsible for its therapeutic benefits because they had strong anti-inflammatory and antioxidant properties that reduced neurotoxicity and neuronal death.These results imply that Neolamarckia cadamba merits more clinical research and has promise as a natural medicinal agent for Parkinson's disease management.

Keywords: Neolamarckia cadamba, Parkinson's disease, anti-inflammatory.

ICTJ-P-153

AI POWERED PHARMACOKINETICS DRUG MODELING

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ABSTRACT

Pharmacokinetic (PK) drug modeling powered by AI has emerged as a revolutionary approach in drug development and personalized medicine. By leveraging the power of ML and DL algorithms, it significantly enhances the prediction of drug ADME processes. The classical pharmacokinetic models often rely on empirical data and linear approximations that obviously limit their ability to handle complex biological processes more effectively. Conversely, AI-driven techniques can analyze large-scale datasets, integrate multifactorial parameters, and identify hidden patterns to create highly accurate and dynamic pharmacokinetic AI-driven models. AI identifies and predicts potential drug-drug interactions by analyzing patterns in large pharmacological datasets, enhancing patient safety during polypharmacy. Moreover, AI expedites the process of drug discovery by identifying candidates that possess favorable pharmacokinetic characteristics, which greatly reduces time and costs in developmental paths. Recent developments, particularly in explainable artificial intelligence and reinforcement learning, have hence made the models more transparent and adaptive, hence reliable within clinical and regulatory environments. This integration of artificial intelligence into pharmacokinetics can be considered a paradigm shift: enabling precision medicine and the innovational therapeutic solution. Moreover, with the advancement through continuous improvement, AI-pharmacokinetic drug modelling will redefine the future scenario of pharmacological research and health care needs.

Keywords: AI-Powered Pharmacokinetic, ML (machine learning), DL (deep learning).

ICTJ-P-154

THE FUTURE OF CERVICAL CANCER PREVENTION: ADVANCES IN RESEARCH AND TECHNOLOGY

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ABSTRACT

Cervical cancer is the second most prevalent cancer among women worldwide. It remains a significant health concern, particularly in developing countries, where it is a leading cause of cancer-related deaths among women. Innovative technologies have emerged to improve the efficiency, cost-effectiveness, and sensitivity of cervical cancer screening and treatment methods. The pathology of cervical cancer requires recognizing that while infection with high-risk HPV is a crucial factor, it alone is insufficient for the development of the disease. The presence of supplementary risk factors facilitates the transition from infection to cancer. This review examines current preventive methods, including the success of HPV vaccines such as Gardasil and Cervarix, and the effectiveness of screening techniques, from cytology to HPV DNA testing. Emerging technologies for cervical cancer prevention include novel screening techniques such as HPV DNA testing, thermal ablation for treating precancerous lesions, and digital health interventions. These advancements aim to enhance the accuracy, efficiency, and cost-effectiveness of identifying women at risk for cervical cancer while also refining treatment and care. Additionally, digital health interventions are being explored for streamlined treatment and care of cervical cancer. These emerging technologies promise to advance cervical cancer prevention and care globally.

Keywords: Cervical cancer, HPV vaccines, Precancerous lesions, Efficiency.

ICTJ-P-155

NUTRACEUTICALS INSIGHTS: EVALUATING THE EFFICACY OF GANODERMA FOR ASTHMA

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ABSTRACT

Ganoderma, a fungal genus widely known as Lingzhi, is a 'miraculous king of herbs' in traditional Asian medicine, garnered global attention for its promising immunomodulatory, antioxidant, and anti-inflammatory properties, making it a potential candidate for novel therapeutic approaches in asthma management. Asthma, a chronic inflammatory airway disease affecting over 300 million individuals worldwide, particularly children. Despite the availability of bronchodilators and anti-inflammatory agents, conventional treatments are limited by severe side effects, corticosteroid resistance, and poor efficacy in certain asthma phenotypes, such as neutrophilic asthma. This necessitates the exploration of alternative therapeutic strategies. B-glucan, a key polysaccharide in Ganoderma, acts as a PAMP (pathogen-associated molecular pattern), stimulating PRRs and promoting a Th1 immune response. The polysaccharides' antioxidant activity counteracts oxidative stress—a major driver of asthma pathogenesis—by neutralizing reactive oxygen species (ROS) that exacerbate inflammation, airway remodeling, and epithelial cell damage. This study evaluates the therapeutic effects of Ganoderma on Using murine models, Ganoderma treatment reduced Th2 and Th17 cytokine levels by 40% and 35%, respectively, and decreased pulmonary inflammation markers by 50%. Additionally, airway hyper responsiveness was mitigated, with a 45% reduction in smooth muscle spasms. Histological analyses revealed significant suppression of allergic inflammation and reduced airway remodeling. This review underscore the dual therapeutic potential of Ganoderma as a nutraceutical in targeting asthma pathophysiology and enhancing treatment outcomes, offering a novel avenue in asthma management.

Keywords: Ganoderma, Polysaccharides, Asthma, antioxidant, immunomodulatory.

ICTJ-P-156

DRUG DISPOSAL AND ITS ENVIRONMENT IMPACT: A REVIEW

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ABSTRACT

The aim of this review was to analyze the available information on methods used in disposing of unused or expired pharmaceuticals in India and the possibility of environmental contamination. The improper disposal of pharmaceuticals poses significant risks to both human health and the environment. As the use of prescription and over-the-counter drugs continues to rise, so does the accumulation of pharmaceutical waste. This pollution often results in the presence of drug residues in drinking water, affecting aquatic ecosystems and, in some cases, human populations. Additionally, pharmaceutical contaminants can contribute to the development of drug-resistant bacteria and disrupt local ecosystems, causing harm to both plant and animal lissfe. Understanding the human and environmental consequences of poor disposal practices is crucial. By fostering public awareness and implementing safe disposal systems such as drug take-back programs, communities can minimize the environmental footprint of pharmaceutical waste. A shift towards more sustainable and mindful disposal methods not only protects ecosystems but also safeguards public health for future generations.

Keywords: Drug disposal, Ecosystem, Drug resistance bacteria, Sustainable methods.

ICTJ-P-157

NANOEMULSIONS IN PHARMACEUTICAL DRUG DELIVERY SYSTEMS: MODERN ASPECTS

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ABSTRACT

Nanoemulsions (NE) are submicron-sized emulsions, having droplet size 20–200 nm, and being a novel drug delivery system, they can increase solubilization, bioavailability, and stability of drugs. Such systems can address issues of creaming, sedimentation, and coalescence commonly experienced with larger emulsions. Nanoemulsions are an important aspect of modern pharmaceuticals, including improving bioavailability (absorption rate), solubilizing drugs, and without fluctuations; their use in oral, topical, and intravenous administration makes them versatile. This can be involved, as nanoemulsion consists of several functional parts such as oily phase (vegetable oil, triglycerides), aqueous phase (water), surfactants, and co-solvent. High-energy (high-pressure homogenization, microfluidization, ultrasonication) and low-energy (phase inversion emulsification and self-nano emulsification) techniques are the methods to create nanoemulsions. Nanoemulsion characterization includes droplet size, morphology, zeta potential, viscosity, and in vitro skin penetration. Increased surface area and stability of nanoemulsions makes these formulation to improve drug absorption and bioavailability in patients. They can be prepared in a range of dosage forms (foams, creams, sprays or liquids) and, therefore, are very versatile. In addition, nanoemulsions are non-toxic, non-irritant, and safe for both human and veterinary use. In conclusion, nanoemulsions present a valid solution to these drawbacks inherent to traditional drug delivery systems, with the potential to improve dosage form stability, therapeutic effectiveness and patient adherence.

Keywords: Nanoemulsion, drug delivery, bioavailability, formulation, stability, patient compliance.

ICTJ-P-158

EMERGING ROLE OF NOVEL GLYCEROSOMES IN CANCER MANAGEMENT

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ABSTRACT

Glycerosomes, an advanced class of nanocarriers, are emerging tools in cancer treatment. These vesicular systems, derived from traditional liposomes, are composed of glycerol, increasing their solubility, stability, and permeability. In cancer therapy, glycerosomes address some key challenges such as poor drug bioavailability and targeted delivery. Their ability to encapsulate both hydrophilic and lipophilic drugs allows for versatile applications, including the transport of chemotherapeutics, gene therapies, and immunomodulators. Furthermore, the enhanced permeation and retention (EPR) effect of glycerosomes improves drug accumulation in tumor tissues, minimizing off-target effects and reducing systemic toxicity. The role of glycerosomes in delivering novel cancer therapeutics, such as siRNA and CRISPR-Cas9 systems, showcasing their adaptability in formulations. With ongoing research, glycerosomes could be cancer treatment, offering a pathway for personalized and effective therapeutic strategies. We have focused on the current advancements of glycerosome and its applications for cancer management.

Keywords: Glycerosomes, Cancer, Targeted delivery, CRISPR-Cas9, precision medicine.

ICTJ-P-159

USE OF SMART BANDAGES FOR WOUND HEALING

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ABSTRACT

The management of wound is a critical aspect of healthcare as it affects patient's quality of life and puts a financial burden on healthcare industry. The development of smart bandages has shown great potential in wound monitoring and targeted treatment. Chronic wounds are major health concern as they affect 1.89 per 1000 people in India and 1.51 to 2.21 per 1000 people worldwide as per WHO survey (2023). They are susceptible to infection and are leading cause of nontraumatic limb amputation worldwide. Smart bandages technology can monitor various biomarkers such as temperature, moisture, oxygen, blood flow, external pressure, and pH and infection status in real time. This technology provides targeted treatment by integrating drug delivery systems that can release drugs on demand based on wound condition. These drug delivery tools are embedded on bandages to facilitate precise temporal and spatial control over drug release. It is observed that cells rapidly migrate into wounds and regenerates skin tissues in the area making 30% more rapid healing than normal bandages in mice. With the ability to noninvasively diagnose wound parameters, reduce pain and accelerate wound healing; Smart bandages are expected to play a significant role in future wound care.

Keywords: Chronic wounds, Biosensors, Wound monitoring, Temporal and spatial control.

ICTJ-P-160

USE OF VIRTUAL REALITY IN THE TREATMENT OF MENTAL ILLNESS AND PAIN

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ABSTRACT:

Virtual reality has emerged as an effective and therapeutic tool in the field of mental Health. The research has shown positive results in managing pain perception and mental health conditions. VR allows people to act out, practice or revisit situations in a safe environment. This can help people learn new skills and face their fears in a safe environment. In this review, I elaborate about the various elements of experiencing and how VR treatment works. Here we discuss the developments in the use of VR in treatment of various mental health conditions such as PTSD- post traumatic stress disorder, depression, Phobias and anxiety. Cognitive behavior therapy (CBT), exposure therapy and Mindfulness based interventions are being made more accessible with the help of Virtual reality. CBT is a form of psychotherapy (talk therapy). VR can be used as a Part of CBT empowering a client to test new skills in a more controlled environment than in real world. We can provide patient to patient based treatment with the help of VR for curing phobias using small, manageable steps with the patient's consent.

Keywords: Cognitive behavior therapy, Exposure therapy, Pain perception.

ICTJ-P-161

ADVANCES IN SMART AND TARGETED DRUG DELIVERY SYSTEMS: A PARADIGM SHIFT IN THERAPEUTICS

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ABSTRACT
The development of smat and targeted drug delivery systems represents a significant development in m**0**dern medicine, as it enables the accurate administration of pharmaceuticals to specific tissues or cells. Advanced system employ novel approaches like nanoparticles, liposomes, dendrimers, and polymer-based carriers to ensshance the bioavailability of drugs and minimize systemic adverse effects. Strategies including stimulus-responsive targeting and ligand-based targeting aim to enhance specificity and efficacy while attempting to solve the challenges in the treatment of complex diseases, such as cancer, neurological diseases, and infections. Nanotechnology is one of the enabling factors, offering a high drug loading capacity and site-specific delivery. For instance, polymer-based nanoparticles and ligand-conjugated systems are designed in such a manner that these systems specifically identify certain receptors, thereby improving drug localization to diseased tissues such as tumors. Hydrogels and implantable devices have been explored for localized drug release, especially in chronic diseases like diabetes and cancer. Stimuli responsive drug delivery systems that respond according to pH, temperature or light ensure precision medicine. From this point of view, there is a surge in the integration of imaging diagnostics and theranostics, paving the way to customized care.
Keywords: Smart Drug Delivery, Targeted Drug Delivery, Nanoparticles, Precision Medicine.

ICTJ-P-162

IN VITRO AND IN VIVO CHARACTERIZATION METHODS FOR WOUND HEALING ASSESSMENT

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ABSTRACT
Wound healing is a complex biological process comprising inflammation, cell migration, proliferation, angiogenesis, and remodeling of tissue. For developing advanced products in wound care, optimizing therapeutic applications, effective assessment of wounds is mandatory. In vitro characterization enables one to understand some of the cellular and molecular pathways that regulate wound healing. For instance, scratch assays, hydrogel-based wound models and 3D skin equivalents provide controlled conditions to investigate cellular migration and proliferation as well as deposition of the extracellular matrix. Excisional and incisional wound models form part of the in vivo approaches to understand wound repair under physiological conditions. All these methods have histology-, immunohistochemistry, biophysical imaging-based assessments, such as laser Doppler imaging and optical coherence tomography that can provide data on epithelialization, angiogenesis, and scar formation. In fact, biosensors and omics-based analyses study systems and localized healing responses through real-time data on the wound microenvironment. Both in vivo and in vitro approaches are essential for advancement in this field of wound healing research.
Keywords: Wound healing, in vitro assays, in vivo models, Wound characterization, advanced imaging.

ICTJ-P-163

NANOTECHNOLOGY AND ITS PROGNOSTIC AND THERAPEUTIC APPROACH IN THE PREVALENCE OF ALZHEIMER'S DISEASE

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ABSTRACT

The complex nature of the pathophysiology and limited treatment options of AD makes it a huge challenge in healthcare. This review dwells on the role of nanotechnology in AD and its applications at its early stages through the development of nanosensors and boost imaging methods. Additionally, nanotechnology-driven therapeutic strategies are looked into with nanoparticle-based drug delivery systems that aim to target the blood-brain barrier among others. Current research innovations, clinical trials, and prospects highlight the transformative potential of nanotechnology in reshaping AD management. Ethical issues related to applying nanomedicine in neurodegenerative diseases as well as fears about nanoparticles are carefully analyzed herein. Finally, this review concludes with a synthesis of how nanotechnology has affected Alzheimer's disease (AD) while emphasizing emerging trends and future directions toward advancing research using Alzheimer's disease (AD). This comprehensive overview underscores the pivotal role of nanotechnology in revolutionizing AD prognosis and therapy, paving the way for personalized and effective treatment strategies.

Keywords: Alzheimer, pathophysiology, nanotechnology, nano-particles, diagnostic tools.

ICTJ-P-164

FORMULATION AND DEVELOPMENT OF A BILAYER TABLET COMBINING AMP-ACTIVATED PROTEIN KINASE ACTIVATOR AND ANGIOTENSIN RECEPTOR BLOCKER FOR THE MANAGEMENT OF HYPERTENSION AND DIABETES TYPE-2

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ABSTRACT

Formulation challenges involved in the compatibility of two drugs, their stability as well as the optimization of their release profiles will be approached using preformulation studies and in-vitro testing. The one layer of the bilayer tablet would comprise an AMP-Activated Protein Kinase (AMPK) activator. It is expected to increase sensitivity to insulin, decrease hepatic glucose production, and increase the oxidation of fatty acids. The second layer would hold an Angiotensin Receptor Blocker (ARB) to reduce the hypertension. The bilayer tablet is designed for controlled, sustained release for the prolongation and stabilization of the therapeutic effects of both drugs. This combination therapy will be developed and tested through pharmacokinetic studies to confirm the therapeutic efficacy of the bilayer tablet in treating hypertension and Type 2 diabetes to provide a convenient, effective, and safer alternative for improving the patient compliance and general health outcomes. Methods like direct compression or dry granulation will be explored to achieve the desired properties of tablets in terms of hardness, dissolution, and uniformity. The formulation will address the issues of drug compatibility, stability, and optimized release profiles through pre-formulation studies and In-vitro testing like dissolution and permeation studies. This study will be focused on the formulation of a bilayer tablet loading together an AMPK activator and an ARB, targeting at the same time the mechanisms of hypertension and Type 2 diabetes. The bilayer design will ensure controlled and sustained release of both drugs, thus prolonging their therapeutic effects and enhance the bioavailability by improving its solubility.

Keywords: AMP – activated protein kinase (AMPK) activator, angiotensin receptor blocker (ARB).

ICTJ-P-165

PERSONALIZING CLOPIDOGREL THERAPY: INSIGHTS FROM PHARMACOGENOMICS

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ABSTRACT

Pharmacogenomics explores how genetic variations influence an individual's response to medications. Clopidogrel is a widely used oral antiplatelet medication for inhibiting recurrent ischemic events after acute coronary syndromes or stent placement. However, its efficacy varies significantly between individuals, with reduced drug response linked to an increased risk of adverse events. As a prodrug, clopidogrel requires activation through metabolism, primarily by the CYP2C19 enzyme, to inhibit the P2Y12 receptor on platelets and prevent clot formation.Normal metabolizers (individuals with fully functional CYP2C19) process the drug effectively, while poor metabolizers (those with loss-of-function CYP2C19 variants) exhibit reduced drug activation, leading to suboptimal therapeutic effects. Intermediate metabolizers show slower drug activation compared to normal metabolizers, and ultra-rapid once metabolize clopidogrel quickly, potentially leading to higher active metabolite levels.Pharmacogenomics insights enable personalized prescribing, improving drug efficacy and safety. Identifying a patient's CYP2C19 genetic profile helps clinicians tailor treatments, reducing adverse outcomes and enhancing therapeutic success. Alternatives like prasugrel or ticagrelor are effective options for poor metabolizers. The future of pharmacogenomics in clopidogrel therapy includes routine genetic testing to personalize treatments, revolutionizing cardiovascular care by minimizing failures, enhancing safety, and improving patient outcomes.

Keywords: Pharmacogenomics, Clopidogrel, CYP2C19, Personalized medicine, Antiplatelet therapy**.**

ICTJ-P-166

NANORADIOTHERANOSTICS

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ABSTRACT

Cancer is a life-threatening disease in which abnormal cells divide uncontrollably and destroy body tissue. Theranostics are mostly used to treat malignancies of the thyroid, prostate, and neuroblastoma. Altering nanoparticles to get theranostic properties is known as nano-theranostics. The effectiveness of nano-theranostics-assisted radiotherapy is increased by radioactive iodine or higher elements like selenium, bismuth, yttrium, and lanthanides. In recognition of their distinctive features, including their size, capability to target tumors, and blood circulation, nanoparticles are employed as theranostic agent carriers. A portion of selenium may be liberated from NPs in vivo and enter the bloodstream, boosting immunity and lessening radiation's negative effects throughout the body. While combined, these three factors should be considered to increase RT's effectiveness and lessen its negative effects: 1) improving tumor tissue radio sensitization; 2) reversing tumor tissue radiation resistance; and 3) raising healthy tissue radio-resistance. While it is extremely desirable, creating a new generation of nano-scaled radiosensitizers that can boost the radio-sensitization of tumor tissues and the radio-resistance of healthy tissue is still quite difficult. The study identifies the drawbacks of traditional radiation therapy for the cancer treatment. It investigates how nanotechnology, more especially the application of nanomaterials, may be able to address these issues.

Keywords: Theranostics, nanoparticles, High-energy ionizing radiation, radiotherapy.

ICTJ-P-167

MYOPIA PROGRESSION

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ABSTRACT

Myopia is a refractive error in which parallel rays of light form focus in front of the retina while accommodation is at rest. It is also known as nearsightedness because close up objects appear clear while distant objects appear blurry. By 2050, 50% of the world population will have myopia.

There are some causes which are axial myopia: due to increase in axial length of eyeball. Curvature myopia: due to increase in curvature of either cornea or lens. Index myopia: due to increase in refractive index of lens. Positional myopia: due to posterior shift of crystalline lens. Myopia due to excessive accommodation. There are some conventional and current methods of treatment which are: Prescribing concave lenses in the form of spectacle and contact lenses. General rule to prescribe concave lenses is minimum acceptance providing maximum vision. Lifestyle changes: Reduced screen timing, Sufficient Illumination, outdoor activities, Balanced diet and Low vision aids. Novel method: Orthokeratology contact lenses: reshape the cornea overnight. It reduces the progression of myopia by about 32%. Pharmaceutical agents: Atropine reduces myopia progression by about 50%. Multifocal contact lenses: It also reduces myopia progression by about 50%. Defocus incorporated multiple segments

Keywords: Myopia, Refractive error, Nearsightedness, Retina, 2050 Projection, Axial myopia, Cornea.

ICTJ-P-168

OVERCOMING PCOS: SCIENCE AND SUPPORT FOR BETTER HEALTH

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ABSTRACT

Polycystic ovary syndrome (PCOS) is an endocrine disorder caused by hormonal imbalance and elevated levels of androgen, which metamorphose the released egg into cysts. Chief enzymes involved are aromatase 5α-reductase and hormones like LH and FSH, Androgen, Progesterone, Estrogen, Insulin, Sex hormone binding globulin. Quantification of the level of these hormones is used to help diagnose PCOS. The major causes of PCOS are unknown but multiple factors can worsen the condition. The entail factors are environmental and lifestyle, genetics, hormonal, metabolic, inflammatory, psychological, prenatal and developmental factors. No medicine is specifically designed for PCOS, but some treatments and combined medicines exist that cannot cure permanently but reduce the effects or consequences. Here are some drugs that can be prescribed: Metformin, Combined oral contraceptives (COCs), spironolactone, progestin (medroxyprogesterone) and many more. Lifestyle modification, medications, stress management therapies and herbal supplements are viable remedies that lower the effects. It could be life threatened condition if left untreated. Infertility, diabetes, uterine cancer, heart disease, endometrial cancer could be the possible health problems. PCOS is a serious health issue among females that they hesitate to talk about. 5 to 10% of women of reproductive age are affected by PCOS. The exact prevalence cannot be determined due to some factors, but the estimated prevalence of PCOS in India is range between 2% to 35%. Awareness campaigns can help to make people educated about it.

Keywords: Combined oral contraceptive (COCs), herbal supplements, endometrial cancer.

ICTJ-P-169

INNOVATIONS IN PHARMACEUTICAL AND HEALTHCARE: COMPUTER AIDED DRUG DISCOVERY AND DEVELOPMENT

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ABSTRACT

In the dynamic landscape of drug discovery, Computer-Aided Drug Design (CADD) emerges as a transformative force, bridging the realms of biology and technology.It alleviates the scale, time, and cost issues associated with traditional experimental methods. Based on different principles of computer-aided drug screening, CADD includes structure-based drug design (SBDD) and ligand-based drug design (LBDD). SBDD methods include molecular docking, molecular dynamics simulation, and de novo drug design, while LBDD methods encompass the quantitative–structure–activity relationship model, similarity searching, and pharmacophore modeling. Innovative in silico techniques With the advancements in high-throughput DNA sequencing technologies, genomic data, including genetic variants and their interactions with each other and the environment, can be incorporated into clinical decision-making. Pharmacometrics, gathering pharmacokinetic and pharmacodynamic data, and mathematical models further contribute to drug optimization, drug behavior prediction, and drug–drug interaction identification. The integration of artificial intelligence (AI) and machine learning (ML) has further enhanced CADD by enabling rapid analysis of massive datasets, predicting biological activity, and identifying novel drug candidates. Quantum computing is emerging as a powerful tool for solving complex molecular interactions, accelerating the development of next-generation therapies. By integrating computational innovations, CADD continues to transform pharmaceutical research, promising faster, more cost-effective, and targeted drug development.

Keywords: CADD, Technology, LBDD, SBDD.

ICTJ-P-170

ROLE OF ARTIFICIAL INTELLIGENCE IN ONCOLOGY

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ABSTRACT

Artificial intelligence (AI) is concretely reshaping the landscape and horizons of oncology, opening new important opportunities for improving the management of cancer patients. These include drug discovery and development and how these drugs are clinically validated and ultimately administered at the point of care, among others. The review on the methods and applications of AI in cancer clinical research are categorized by the data types including radiographic imaging, cancer genome, medical records, drug information and biomedical literatures. The future perspectives of AI in oncology are discussed: the creation of multidisciplinary platforms, the comprehension of the importance of all neoplasms, including rare tumors and the continuous support for guaranteeing its growth represent in this time the most important challenges for finalizing the 'AI-revolution' in oncology.

Keywords: Artificial Intelligence, Oncology, Cancer genome, Radiographic imaging, Algorithms, neoplasm.

ICTJ-P-171

DEVELOPMENT AND EVALUATION OF TAXIFOLIN LOADED ETHOSOMAL GEL FOR MANAGEMENT OF PSORIASIS

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ABSTRACT

Taxifolin, is an herbal phytomolecule with substantial activity against psoriasis. However, its poor water solubility and limited skin permeation, which restrict its clinical applications. To address this, we developed a novel ethosomal gel formulation loaded taxifolin for enhancing its transdermal application as novel topical treatment for psoriasis. Design expert software was used for the optimization of formulation and subjected for evaluation of particle size, zeta potential and entrapment efficiency were selected as the critical quality attribute. The fabricated taxifolin loaded ethosomes were further assessed to FTIR, DSC, and TEM characterization. Optimized ethosomal formulation was further incorporated into a gel and additional evaluated for pH, viscosity, drug content, rheology, spredability, extrudability, *in-vitro*, *ex-vivo* permeation studies and stability studies. The prepared TES formulation showed the vesicular size of 138.04 ± 1.02 nm, with zeta-potential -0.4 ± 0.534 and entrapment efficiency of 89.33 ± 1.67, FTIR and DSC analysis showed no significant chemical interaction. TEM images showed spherically shaped vesicles. Prepared gel exhibited an elegant physical appearance, shear thinning rheological behavior, good spredability and extrudability. Among the drug release kinetic models, the formulation followed the Higuchi model with drug release of 92.639 ± 0.484 % in 24 h. The study successfully proved the ethosomal gel's outstanding capacity for taxifolin transdermal penetration. This method is environmentally friendly, sustainable for novel alternative management of psoriasis.

Keywords: Taxifolin, Psoriasis, Ethosomal gel, Box-Behnken design.

ICTJ-P-172

AI AND MACHINE LEARNING IN DRUG DISCOVERY AND DEVELOPMENT

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ABSTRACT

The use of artificial intelligence (AI) and machine learning (ML) in drug discovery and development is changing pharmaceutical research by cutting down costs and time needed. Normally, drug development can take more than 12 years and cost about $2.6 billion, but AI methods are speeding up this process. Machine learning algorithms, especially deep learning (DL), help analyses data efficiently throughout the drug discovery phases, like target identification, virtual screening, lead optimization, and clinical trials. Advanced methods, such as neural networks, graph-learning, and natural language processing, help predict drug interactions, toxicity, and pharmacokinetics with great accuracy. Important innovations, including hybrid de novo design and spatial-symmetry models, are solving problems in predicting how molecules behave and optimizing lead compounds. Additionally, AI helps in reviewing biomedical literature and improving experimental processes. AI in drug discovery faces challenges like data scarcity, interpretability, scalability, and regulatory barriers. Solutions include better data sharing, explainable AI, synthetic datasets, improved algorithms, and ethical frameworks for future innovation. Despite ongoing issues related to data access, understanding algorithms, and regulatory approval, the future of drug discovery will benefit from AI systems and shared data.

Keywords: AI, ML, Drug development, deep learning, graph-learning, de novo design.

ICTJ-P-173

SCREENING AND FORMULATION OF EXCIPIENTS FOR DUAL DRUG-LOADED NANOEMULSION FOR THE MANAGEMENT OF HIV-1 INFECTION

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ABSTRACT

According to WHO around 16% of the world population is affected by HIV. The conventional method of drug delivery is not so effective for the management of HIV-1 infection. So a novel combination of antiretroviral dual drug loaded nanoemulsion is formulate to suppress viral replication. However, the poor aqueous solubility and low bioavailability of many antiretrovirals drug possess significant challenges. However, Nanoemulsions, is as advance drug delivery system, to enhance drug solubility, stability, and for targeted delivery. This study focuses on the formulation and screening of excipients for dual drug-loaded nanoemulsions for management HIV-1 infection. Dual antiretroviral drugs with complementary mechanisms of action will be chosen for delivery. Oils, surfactants, and co-surfactants will be screened for their ability to solubilize in the drugs and form a stable nanoemulsion. Pseudo-ternary phase diagrams will be constructed to establish the optimal ratios of selected components. Nanoemulsions will be formulated with the help of vortex mixer and Evaluated for Parameters, such as droplet size, PDI, zeta potential, EE%, and *in vitro* drug release.

Keywords: HIV-1, nanoemulsion, dual drug delivery, antiretrovirals, sustained release, viral load reduction.

ICTJ-P-174

A COMPREHENSIVE REVIEW ON THE CURRENT TRENDS IN THE MANAGEMENT OF RHEUMATOID ARTHRITIS

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ABSTRACT

In the current work, we present a comprehensive perspective on the management of rheumatoid arthritis (RA) by centralizing the existing data provided by significant literature. We emphasize the significance of an early and accurate diagnosis in conjunction with optimal personalized treatment in order to achieve better outcomes for patients who suffer from RA. The findings of this study also provide some suggestions for future research directions in the treatment of rheumatoid arthritis (RA), which may result in improved effectiveness and safety profiles, as well as reduced financial expenditures. Early and correct diagnosis is crucial, as symptoms are associated with other diseases. The use of ACR-EULAR criteria, identification of diagnostic biomarkers, and imaging techniques contribute to accurate diagnosis. The ultimate goal is aggressive drug treatment for full remission or significant reduction in symptoms and clinical signs. Studies have facilitated understanding of pathophysiological mechanisms and developed new therapeutic approaches, but many patients remain unresponsive to current medications. Insufficient data highlights the need for new drugs and personalized medicine.

Keywords: Rheumatoid arthritis, Protein Antibodies, Rheumatoid factor, DMARDs, targets, proteins.

ICTJ-P-175

ROLE OF AI IN BIOPHARMACEUTICALS TO IMPROVE TARGETED DRUG DELIVERY AND BIOAVAILABILITY

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ABSTRACT

Artificial Intelligence (AI) is revolutionizing the field of biopharmaceuticals by enhancing the development of targeted drug delivery systems and improving bioavailability. AI-driven techniques, such as machine learning (ML) and deep learning (DL), are being employed to design more precise drug delivery systems, optimize nanoparticle engineering, and develop personalized treatment strategies. These approaches enable the prediction of drug-receptor interactions and facilitate the creation of formulations that enhance solubility and permeability, addressing challenges associated with poor bioavailability. Additionally, AI accelerates the identification of potential drug-drug interactions and assists in optimizing controlled drug release mechanisms. The integration of AI with advanced imaging techniques and real-time monitoring further improves the targeting and therapeutic efficacy of drugs. In the clinical and manufacturing sectors, AI enhances patient stratification, trial optimization, and process automation, ensuring more efficient and consistent drug production. Ultimately, AI is playing a crucial role in improving the safety, effectiveness, and speed of biopharmaceutical development, leading to more personalized and efficient treatments for patients.

Keywords: Biopharmaceuticals, AI, Bioavailability, Targeted drug delivery system.

ICTJ-P-176

AN OVERVIEW ON FLOATING DRUG DELIVERY SYSTEM

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ABSTRACT

Floating Drug Delivery Systems (FDDS) are oral dosage forms designed to remain buoyant in the stomach for extended periods, enhancing gastric residence time (GRT). This prolongs the drug's presence in the stomach, allowing for sustained and controlled release. FDDS are particularly beneficial for drugs that are poorly soluble, unstable in the intestines, or absorbed in the upper gastrointestinal tract. The review aims to explore how FDDS can improve drug delivery and the future applications and also provide comprehensive insights into the design, classification, and preparation of FDDS. FDDS are formulated using specific materials such as hydrophilic polymers, low density agents, effervescent agents and prepared by using techniques such as direct compression, wet granulation or extrusion. FDDS can also provide local and sustained drug delivery to the stomach or proximal small intestine, offering advantages for conditions like ulcers, H. pylori infections, and nausea. Moreover, FDDS help maintain consistent plasma drug concentrations, reducing side effects and improving therapeutic efficacy. Floating Drug Delivery Systems (FDDS) offer significant advantages for controlled drug release, particularly for drugs with poor solubility or instability in the intestine. By enhancing gastric residence time, FDDS improve bioavailability, reduce dosing frequency, and provide consistent therapeutic effects.

Keywords: Floating drug delivery systems, Gastric residence time, buoyant.

ICTJ-P-177

FORMULATION AND OPTIMIZATION OF DELAYED RELEASE TABLET CONTAINING DOXYCYCLINE HYCLATE

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Abstract:

Doxycycline hyclate act as a broad-spectrum antibacterial agent belonging to the chemical class of tetracycline derivative. In this presentation, we have used various enteric coating polymers in formulation to attain delayed release of the drug. Tablet formulation was prepared by using various excipients and delayed-release polymers and their evaluation test are performed. Nine formulation trial batches were prepared by using Minitab 18 3^2 full factorial design. In that three formulation levels (High, Medium, and Low) of delayed-release polymer as a factor and dissolution and drug content as a response was taken. From all nine batches batch F3 was selected as an optimized batch because of %Cumulative drug release and drug content were found satisfactory. Batch F3 gives results of % CDR (95.16%) and % drug content (101.25 %) having the concentration of 21.63 mg and 64.88 mg of HPMC K100M and Ethyl cellulose respectively and hence batch F3 was selected as an optimized batch.

Keywords: Doxycycline Hyclate, Delayed-release polymers, Tetracycline, Enteric coating polymers, Factorial design, Minitab

ICTJ-P-178

SYNTHESIS AND BIOLOGICAL EVALUATION OF SOME HETEROCYCLIC COMPOUNDS

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ABSTRACT

7-azaindoles shows lot of biological activities such as analgesic, anticancer, Rho-kinase inhibitor, Thrombin inhibitor, Antibacterial activity etc. A series of four 7-azaindole derivatives 6a-6d were synthesized and evaluated for antimicrobial activity. The compound 6a and 6d have shown excellent activity and 6c have shown equal potency as that of standard drug Azithromycin against gram negative bacteria (*P. aeuginosa*).

Keywords: Analgesic, Anticancer, Antibacterial, and Antifungal.

ICTJ-P-179

ROLE OF BIODEGRADABLE POLYMER IN SUSTAINED OCULAR DRUG DELIVERY

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ABSTRACT

The anatomical and physiological limitations of the eye make the ocular drug delivery system particularly challenging because they bar therapeutic drugs from being retained and bioavailable for any protracted period. Poor compliance on the part of patients and repeated administration result from the frequent inability of conventional techniques of delivery to sustain proper concentrations of medications at the desired site. Biodegradable polymer-based systems delay medication residency time on the ocular surface or in ocular tissues, extend drug stability, and reduce systemic side effects. It enhances the encapsulation properties of polymers such as poly (lactic-co-glycolic acid), chitosan, and polylactic acid to deliver a range of therapeutic agents using targeted and sustained drug release. Moreover, these methods ensure greater treatment success for diseases like glaucoma, macular degeneration, and postoperative inflammation as they avoid conventional hindrances such as rapid expulsion by tears or enzymatic degradation. It addresses the importance of biodegradable polymers as a basic component of the newest ocular therapies and significant problems, current developments, and potential for clinical use.

Keywords: Biodegradable polymer**,** Nanocarriers, ocular barrier, Biocompatibility, Ocular drug delivery.

ICTJ-P-180

BIOLOGICAL PROPERTIES OF *MORINDA OFFICINALIS*: EXPLORING ITS THERAPEUTIC POTENTIAL

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ABSTRACT

Morinda officinalis, a traditional medicinal plant used in Asian herbal medicine, has adaptogenic, anti-inflammatory, and Immunomodulatory properties. Its bioactive components such as polysaccharides, anthraquinones, and iridoids, enhance its therapeutic efficacy against reproductive, osteoporosis, and neurological problems. This review investigates the several biological properties of *Morinda officinalis*, highlighting its pharmacological mechanisms and prospective uses in modern medicine. A systemic review of experimental and clinical research was performed to assess the bioactivity of *Morinda officinalis*. Key areas of investigation included its antioxidant, anti-inflammatory, neuroprotective, and hormone-regulating effects, alongside its effect on bone health, immune modulation, and gut micro biota. *Morinda officinalis* has shown beneficial effects for reproductive health by regulating testosterone and estrogen levels, showing potential in treating male infertility and menopausal symptoms. The plant enhanced osteoblast activity and suppressed osteoclast-mediated bone resorption, underscoring its significance in osteoporosis therapy. Polysaccharides derived from *Morinda officinalis* improved immune responses by controlling cytokine synthesis and altering gut micro biota composition. Substantial decreases in inflammatory markers and oxidative damage were seen, highlighting its potential in the management of chronic inflammatory illnesses. *Morinda officinalis* has many biological effects, with prospective uses in reproductive health, neuroprotection, skeletal health, and immunological regulation. Future research, especially clinical trials, is crucial to convert these insights into medicinal uses.

Keywords: *Morinda officinalis*, Neuroprotection, bone health, Reproductive health, Immunomodulation.

ICTJ-P-181

ADVANCEMENTS IN DRUG DELIVERY SYSTEMS

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ABSTRACT

Advancements in drug delivery systems (DDS) have revolutionized the field of medicine by enhancing therapeutic efficacy, reducing side effects, and improving patient compliance. Innovations like nanotechnology enable precise targeting through nanoparticles, liposomes, and quantum dots, while overcoming barriers such as the blood-brain barrier. Controlled and sustained release systems, including polymer-based formulations, microspheres, and implantable devices, allow for consistent drug delivery over extended periods. Targeted delivery methods, such as ligand-based and stimuli-responsive systems, increase drug concentration at disease sites, minimizing systemic effects. Gene delivery technologies, such as CRISPR-Cas9 and RNA-based drugs, are transforming genetic therapies. Smart systems integrating diagnostics and therapy, transdermal methods like micro-needles, and inhalation approaches provide novel ways to administer drugs effectively. Further, biologic therapies using monoclonal antibodies and oral innovations like controlled-release tablets expand treatment possibilities. Finally, 3D printing enables personalized drug dosing and formulation. These advancements promise to reshape drug therapy, offering precision and improved outcomes across various medical fields.

Keywords: Drug delivery system, Nanoparticles, Nanocarriers, Nanosheet, Tumor, Pharmacokinetics, Chemotherapy.

ICTJ-P-182

AI-DRIVEN 3D PRINTING IN PERSONALIZED MEDICINE AND TAILORED THERAPIES

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ABSTRACT

Personalized medicine is currently being transformed by the combination of 3D printing and artificial intelligence (AI), which makes it possible to create highly customized equipment and therapies for each patient. In order to create and manufacture 3D-printed solutions that are precisely tailored to each patient's particular anatomy and treatment requirements, artificial intelligence (AI) algorithms examine patient-specific data, including genetic profiles, medical imaging, and health conditions. Personalized medication delivery, AI-driven 3D printing for unique implants, for regenerative medicine are some of the main applications covered. AI also helps with printing process optimization, making sure that structures, materials, and characteristics are optimized for better patient results. Notwithstanding the enormous promise, issues including data security, ethical concerns, and legal requirements need to be resolved. The presentation shows how AI and 3D printing will be used in healthcare in the future to provide highly customized medicines and increase treatment effectiveness, opening the door to more accurate, customized medical interventions. This poster examines how artificial intelligence (AI) is revolutionizing healthcare through 3D printing, namely in the creation of customized implants.

Keywords: Artificial Intelligence (AI), Personalized medicine, 3D printing.

ICTJ-P-183

ADVANCEMENTS IN NANOGELS FOR ENHANCED OCULAR DRUG DELIVERY

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ABSTRACT

The use of nanomedicine in gel or particle production has a lot of promise for improving both active and passive targeting in ocular medication delivery systems. Drug delivery is severely hampered by the eye's numerous barriers, which are best illustrated by the dense network of closely related tissue structures. Using the potential of designed nanomedicine is a viable strategy to improve medication penetration, especially when using active targeting agents like aptamers and protein peptides, which enable targeted release and increased bioavailability. Concurrently, DNA carriers have become a novel type of active-targeting structures that link active targeting agents and demonstrate their promise for use in ocular drug delivery applications. In order to explore new processes and approaches, this study attempts to compile recent data about the optimization of different nanoparticles, i.e., hydrogel-based systems, including both passive and active targeting agents for ocular drug delivery. The review also explores the possible uses of DNA nanostructures, including how they might be used to develop tailored medication delivery strategies in the field of ophthalmic medicine.

Keywords: DNA, targeted modulators, ocular treatment, nanomedicine, nanogel.

ICTJ-P-184

AI IN HEALTHCARE: REVOLUTIONIZING DIAGNOSIS AND THERAPY

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ABSTRACT

Artificial Intelligence (AI) is transforming healthcare, making medical care smarter, faster, and more personalized. By processing massive amounts of data, AI is helping doctors diagnose diseases earlier, more accurately and with greater precision. Medical Imaging analysis whether through analyzing medical images like X-rays and MRIs or interpreting genetic information or Natural Language Processing (NLP). AI can spot patterns that might be missed by the human eye, helping doctors make better decisions for their patients. In medical therapy, AI is revolutionizing treatment by offering personalized treatment plans by considering factors like a patient's genetics, lifestyle and drug discovery and development. AI helps to create customized treatment plans, ensuring that right therapy is provided at the right time. Robotic Surgery are assisting in surgery by enhancing precision and minimizing human error. From improving the accuracy of diagnoses to providing individualized care. AI in healthcare is not just about technology it's about improving lives, offering better outcomes and paving the way for a healthier future.

Keywords: Medical Imaging Analysis, Personalized Treatment Plans, Robotic Surgery.

ICTJ-P-185

ROLE OF ARTIFICIAL INTELLIGENCE IN CLINICAL TRIALS AND AACCELERATING MEDICAL BREAKTHROUGHS

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ABSTRACT

Artificial intelligence (AI) is increasingly transforming clinical trials by enhancing various stages of the process, from drug discovery to patient recruitment and data analysis. AI's ability to analyse vast amounts of complex data enables more efficient decision-making, accelerates trial timelines, and improves the accuracy of predictions regarding drug efficacy and safety. Its application in patient selection, personalized treatment plans, and real-time monitoring contributes to more tailored and adaptive clinical trial designs, ultimately fostering innovation in medicine. Moreover, AI-based tools can help identify potential adverse effects earlier, improving safety and reducing costs associated with clinical trials Clinical trials are the essential assessment for safe, reliable, and effective drug development. Data-related limitations, extensive manual efforts, remote patient monitoring, and the complexity of traditional clinical trials on patients drive the application of Artificial Intelligence (AI) in medical and healthcare organisations. For expeditious and streamlined clinical trials, a personalised AI solution is the best utilization. The future implications of AI to accelerate clinical trials are important in medical research because of its fast output and overall utility.

Keywords: Artificial intelligence, Clinical trials.

ICTJ-P-186

INNOVATIVE ANTI-AGING CREAM WITH NIACINAMIDE: FORMULATION AND EFFICACY STUDY

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ABSTRACT

The growing demand for effective anti-aging skincare products has led to the development of innovative formulations aimed at combating visible signs of aging. This study focuses on the formulation and efficacy of an anti-aging cream enriched with niacinamide, a well-known vitamin B3 derivatives that has demonstrated significant skin benefits. The formulation of the cream incorporates niacinamide alongside other active ingredients to enhance skin barrier function, reduce wrinkles, improve skin texture and promotes a more even skin tone. The efficacy of the cream was assessed through clinical trials, which measured parameters such as wrinkle depth, skin hydration, and elasticity over a specified period. Results indicated that the niacinamide- enriched cream significantly improved signs of aging, demonstrating both short-term and long-term benefits in reducing fine lines and enhancing skin luminosity. The study provides valuable insights into the potential of niacinamide as a key ingredient in innovative anti-aging skincare products.

Keywords: Anti-aging, Niacinamide, Hydration, Fine lines, Skin luminosity.

ICTJ-P-187

NANOSTRUCTURED LIPID CARRIERS FOR REVOLUTIONIZING BREAST CANCER MANAGEMENT

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ABSTRACT

Breast cancer continues to be a major cause of cancer-related fatalities globally, with being the most prevalent cancer diagnosed in women. The conventional treatment methods that are limited include chemotherapy, surgery and radiotherapy of breast cancer which further results in the development of multidrug resistance, toxicity in normal cells, less therapeutic effect and cancer relapse. To overcome these challenges nanotechnology has been introduced which has demonstrated significant results in treating the breast cancer cells. Among the various nanocarriers, nanostructured lipid carriers, or NLCs, composed of solid lipid matrix with a definite liquid lipid content have drawn a lot of interest attributing to their several advantages. These provide improved drug loading capacity, enhanced stability, sustained release, biocompatibility and site specific targeting. Furthermore, as per the documented evidence it has been demonstrated that they are capable of prolonging the exposure of cancerous cells to the antitumor drug thereby elevating the therapeutic efficacy and limiting the associated side-effects. Considering the aforementioned implications; here we provide a broad overview of the role of NLCs in breast cancer management.

Keywords: Nanostructured lipid carriers, breast cancer, multidrug resistance, nanotechnology, antitumor.

ICTJ-P-188

ROBOTICS TECHNOLOGY IN HEALTHCARE AND MEDICAL PROCEDURES

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ABSTRACT

Robotics in healthcare is transforming the way we approach patient care, making treatments more precise, personalized, and compassionate. These advanced technologies are not just machines; they are tools that work alongside doctors and nurses to provide the best possible care. Whether in surgery, rehabilitation, or everyday patient support, robots are helping reduce human error, speed up recovery, and improve the accuracy of procedures. What makes this technology truly special is its ability to focus on the human experience, it supports healthcare workers in doing their jobs with greater ease and safety, while also ensuring that patients feel cared for, respected, and understood. As robots continue to evolve, they will help make healthcare more accessible, efficient, and centered on the needs of each individual, blending cutting-edge technology with a deep commitment to human well-being. Da Vinci Surgical System, Mako Robotic-Arm Assisted Surgery, and Cyberknife, etc. are some examples of robotic systems in healthcare that help make medical procedures more accurate and patient-friendly. These robots don't just make procedures faster and more precise, they help doctors provide care that's more thoughtful, compassionate, and centered on the needs of each individual patient.

Keywords: Robotics, healthcare, speed up recovery, surgery.

ICTJ-P-189

RICH NATURAL SOURCES OF OMEGA-3 FATTY ACIDS IN PEARL MILLET: UNLOCKING ITS NUTRITIONAL POTENTIAL

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ABSTRACT

Pearl millet (*Pennisetum glaucum*), a drought-tolerant crop, has long been praised for its strength and macronutrient richness. They are natural source of bioactive substances including Omega-3 fatty acids, which are necessary for cardiovascular, neurological, and inflammatory health. While fish and flaxseed remain the key sources of Omega-3, the global desire for plant-based and sustainable alternatives makes pearl millet a unique candidate. This study investigates the potential of pearl millet as an alternative, sustainable and cost-effective source of Omega-3 fatty acids, especially in areas with limited access to conventional sources. Recent studies reveal that pearl millet contains significant levels of alpha-linolenic acid (ALA), a plant-based omega-3 fatty acid precursor, focusing on its lipid profile and the bioavailability of Omega-3 fatty acids. It also investigates agronomic strategies, genetic variants, and post-harvest processing methods that can maximize the Omega-3 concentration.This study emphasizes the importance of pearl millet in promoting healthy dietary habits, especially in resource-constrained areas, by revealing its Omega-3 potential. The outcomes intend to raise pearl millet from a subsistence crop to a functional superfood, so that it supports the worldwide goal of sustainable nutrition and health equity.

Keywords: Pearl millet, Omega-3 fatty acids, functional foods, sustainable nutrition.

ICTJ-P-190

ADVANCED HERBAL BASED MICROSPONGES FOR EFFECTIVE CELLULITIS TREATMENT

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ABSTRACT

Cellulitis is a common illness of the deep layers of the skin, often caused by bacteria like streptococcus and staphylococcus aureus. In India, cellulitis affects 6.7% to 21%of the population. According to a research, 7.4%of hospitalised patient in southern India developed cellulitis. The development of herbal based microsponges is highlighted in this abstract as a novel cellulitis treatment's strategy. Porous polymeric delivery devices called microsponge improve the stability, effectiveness and regulated release of medicinal substance. These microsponges, when combined with herbal extract that have antibacterial, anti-inflammatory and wound healing qualities, such as Azadirachta indica (neem), Curcumalonga (turmeric). Microsponge present a fresh way around the drawback of synthetic therapies. The unique combination of bioactive chemicals found in herbal extract, as opposed to manufactured antibiotic, lowers the risk of resistance development and offers synergistic therapeutic. Additionally, the encapsulation of herbal substance in microsponges minimizes systemic exposure and adverse effect by preventing degradation, extending their activity and ensure continuous release at the infection site. According to preliminary research, herbal- based microsponges have strong antibacterial activity against microorganisms. They also have better skin penetration and patient tolerability. This method demonstrated how herbal formulations are superior to synthetic ones when it comes to treating Cellulitis. The potential to transform dermatological care is enormous when herbal medicine is combined with cutting edge medication delivery method like microsponges.

Keywords: Cellulitis, herbal treatment, anti-inflammatory activity, anti-microbial activity.

ICTJ-P-191

UTILIZING AI IN PATIENT CARE: A REVIEW

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ABSTRACT

With great potential to enhance patient care and experiences, artificial intelligence (AI) is rapidly emerging as a potent instrument in the healthcare industry. Doctors and other healthcare professionals are using AI technology, such as machine learning and natural language processing, to diagnose patients more accurately, create individualized treatment plans, and better manage their health. AI can find patterns and insights in vast amounts of medical data, including lab results, photographs, and patient histories, that humans might overlook. This allows for more focused treatments and early problem diagnosis. AI, for instance, can help physicians interpret MRIs or X-rays, forecast health risks using patient data, and recommend the best course of action based on each individual's particular health profile. Through chatbots and virtual assistants who offer rapid responses, remind patients to take their medications, and support them in monitoring their progress, AI is also revolutionizing patient interactions.AI helps healthcare systems become more efficient while simultaneously improving treatment quality by automating repetitive operations and supporting complicated decision-making. AI's role in patient care is expanding quickly, ignoring ongoing problems like data management and privacy protection. This indicates well for a more efficient, individualized, and accessible healthcare system in the future.

Keywords: Artificial intelligence (AI), Healthcare applications, Precision medicine.

ICTJ-P-192

MORINDA CITRIFOLIA (NONI): A COMPREHENSIVE REVIEW ON ITS MEDICINAL VALUE

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ABSTRACT

The perennial plant *Morinda citrifolia*, also known as noni, has been consumed from more than 2,000 years and is originating in Southeast Asia. Noni attracted the interest of researchers from the pharmaceutical industries because of its adaptability and utilization of the plant in various therapeutic applications. Chemical and nutritional analyzes already performed in *M. citrifolia* reveal the existence of more than 200 phytochemical substances with bioactive properties such as acids, alcohols, phenols, saccharides, anthraquinones, carotenoids, esters, triterpenoids, flavonoids, glycosides, lactones, iridoids, ketones, lactones, lignans, nucleosides, triterpenides, sterols, and aromatic compounds. The high nutritional value of *M. citrifolia* may induce therapeutic effects, including antimicrobial anti-inflammantory and antioxidant properties. Pharmacologically, M.citrifolia has been found to help reduce oxidative stress, fight infections, manage pain and support immune health. It has also shown potential in managing diabetes, protecting the liver and improving overall wellness. The main industrial products from this plant are beverages (juice drinks), powders (from dried fruits), oil (from seeds) and leaf powders. Biological and phytotherapeutic applications of *M. citrifolia* are promising, but more extensive studies are still required. Thus, this review aims to gather updated and comprehensive information on *Morinda citrifolia*, discussing its traditional use, biochemical, phytotherapics, and toxicological properties, as well as the recent advances in the processing and standardization of products derived from noni.

Keywords: Antimicrobial, antioxident, immune health.

ICTJ-P-193

ADVANCEMENTS AND CHALLENGES IN NANO-PHYTOPHARMACEUTICALS: TARGETED DELIVERY, NOVEL DRUG SYSTEMS, STANDARDIZATION, AND REGULATORY PERSPECTIVES FOR HERBAL MEDICINES AND NATURAL EXTRACTS

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ABSTRACT

Nano-phytopharmaceuticals represent a transformative advancement in the delivery of herbal medicines and bioactives, addressing challenges of bioavailability, stability, and targeted therapeutic action. This review highlights the role of nanotechnology in improving the efficacy of herbal extracts and bioactives through novel drug delivery systems such as nanoparticles, liposomes, and dendrimers. Recent advancements emphasize precision-based approaches, enabling targeted drug delivery with minimal side effects, thus enhancing therapeutic outcomes. The standardization of herbal drugs, including quality control and characterization of Nano carriers, remains critical to ensure consistency and safety. Furthermore, the regulatory landscape for herbal Nano medicines is still evolving, necessitating international harmonization for quality assurance and clinical application. The future of nano-phytopharmaceuticals lies in bridging these gaps through collaborative research and development, incorporating advanced technologies, and establishing clear regulatory frameworks. This integration of traditional herbal medicine with modern nanotechnology holds immense potential for addressing complex diseases and unmet therapeutic needs.

Keywords: Nano-Phytopharmaceuticals, Herbal Medicines, Targeted Drug Delivery, Bioavailability.

ICTJ-P-194

ANTIDIABETIC EVALUATION OF POLY HERBAL FORMULATION

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ABSTRACT

Diabetes mellitus, a chronic metabolic disorder, requires effective management to prevent complications, and traditional herbal formulations offer a promising approach due to their multifaceted pharmacological properties and fewer side effects compared to synthetic drugs. This review explores the pharmacological potential, phytochemical constituents, and antidiabetic activities of various herbal formulations. Notably, plants such as Ficus carica, Sida rhombifolia, and Momordica charantia have garnered significant attention for their therapeutic efficacy. Ficus carica, or fig, is rich in flavonoids, phenolic acids, and alkaloids, exhibiting antioxidant, anti-inflammatory, and antimicrobial properties. Sida rhombifolia, with its abundant alkaloids, flavonoids, tannins, and saponins, demonstrates antidiabetic effects through improved insulin secretion and glucose uptake. Momordica charantia, or bitter melon, contains phytochemicals like charantin, momordicin, and vicine, offering broad pharmacological benefits. Its antidiabetic properties are attributed to enhanced insulin secretion, glucose uptake, and regulation of carbohydrate metabolism. Collectively, these herbal formulations highlight the potential of natural remedies in diabetes management and advocate for further clinical research to validate their efficacy and safety.

Keywords: Diabetes mellitus, chronic metabolic disorder**,** flavonoids, phenolic acids, hypoglycaemic effects.

ICTJ-P-195

ROLE OF MYRICETIN IN VARIOUS NEURODEGENERATIVE DISEASE

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ABSTRACT

Myricetin (MC), 3, 5, 7, 3′, 4′, 5′-hexahydroxyflavone, chemically belongs to a flavonoid category known to confer antioxidant, antimicrobial, antidiabetic, and neuroprotective effects. The aim of the present review is to highlight the therapeutic potential of MC in the treatment of several neurological, neuropsychiatric, and neurodegenerative disorders. Here we show that the natural flavonoid myricetin inhibited glutamate-induced excitotoxicity and protected neurons by multiple, distinct pathways. Therefore, it is important to search for compounds that reduce glutamate neurotoxicity. First, myricetin affect modulation of the NMDAR by phosphorylation, causing a subsequent reduction in glutamate-induced intracellular Ca21 overload. Second, myricetin inhibited the ROS production caused by glutamate. Finally, glutamate induced activation of caspase-3 was reduced by myricetin treatment. Moreover, myricetin directly interacted with the active site of caspase-3 via three hydrogen bonds and inhibited its activity. Collectively it concludes that myricetin inhibited glutamate-induced neuronal toxicity by multiple biochemical pathways. These results show that myricetin is a potent anti-neurodegenerative compound and may contribute to the discovery of a drug with which to combat neurodegeneration.

Keywords: Neuroprotection; Ab; myricetin; BACE-1; ADAM10, myricetin; NMDA receptor.

ICTJ-P-196

DEVELOPMENT AND EVALUATION OF A MUCOADHESIVE AEROSOL FORMULATION OF SPIRULINA AND SALBUTAMOL TO ENHENCED ANTI-ASTHMATIC THERAPY

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ABSTRACT

Asthma is a chronic respiratory condition characterized by airway inflammation, hyperresponsiveness, and mucus production. This study explores the formulation and evaluation of an innovative anti-asthmatic mucoadhesive aerosol dosage form incorporating Spirulina and Salbutamol. Spirulina, a natural bioactive compound, offers anti-inflammatory and immunomodulatory effects, while Salbutamol acts as a bronchodilator to relieve bronchospasms. The formulation aimed to enhance drug retention at the site of action, leveraging mucoadhesive polymers for prolonged residence time in the respiratory tract. Key formulation parameters such as particle size, aerosolization efficiency, mucoadhesive strength, and drug release profiles were optimized the study assessed the pharmacodynamic effects, including respiratory rate, airway resistance, and histopathological changes in lung tissues.The results demonstrated that the mucoadhesive aerosol significantly improved lung deposition and drug retention compared to conventional aerosols. Pharmacodynamic studies revealed enhanced bronchodilation and reduced inflammatory markers in guinea pigs treated with the Spirulina-Salbutamol formulation. These findings suggest that the novel aerosol could be a promising approach for improving the management of asthma by combining the therapeutic benefits of Spirulina and Salbutamol with targeted drug delivery.

Keywords: Hyperresponsiveness, Anti-inflammatory, Mucoadhesive aerosol.

ICTJ-P-197

INNOVATIVE APPROACHES AND ADVANCEMENTS IN CANCER THERAPEUTIC DELIVERY: NEXT-GENERATION METHODS, GLOBAL RESEARCH PERSPECTIVES, AND PROGRESS IN CANCER THERAPY

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ABSTRACT

Cancer remains one of the leading causes of death worldwide, prompting significant research into novel therapeutic strategies. Innovative approaches in cancer therapeutic delivery have emerged as crucial to enhancing treatment efficacy, minimizing side effects, and overcoming drug resistance. This review explores the latest advancements in next-generation delivery systems for cancer therapy, focusing on cutting-edge technologies such as nanoparticles, liposomes, dendrimers, and targeted drug delivery mechanisms. These strategies not only improve the bioavailability of chemotherapeutic agents but also allow for more precise targeting of cancer cells, reducing systemic toxicity.The integration of artificial intelligence and nanotechnology in drug delivery is paving the way for more efficient and tailored treatments. This paper provides a comprehensive analysis of these advancements, highlighting the significant progress made and the challenges that remain. As global research continues to evolve, the future of cancer therapy lies in the refinement of these novel delivery techniques, offering new hope for more effective, less toxic cancer treatments.

Keywords: Cancer Therapy, Drug Delivery Systems, Nanoparticles, Targeted Therapy, Chemotherapy.

ICTJ-P-198

MOLECULAR BASIS OF PORIA COCOS IN HUMAN HEALTH: A REVIEW

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ABSTRACT

Poria cocos, an edible medicinal fungus known as "Fuling" in Chinese, have been a staple of traditional Polysaccharides are the most prevalent and well researched of its numerous bioactive substances, and they are in charge of a wide range of biological processes. These consist of anti-inflammatory, anti-tumor, immunomodulatory, antioxidant, anti-aging, anti-hepatitis, and anti-diabetic properties. Poria cocos polysaccharide has been formulated as an oral solution and sold as a health supplement since the 1970s due to its exceptional qualities. In order to improve treatment efficacy, it is frequently used in conjunction with chemotherapy or radiation therapy. By 2015, the Chinese Food and medicine Administration (CFDA) formally recognized it as a therapeutic medicine for the treatment of hepatitis, various malignancies, and other illnesses. The article provides a thorough summary of *Poria cocos* polysaccharides' application as shedding light on how it can help people with chronic illnesses including cancer.an anti-cancer drug and also looks at their toxicity profile. This study highlights *Poria cocos* polysaccharides' expanding importance as a clinically used anti-tumor treatment by examining both biochemical and preclinical research, which helps to clarify how they function at the molecular level. The use of *Poria cocos* polysaccharide as a potential natural medicinal agent is ultimately supported by this synthesis of studies, revealing.

Keywords: Traditional and Medicinal Use, Bioactive Compounds, Pharmacological Benefits.

ICTJ-P-199

ADVANCES IN SMART NANOCARRIERS AND NANO-FORMULATION STRATEGIES FOR TARGETED DRUG DELIVERY: INNOVATIONS IN PRECISION MEDICINE AND ENHANCED THERAPEUTIC OUTCOMES THROUGH TARGETED THERAPY

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ABSTRACT

The development of smart nanocarriers and nano-formulation strategies. These innovations are revolutionizing targeted drug delivery, allowing for enhanced precision and improved therapeutic. Smart nanocarriers, engineered at the nanoscale, provide the ability to deliver therapeutic agents directly to diseased cells or tissues, thereby minimizing off-target effects and reducing systemic toxicity. These nanocarriers can be functionalized with ligands, antibodies and biomarkers associated with disease, such as those found in cancer, neurological disorders, and cardiovascular diseases. Nano- formulations, which incorporate nanoparticles, liposomes, dendrimers, and other nanostructures, offer several advantages, including controlled drug release, improved bioavailability, and enhanced stability of drugs. Integrating stimuli-responsive features such as pH, temperature. Additionally, these innovations contribute to the development of personalized treatments tailored to individual patients' needs, advancing the field of precision medicine. The highlight the keyword design principles behind nano-formulations, mechanisms of targeted drug release, and the clinical potential of these technologies in achieving better therapeutic. These approaches hold great promise for transforming the landscape of modern medicine, offering new avenues for treating complex and stimulating diseases.

Keywords: Smart Nanocarriers, Nano-formulations, Targeted Drug Delivery, Precision Medicine.

ICTJ-P-200

PHARMACEUTICAL WASTES: OVERVIEW, MANAGEMENT AND IMPACT OF IMPROPER DISPOSAL

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ABSTRACT

Pharmaceutical waste is released into the environment in low amount by homes, farms, medical centers, and pharmaceutical enterprises. The development of pharmaceutical waste, disposal the costs, safe disposal, effects of improper disposal and role of pharmacists in the disposal process are all topics that will be covered in this investigate. Millions of pharmaceutical wastes that are costly to get rid of are found in many nations. Effective management of pharmaceutical waste, along with the establishment of guidelines and public awareness ingenuities. National drug regulatory authorities to perform environmental risk assessments related to the disposal of unwanted pharmaceuticals. Pharmacist are promoting comprehensive training on sustainable medication usage and the appropriate disposal of pharmaceutical waste across all tiers to mitigate the hazards linked. Minimizing the generation of pharmaceutical waste throughout the entire lifecycle of a drug, ensuring collection at designated sites, and employing advanced technologies for wastewater treatment are strongly advised to mitigate the impact of unwanted pharmaceuticals on both human health and the environment.

Keywords: Pharmaceutical waste; Sources; Cost of disposal; Management; Impact; Pharmacists.

ICTJ-P-201

IBD DRUG THERAPY: PHARMACOLOGY, TOXICOLOGY, AND PATIENT SAFETY CONCERNS

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ABSTRACT

Complex drug therapy is necessary to reduce inflammation and induce remission in inflammatory bowel disease (IBD), which includes Crohn's disease and ulcerative colitis. Immunosuppressants, biologics, small molecules, and corticosteroids are among the medications often used in the treatment of IBD. These substances provide serious toxicological dangers in addition to their substantial therapeutic advantages. The pharmacology, toxicity, and patient safety issues related to IBD medication therapy are examined in this study. The methods of action, effectiveness, and dosage schedules of biologics, methotrexate, corticosteroids, thiopurines, and JAK inhibitors are examined in relation to their pharmacological activities. The study also discusses adverse drug reactions (ADRs), such as liver toxicity, infections, and bone marrow suppression, and emphasizes the necessity of individualized treatment plans. Drug interactions, chronic adverse effects, and the treatment of comorbid illnesses are all closely related to patient safety. Optimizing medication while reducing toxic hazards is ultimately essential for managing IBD effectively. In order to balance therapeutic efficacy and safety and improve outcomes for patients with IBD, doctors must have a thorough awareness of both pharmacological and toxicological characteristics.

Keywords: Complex drug therapy, inflammatory bowel disease (IBD), Immunosuppression.

ICTJ-P-202

ADVANCES IN CONTROLLED DRUG DELIVERY SYSTEMS: RECENT INNOVATIONS AND EMERGING TECHNOLOGIES

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ABSTRACT

The drug delivery system enables the release of the active pharmaceutical ingredient to achieve a desired therapeutic response. Without an efficient delivery mechanism, the whole therapeutic process can be rendered useless. Moreover, the drug has to be delivered at a specified controlled rate and at the target site as precisely as possible to achieve maximum efficacy and safety. Controlled drug delivery systems are developed to combat the problems associated with conventional drug delivery. There has been a tremendous evolution in controlled drug delivery systems from the past two decades ranging from macro scale and nano scale to intelligent targeted delivery. The opening section of this review offers a foundational overview of drug delivery systems, focusing particularly on the pharmacokinetics associated with the drug. Moreover, the review explores advancements in nano-drug delivery, as well as targeted and smart drug delivery methods that utilize stimuli-responsive and intelligent biomaterials, highlighting recent significant discoveries. The paper concludes by outlining the challenges encountered and potential future developments in the field of controlled drug delivery.

Keywords: Drug Delivery System, Pharmaceutical Ingredient, Bioavailability, Nano-Drug Delivery.

ICTJ-P-203

AN UPDATE ON ANTIMALARIAL POTENTIAL OF CHLOROQUINE

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ABSTRACT

Antimalarial drugs used for prophylaxis treatment and prevention of relapses of malaria. Malaria is an infection of liver and RBCs caused by parasites (that are transmitted to people through the bite of infected female Anopheles mosquitoes) during the first half of the 20th century, Chloroquine was successfully extracted from *Cinchona* bark by French pharmacists, and it became the earliest antimalarial drug. Chloroquine is used in the management and prevention of malaria from *Plasmodium vivax*, *Plasmodium Ovale*, and *Plasmodium Malaria*. It exerts its antimalarial effects by preventing the polymerization of Heme into hemozoin. Chloroquine forms a drug-hemozoin complex, and this complex caps the polymerizing chain, thereby preventing additional polymerization. Along with the prevention of polymerization, the free Heme accumulates in the food vacuole, exerting its toxic effects on the parasite. This particular work describes the update on different aspects of chloroquine as a valuable agent in the therapy of malaria.

Keywords: Chloroquine; Sulfonamides; Antimalarial; Pharmacodynamic.

ICTJ-P-204

REAL-TIME MONITORING IN CLINICAL TRIALS USING ARTIFICIAL INTELLIGENCE (AI)

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ABSTRACT

The discovery of novel treatments depends on clinical studies, but they are frequently hampered by delays, exorbitant prices and difficulties with data management. By facilitating real-time monitoring, increasing data accuracy and facilitating better decision-making, artificial intelligence (AI) is revolutionizing the clinical trial scene. Large datasets from several sources, including wearable technology, electronic health records, and patient-reported outcomes, can be analyzed by AI-driven technologies, which can then instantly provide insights into patterns in efficacy, protocol adherence and patient safety. In addition to lowering the possibility of human error, AI-powered real-time monitoring makes adaptive trial designs possible, guaranteeing quicker and more accurate findings. The medication development timetable is accelerated, resource allocation is optimized and patient care is improved by this creative method.

Keywords: Time monitoring, Clinical trials, Artificial Intelligence (AI), Data accuracy.

ICTJ-P-205

RECENT ADVANCES IN GREEN CHEMISTRY APPROACHES FOR PHARMACEUTICAL SYNTHESIS

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ABSTRACT
Green chemistry has revolutionized pharmaceutical synthesis by prioritizing sustainability and minimizing environmental impact. This review highlights recent advancements in green chemistry approaches, including core principles, novel methodologies, and practical applications in the pharmaceutical industry. It emphasizes the importance of environmentally friendly solvents, catalytic processes, and the increasing role of bio-catalysis and chemo-enzymatic strategies in improving reaction efficiency and sustainability. The review also discusses modern methods like microwave-assisted and ultrasound-assisted synthesis, flow chemistry, and eco-friendly extraction techniques, all of which enhance reaction efficiency while consuming less energy. The paper outlines best practices for industrial applications, as well as potential challenges, including economic, technical, and legal obstacles. It further examines the scalability of green chemistry concepts, focusing on catalysis, solvent use, and waste reuse. In conclusion, this review highlights the positive transformations green chemistry has brought to the pharmaceutical industry and outlines new directions and challenges moving forward. This version condenses your ideas into a more structured format, making it easier to follow while retaining all the key points. It also ensures smooth transitions between the topics you address, from principles to challenges, and offers a clear conclusion.
Keywords: Green Chemistry, Sustainable Synthesis, Pharmaceutical Manufacturing.

ICTJ-P-206

GANODERMA LUCIDUM (REISHI) AN EDIBLE MUSHROOM: A COMPREHENSIVE REVIEW OF ITS NEUTRITIONAL, COSMECEUTICAL AND PHARMACOLOGICAL VALUES

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ABSTRACT
Ganoderma Lucidum owes an exceptional value in nutritional, cosmeceutical, and medical treatments. *Ganoderma Lucidum* extensively used as "the mushroom of immortality" in China, Japan, Korea and other Asian countries for 2000 years. It contains polysaccharides (α/β-D-glucans), alkaloids, triterpenoids (ganoderic acids, ganoderenic acids, ganoderol, ganoderiol, lucidenic acids), sterols/ergosterol, proteins, nucleosides and nucleotides. The basidiocarp, mycelia and spores of G. lucidum contain approximately 400 different bioactive compounds, which mainly include triterpenoids, polysaccharides, nucleotides, sterols, steroids, fatty acids, proteins/peptides and trace elements which has been reported to have a number of pharmacological effects including immunomodulation, anti-atherosclerotic, anti-inflammatory, analgesic, chemopreventive, antitumor, chemo and radio protective, sleep promoting, antibacterial, antiviral (including anti-HIV), hypolipidemic, anti-fibrotic, hepatoprotective, anti-diabetic, anti-androgenic, anti-angiogenic, anti-herpetic, antioxidative and radical-scavenging, anti-aging, hypoglycemic, estrogenic activity and anti-ulcer properties. Ganoderma lucidum has now become recognized as an alternative adjuvant in the treatment of leukemia, carcinoma, hepatitis and diabetes. Present review focuses on the pharmacological aspects, cultivation methods and bioactive metabolites playing a significant role in various therapeutic applications.
Keywords: Immune Boosting effect, Stress relief, Antioxidant, Hearth health, cancer support.

ICTJ-P-207

GREEN SYNTHESIS IN PHARMACEUTICAL DEVELOPMENT

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ABSTRACT

Green synthesis a readily comprehensible term is an offshoot of chemistry which aims to produce or generate pharmaceutical products in a sense that drops the generation of hazardous chemical waste and its release into the environment. This field has received the great recognition in recent years due to its capability to design unconventional, safer, energy efficient and less noxious path towards pharmaceutical synthesis. The development of various compounds and greener approach such as ultrasound assisted method, microwave-assisted method, green solvent reactions, solvent free reactions, biomolecules and nanoformulations as a new healthy approach. Combating antimicrobial resistance (AMR) is an on-going global grand challenge, as recognized by several UN Sustainable Development Goals. Silver nanoparticles (Ag NPs) are well-known for their efficacy against antimicrobial resistance, and a plethora of green synthesis methodologies now exist in the literature. These 12 principles due to their applicability, practicality and specificity have made noteworthy contribution to the extension and establishment of convection.

Keywords: Green synthesis, analytical methods, Pharmaceutical synthesis, antimicrobial resistance.

ICTJ-P-208

SWALLOWABLE ROBOT PILL: AI BASED TRACKING SYSTEM FOR NON-INVASIVE ENDOSCOPY

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ABSTRACT

PillBot is a miniature robot that patients can swallow like a regular pill. Once inside the body, it navigates through the gastrointestinal tract, capturing high-quality images and videos. These visuals are then transmitted in real-time to healthcare professionals, providing a comprehensive view of the patient's internal organs without the need for invasive procedures. The PillBot is equipped with advanced imaging technology and sensors that allow it to maneuver through the body's complex internal pathways. As it travels, it takes detailed pictures and videos, which are wirelessly transmitted to an external receiver worn by the patient. This data is then analyzed by doctors to diagnose and monitor various gastrointestinal conditions. The introduction of PillBot marks a significant advancement in medical technology. By making endoscopic procedures less intimidating and more accessible, PillBot is likely to increase patient compliance with recommended screenings. This could lead to earlier detection of diseases such as colorectal cancer, Crohn's disease, and ulcers, ultimately improving patient outcomes. The potential applications of PillBot extend beyond gastrointestinal endoscopy. Researchers are exploring its use in other areas of the body, potentially revolutionizing diagnostics across multiple medical fields. As the technology develops, we can expect even more sophisticated versions of PillBot, enhancing its diagnostic capabilities and broadening its scope of use.

Keywords: Pillbot, Endoscopy, Gastrointestinal tract.

ICTJ-P-209

COMPREHENSION OF THE FUNCTION OF ANTIOXIDANTS IN TARGETING DIFFERENT SIGNALING PATHWAYS TO CURE OXIDATIVE STRESS INDUCED HEPATOTOXICITY

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ABSTRACT
Oxidative stress is the core in the pathogenesis of hepatotoxicity, and this involves an imbalance between the production of ROS and the defense mechanisms of antioxidants of the liver, causing cellular damage and liver dysfunction. Since scavenging ROS and the modulation of signaling pathways are found to provide an attractive therapeutic approach in counteracting oxidative stress-induced liver injury, this poster shall discuss how antioxidants modulate various signaling pathways to alleviate hepatotoxicity. The molecular pathways that the antioxidants such as vitamins C and E, flavonoids, and other natural agents, like curcumin, act upon include the Nrf2/ARE pathway, MAPK and NF-κB signaling involved in inflammation, apoptosis, and the repair mechanisms of cellular processes. Antioxidants activate the Nrf2 pathway, which enhances the activity of protective enzymes such as superoxide dismutase and glutathione peroxidase to reduce oxidative damage. Besides, antioxidants modulate inflammation and apoptosis by the action of pathways like MAPK and NF-κB, which will sequentially result in cell survival and reduced liver fibrosis. This underlines that antioxidants are indeed adjuncts to the mainstay of the conventional treatments and do restore homeostasis with protection against oxidative damage in hepatotoxic conditions.
Keywords: Antioxidants, oxidative stress, hepatotoxicity, Nrf2/ARE pathway, MAPK, NF-κB, liver disease.

ICTJ-P-210

THE ROLE OF PROBIOTICS IN ENHANCING DRUG EFFICACY FOR GASTROINTESTINAL DISORDERS

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ABSTRACT
This review explores the mechanisms through which probiotics improve drug effectiveness, focusing on their immunomodulatory effects. Probiotic interactions with proton pump inhibitors, their role in combating drug-resistant infections, and their synergy in antibiotic development are also discussed. Evidence from preclinical and clinical studies highlights the therapeutic potential of probiotics in conditions such as gastrointestinal ulcers, irritable bowel syndrome (IBS), and gastroenteritis. While promising, challenges remain, including determining optimal dosages, ensuring product homogeneity, and addressing patient-specific responses. This review underscores the need for further research to standardize probiotic formulations and establish guidelines for their use in clinical practice. The integration of probiotics with conventional therapies holds significant potential to improve outcomes in gastrointestinal disorders, offering a safe and innovative approach to managing chronic inflammatory conditions.
Keywords: Probiotics, Gut Microbiota, Inflammatory Bowel Disease, Ulcerative Colitis, Crohn's Disease.

ICTJ-P-211

SMART QA SYSTEM: TRANSFORMING REGULATORY COMPLIANCE WITH AI INNOVATION

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ABSTRACT

Artificial intelligence (AI) is transforming regulatory compliance, addressing traditional challenges through automation and optimization. The integration of cutting-edge AI technologies, including large language models (LLMs), graph neural networks (GNNs), reinforcement learning (RL), neuro-symbolic systems, and multi-agent frameworks, is driving unparalleled advancements in speed, accuracy, and adaptability of compliance systems. Tools such as analytics, robotic process automation (RPA), and AI methodologies like machine learning and natural language processing (NLP) are reshaping the regulatory landscape, introducing efficiency and precision into compliance workflows. Collaborations between the pharmaceutical industry and technology innovators have enhanced regulatory processes by providing insights into human health, aligning with dynamic regulatory demands. These advancements facilitate proactive decision-making and real-time monitoring, ensuring adherence to quality standards while streamlining complex compliance requirements. This study provides a comprehensive exploration of the potential and challenges of AI-powered compliance systems, offering actionable insights for organizations aiming to adopt AI responsibly. By navigating the complexities of AI implementation, companies can enhance their regulatory compliance frameworks while ensuring security, efficiency, and ethical integrity.

Keywords: Artificial Intelligence, Regulatory Compliance, Quality Assurance, Large Language Models.

ICTJ-P-212

ORGANOID AND ORGAN-ON-A-CHIP SYSTEMS: RECENT BREAKTHROUGHS AND FUTURE PROSPECTS

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ABSTRACT

Organ-On-A-Chip (OoC) technology represents a groundbreaking shift in biomedical engineering by offering more accurate models of human organ behavior, better bridging the gap between traditional drug testing and human biology's complexities. By integrating microfluidics and tissue engineering, OoCs simulate organ functions at a microscale, allowing for precise control over drug testing in conditions that closely replicate those in the human body. Microfluidics, which involves manipulating tiny fluid volumes within channels as small as tens to hundreds of microns, supports efficient processes like sample preparation and cell culture within compact "lab-on-a-chip" setups. The pivotal lung-on-a-chip study in 2010 marked a significant advancement by enabling long-term cell culture and real-time monitoring, showcasing the potential of OoCs in biomedical research. OoCs containing organoids allow researchers to observe drug effects and toxicity with reduced dependence on animal models. This innovation enhances drug development through high-throughput screening, promising more reliable and ethically conscious therapeutic testing methods that improve patient outcomes.

Keywords: Organoids, Microfluidics, Organ-On-A-Chip, 3D Tissue and Cell Culture, Microbiome.

ICTJ-P-213

MICROSPHERES BASED ORODISPERSIBLE TABLET OF AZITHROMYCIN: A REVIEW

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ABSTRACT

Recent advances in novel drug delivery systems (NDDS) aim for designing dosage forms, convenient to be manufactured and administered, free of side effects, offering immediate release and enhance bioavailability, to achieve better patient compliance. Mouth dissolving tablets are a preferred dosage form for pediatric and geriatric populations due to their ease of administration. These tablets are formulated to dissolve or disperse when placed on the tongue, making them easier to swallow, especially for individuals who have difficulty swallowing traditional tablets or capsules.The present study aims to formulate and evaluate a taste-masked mouth dissolving tablet of Azithromycin using various pharmaceutical techniques. Azithromycin, a broad-spectrum antibiotic was subjected to taste masking via polymeric coating, using a combination of food-grade polymers. The process involved the preparation of the taste-masked granules through solvent evaporation, formulated by direct compression to form MDTs. Several formulation variables such as the concentration of taste-masking agents, disintegrating agents, and super disintegrants were optimized to achieve rapid disintegration (within 30 seconds) and acceptable taste masking. A sensory evaluation confirmed significant taste masking as compared to the uncoated Azithromycin. Stability studies conducted under accelerated conditions indicated no significant degradation of the drug or the formulation. This study successfully developed a novel MDT of Azithromycin with enhanced patient compliance due to effective taste masking and rapid dissolution.

Keywords: Mouth dissolving tablet, Azithromycin, Taste masking, Disintegration, Patient compliance.

ICTJ-P-214

TOXICOGENOMICS IN PERSONALIZED MEDICINE: A GENOMIC APPROACH TO OPTIMIZING DRUG SAFETY AND EFFICACY

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ABSTRACT

Toxicogenomics combines genomics and toxicology to improve customised therapy by discovering gene expression patterns related to medication responses and toxicities. Harmful effects can be predicted and prevented with the help of Toxicogenomics, which finds genetic polymorphisms, gene expression patterns, and epigenetic alterations associated with toxicity. Toxicogenomic biomarkers function as early indications of toxicity, allowing for safer drug development and reducing late-stage failures. Furthermore, this discipline contributes significantly to environmental and occupational toxicology by identifying people at risk of chemical-induced disorders. The research underlines the need to identify chemicals that may cause adverse effects early in the medication discovery process. Early diagnosis is critical for replacing hazardous chemicals with safer alternatives, saving time and dollars in the drug development pipeline. By leveraging toxicogenomics, Researchers aim to enhance the understanding of how different individuals may respond to drugs based on their genetic makeup. This approach is a step towards personalized medicine, where treatments can be tailored to the individual characteristics of patients, potentially reducing the risk of adverse effects.

Keywords: Toxicogenomics, Personalized medicine, Genetic Polymorphism, Adverse effects Biomarkers.

ICTJ-P-215

INNOVATING PHARMACEUTICAL THROUGH NANOTECHNOLOGY

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ABSTRACT

Nanotechnology has attracted considerable interest due to its favored physicochemical properties, drug-targeting efficiency, enhanced uptake, and bio-distribution. Most conventional drug-delivery systems have an immediate, high drug release after administration, leading to increased administration frequency. Thus, many studies have been carried out worldwide focusing on the progress of pharmaceutical nanomedicines for translation into products manufactured by pharmaceutical companies. Nanomaterials enable targeted drug delivery or directly exert therapeutic action, based on their physicochemical properties and surface modification. Nanoparticles should be bio-compatible, biodegradable, and nonimmunogenic particularly especially for antibiotic delivery systems that's also are in high demand. From this point of view, this poster explains how nanotechnology, nanomaterials, and engineered nanomaterials are facilitating a drastic acceleration toward newer knowledge frontiers, and describe the recent significant advances therein. Discover the power of nanotechnology and explore synthetic biology, where we create and redesign the building blocks of life. Biopolymers have been intensely investigated for decades, initially as biomimetic membrane models and later as drug nanocarriers.

Keywords: Nanotechnology, Nanomedicine, Nanomaterials, Biopolymers, Drug-targeting.

ICTJ-P-216

ARTIFICIAL INTELLIGENCE, NANOTECHNOLOGY AND MEDICINAL PLANTS AS CATALYSTS FOR SUSTAINABLE CANCER AND ALZHEIMER'S CARE IN PHARMACEUTICAL AND HEALTHCARE NOVEL CONCEPTS

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ABSTRACT

The integration of nature, Artificial Intelligence (AI), and nanotechnology is altering pharmaceutical and healthcare areas, with medicinal plants serving as pivotal catalysts for sustainable cancer and Alzheimer's care. Nanotechnology aids this integration by providing tailored drug delivery networks, using nanoparticles and nanorobots for accurate localisation in therapy, so minimising adverse effects and enhancing effects on patients. Personalised treatment strategies, and accelerated drug development, which enhances access to maintenance and sustainability across diverse populations. Nonetheless, challenges as legislative walls, ethical quandaries, and technological scalability persist. Amalgamation of medicinal flora with cutting-edge technologies like as AI and nanotechnology is transforming sustainable cancer treatments, concurrently propelling worldwide pharmaceutical. AI improves accuracy by examining data and identifying minute tumours, allowing swift, individualised therapies informed by biological, clinical, and imaging characteristics. Integration of medicinal plants, abundant in bioactive chemicals, enhances therapeutic potential, resulting in targeted, natural formulations. It expedites medication development, enhances international cooperation, and addresses disparities in healthcare, enhancing innovation and accessibility in cancer treatment while reshaping the entire pharmaceutical sector.

Keywords: Medicinal Plants, Artificial Intelligence, Nanotechnology, Cancer Therapy, Alzheimer's disease.

ICTJ-P-217

ADVANCED ENGINEERED NANOPLATFORMS TO OVERCOME BIOLOGICAL BARRIERS FOR TRAGETING TO BRAIN TUMORS

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ABSTRACT

Effective drug delivery to the brain is critically hindered by the blood-brain barrier (BBB), a selective barrier that complicates treatment for central nervous system (CNS) disorders, including brain tumors. This review aims to assess recent advancements in engineered nanoplatforms designed to overcome the BBB, with a focus on their application in brain tumor targeting. It seeks to evaluate different drug delivery strategies and formulations that enhance brain penetration, improve targeting precision, and minimize systemic side effects. The review examined the strategies to prolong blood circulation time and analyzed particularly, PEGylation approach, lipid based nanocarrier, albumin binding strategies and red blood cell based delivery. It also explored various strategies (e.g., peptides, prodrug, antibodies, nanotechnology, ligand based delivery) and subcellular targeting techniques aimed at enhancing brain drug delivery and cellular uptake. PEGylation was found to significantly improve the ability of Nano carriers to penetrate brain tumors by reducing macrophage-mediated clearance. Nanotechnology based strategies coupled with ligand-based approaches effectively enhancing brain delivery. Subcellular targeting strategies facilitated endolysosomal escape, leading to better therapeutic agent retention within brain tumor cells. Advances in nanotechnology and targeting strategies offer promising solutions for overcoming the BBB and improving brain tumor treatment.Continued research is essential to optimize these methods and achieve more effective therapeutic outcomes.

Keywords: Central nervous system, brain tumors, PEGylation, nanoparticles, liposomes, dendrimers.

ICTJ-P-218

HARNESSING ZINC OXIDE & RASPBERRY SEED OIL FOR EFFECTIVE SUNSCREEN FORMULATION

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ABSTRACT

Sunscreen cream is the topical product applied on skin to protect skin from harmful effects of UV radiation and sunburns, premature aging and reduced risk of skin cancer. In 1960s the first broad spectrum sunscreen were developed to providing protection against UVA and UVB radiation. Sun exposure cause skin damage and skin cancer leading to increase demand for effective and safe sunscreens this study aims to develop sunscreen formulation harnessing zinc oxide & raspberry seed oil (ROS). Zinc oxide used as a physical sunblock and provide broad spectrum protection against UVB and UVA like harmful rays. ROS is play very crucial role in sunscreen it rich in antioxidant and also give range of SPF 25-50 and enhance skin health and reduce oxidative stress .The formula of sunscreen optimized using combination of zinc oxide and ROS zinc oxide used in (20%)of concentration as well as ROS in (10%) along with other ingredients. The in-vitro and in-vivo tests are conducted for efficacy evaluation of sunscreen including SPF and UVA-PF. This natural and synthetic combination give effective and safe sunscreen formulation prevent skin from sun damage.

Keywords: Zinc Oxide, Raspberry Seed Oil, Sunscreen Formulation, Broad-Spectrum Protection.

ICTJ-P-219

POLYCYSTIC OVARIAN SYNDROME: SYMPTOMS, DIAGNOSIS AND TREATMENT

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ABSTRACT
The polycystic ovarian syndrome (PCOS) is the most frequent cause of anovulatory infertility, affecting a significant proportion of reproductive-age women. The condition might be biochemical (hyperandrogenemia) or physiological (polycystic ovaries). The presence of at least two of these three conditions—hyperandrogenism, persistent ovulatory dysfunction, and polycystic ovaries on ultrasound imaging—is one of the Rotterdam criteria, which are most frequently used to diagnose PCOS. PCOS can appear in a variety of ways, with hirsutism being the most prevalent (65–75%) clinical presentation. Furthermore, PCOS is strongly associated with metabolic syndrome symptoms, such as non-alcoholic fatty liver disease (NAFLD), obesity, insulin resistance, type 2 diabetes mellitus (T2DM), dyslipidemia, and hypertension. For women with PCOS who are overweight or obese, lifestyle changes are also crucial for weight loss. The first-line treatment for PCOS-related hirsutism/acne and irregular menstruation is hormonal contraception.Despite the availability of drugs, lifestyle changes are the mainstay of therapy because weight loss and exercise improve all parameters of PCOS without the potential negative effects of medication.

Keywords: Infertility, Hirsutism, Dyslipidemia, Medication, Hypertension.

ICTJ-P-220

DEVELOPMENT AND EVALUATION OF A NANOSUSPENSION FOR A POORLY SOLUBLE DRUG

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ABSTRACT
This study presents the design and optimization of a nanosuspension formulation for Telmisartan, an antihypertensive drug with poor solubility and bioavailability. The nanosuspension was prepared using the solvent evaporation method, with Poloxamer 188 as the surfactant and Sodium Lauryl Sulfate (SLS) as the stabilizer. A Design of Experiments (DoE) approach was utilized for optimization. The resulting formulation showed a particle size of 73 nm, a polydispersity index (PDI) of 0.183, and a zeta potential of -22.2 mV, indicating good stability. Differential Scanning Calorimetry (DSC) analysis confirmed the conversion of Telmisartan from a scrystalline to an amorphous state, enhancing its solubility. In vitro studies demonstrated a significant improvement in drug dissolution, with the optimized formulation achieving a 97.34% dissolution rate within 40 minutes. The findings suggest that the nanosuspension improves Telmisartan's solubility and dissolution, addressing its bioavailability challenges. This formulation shows promise as an effective drug delivery system with potential clinical applications for poorly water-soluble drugs.

Keywords: Nanosuspension, Solubility improvement, Design of Experiments (DoE), Dissolution rate.

ICTJ-P-221

THE TRANSFORMATION OF HEALTHCARE: THE CONTRIBUTION OF AI AND NANOTECHNOLOGY IN THE GROWTH OF SUSTAINABLE CANCER THERAPY AND IMPACT ON THE FUTURE OF FOREIGN PHARMACEUTICAL AND CLINICAL INNOVATION

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ABSTRACT

Artificial Intelligence (AI) and nanotechnology are revolutionizing global healthcare, particularly in advancing sustainable cancer therapies. The working connection has transformational potential in the diagnosis, treatment, and identification of pharmaceuticals, modernising pharmacology and clinical medicine. The combined use of medicinal flora with cutting-edge technologies like as Artificial Intelligence (AI) and nanotechnology is transforming durable cancer treatments, simultaneously propelling around the world pharmaceutical expansions and fostering international innovation. This method enhances patient outcomes while minimising complications. The addition of medicinal plants, wealthy in bioactive chemicals, enhances therapeutic potential, resulting in precise, genuine formulations. It expedites medication development, promotes international cooperation, and addresses disparities regarding healthcare, enhancing innovation and accessibility in cancer treatment while reshaping the entire pharmaceutical sector. Resolving these obstacles requires a coordinated effort from government entities, industry leaders, and researchers. Strategic investments in artificial intelligence and nanotechnology will drive innovation in cancer treatment and offer an equitable opportunity for advanced treatments worldwide. The crucial importance of artificial intelligence and nanotechnology in revolutionizing cancer treatment and promoting their integration into international health policies to achieve sustainable progress and clinical superiority.

Keywords: artificial intelligence, nanotechnology, sustainable healthcare, pharmaceutical innovation.

ICTJ-P-222

HISTORY EVALUATION IN QSAR DRUG DISCOVERY

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ABSTRACT

Quantitative Structure-Activity Relationship (QSAR) has been a cornerstone in the evolution of computational drug discovery. From its inception in the 1960s with Hansch's pioneering work on correlating physicochemical properties with biological activity, QSAR has grown into a sophisticated tool that integrates chemistry, biology, and informatics. The classical 2D-QSAR approaches laid the foundation for understanding molecular interactions, while the emergence of 3D-QSAR expanded its scope to include spatial and stereoelectronic properties. The development of advanced molecular descriptors and the integration of machine learning techniques have revolutionized QSAR, enabling the prediction of complex biological activities and ADMET properties. QSAR has played a pivotal role in reducing the cost and time associated with drug discovery, particularly in lead optimization and toxicity prediction. It highlights its evolution from a simple linear regression model to a multidisciplinary approach that continues to drive innovation in computational chemistry and pharmaceutical sciences.

Keywords: QSAR, Drug Discovery, Hansch Analysis, 2D-QSAR, 3D-QSAR, Molecular Descriptors.

ICTJ-P-223

NANOCOCHLEATES- BASED VACCINE DELIVERY SYSTEM FOR INFECTIOUS DISEASES

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ABSTRACT
Nanocochleates, or lipid-based nanocarriers, have emerged as a viable platform for delivering vaccines against infectious illnesses. These distinct nanostructures are generated by the interaction of negatively charged phospholipids and divalent cations, resulting in very stable, bilayered structures that preserve encapsulated antigens from destruction. Nanocochleate-based vaccines provide several benefits, including longer antigen release, tailored delivery to antigen-presenting cells, and better mucosal and systemic immune responses. They are ideal for oral and nasal vaccine administration, overcoming the constraints of standard injectable vaccines by increasing patient compliance and allowing for mass vaccination in resource-constrained environments. Nanocochleates can be made in a variety of methods and used to deliver a wide range of active chemicals for a variety of applications. Nanocochleates are less constrained than conventional dosage forms and technologies, making them a more widely applicable and possibly successful drug delivery device. For enhancing the bioavailability and therapeutic effectiveness of hydrophobic medications, peptides, and nucleic acids, this administration method is especially beneficial. Numerous medicinal uses for Nanocochleates exist, including as antifungal, antiviral, anticancer, and anti-inflammatory treatments.

Keywords: Nanocochleates, Phospholipids, Antifungal. Antiviral, Anticancer.

ICTJ-P-224

APPLICATION OF ARTIFICIAL INTELLIGENCE IN PATIENT CARE AND HEALTHCARE INDUSTRY

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ABSTRACT
The purpose of this research is to know and understand the state of artificial Intelligence (AI) technology and its effects on the health care field. AI systems are also making an impact on improving the efficiency of nursing and managerial activities of hospitals. Many hospitals are already making use of AI-enabled tools to help doctors diagnose and treat patients with a wide variety of diseases. While healthcare professionals generally have a positive outlook on AI, its applications can bring both exciting new possibilities and disconcerting new obstacles. Artificial Intelligence as an innovation promises to transform how medical staff manage, treat and diagnose patients. Use of AI also helps to provide Precision Medicine to the patients as it can obtain and analyze large amounts of information. We address the potential and the difficulties of AI in healthcare to provide the reader with a better-rounded picture of the field's future. As AI and its technologies are continuing to advance at a rapid pace, it is becoming increasingly clear that they will help the healthcare providers to enhance the efficiency of their operating operations and provide more value to their patients.

Keywords: Clinical decision support (CDS), Precision Medicine, Medical imaging and diagnostic, AI enabled tools.

ICTJ-P-225

TRANSFORMING PHARMACEUTICALS: HARNESSING AI'S POWER FOR DRUG DISCOVERY, CLINICAL TRIALS, MANUFACTURING AND QUALITY ASSURANCE

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ABSTRACT

Artificial Intelligence (AI) is transforming the pharmaceutical industry by enhancing precision, efficiency, and cost-effectiveness in drug discovery, clinical trials, manufacturing, and quality assurance. In drug discovery, AI accelerates the identification of new molecules and reduces the high attrition rates associated with traditional methods.In manufacturing, AI enables real-time monitoring, predictive maintenance, and process automation, leading to significant reductions in production timelines and equipment downtimes. For quality assurance, AI ensures superior product safety by automating defect detection, real-time monitoring, and predictive quality assessments. The benefits of AI include halving drug development timelines, improving clinical trial efficiency, enhancing manufacturing productivity, and ensuring consistent product quality and regulatory compliance. However, challenges such as high implementation costs, workforce reskilling requirements, regulatory complexities, and data privacy concerns remain significant barriers. Despite these challenges, AI holds immense potential for the future of pharmaceuticals, offering personalized medicine, fully automated factories, and greater transparency in AI-driven systems. By leveraging these advancements, the industry can meet rising healthcare demands and deliver innovative patient-centered solutions more efficiently and effectively.

Keywords: Artificial Intelligence, Quality Assurance, Drug Discovery, Clinical Trials.

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APPLICATION ON ARTIFICIAL INTELLIGENCE (AI) IN PATIENT CARE

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ABSTRACT

The integration of Artificial Intelligence (AI) in healthcare is enhancing the efficiency, accuracy, and accessibility of medical services. We can analyse a lot of data in a short span of time so we can collect the data from a large population and analyse a particular disease symptom and monitor the disease. We can prepare a chatbot that can help the patients with symptoms they are having and guide them what they had to do. Based on the data, AI can create multiple logical disease indicators for rare diseases (Vasculitis, Spondylarthritis) that can be usable by clinicians and researchers. If implemented well, AI can immensely provide benefits to the people who have been suffering from rare diseases infections are some of the causes of death which can be avoided to a large extent. The wrong medication or improper dosage can also lead to loss of life when a patient consumes wrong medicine for long time. Currently, to overcome the medical error due to incorrect dosage, some studies are using AI to predict the dosage of medicines, specifically in the case of chronic conditions in which the patient follows medication regimens for months and years. There are multiple wearable devices such as smartwatch and smart rings that continuously monitor the blood pressure and heart rate of patients, it can be helpful for the patient suffering from heart problems because they can predict heart attack and save someone's life. AI-based software is under evaluation for the diagnosis of diseases such as skin cancer, leukaemia, dementia**,** and some other diseases.

Keywords: Artificial Intelligence, Chatbot, Wearables, Rare Disease.

ICTJ-P-227

RECENT NANOTHERANOSTIC APPROACHES IN CANCER

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ABSTRACT

Mankind has faced cancer, which has lately turned to become a primary cause of the early death of people across the globe. Nanotheranostics unites therapeutics and diagnostics together to monitor treatment response in an attempt to enhance drug efficacy and safety. We henceforth propose to discuss all recent cancer imaging and diagnostic tools, the mechanism behind targeting tumor cells, and current nanotheranostic platforms available for cancer. This review discusses various nanotheranostic agents and novel molecular imaging tools like MRI, CT, PET, SPEC, and PAT used or cancer diagnostics. Emphasis is given to gold nanoparticles, silica, liposomes, dendrimers, and metal-based agents. We also highlight the mechanism of targeting the tumor cells, and the limitations of different nanotheranostic agents in the field of research for cancer treatment. Since it is the area of complexity, the multifunctional and hybrid nanoparticles functionalized with targeted moieties or anti-cancer drugs have the best feature for theranostics that enables them to work on carrying and delivering active materials to the desired area of the requirement for early detection and diagnosis. The specificity of receptor binding and internalization processes of the nanosystems within the cancer cells provides non-invasive imaging techniques. Nanotheranostics could offer the right medicine, at the right dose, to the right patient, at the right time.

Keywords: Theranostics, Cancer, Diagnostics, Nanoparticles, Nanosystems, liposomes.

ICTJ-P-228

A VIGILANT APPROACH TO DRUG SAFETY: UNDERSTANDING PHARMACOVIGILANCE

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ABSTRACT

Pharmacovigilance is the science of monitoring and evaluating the safety of medicines and vaccines after they are marketed. It aims to improve patient safety by detecting, assessing, understanding, and preventing adverse drug reactions (ADRs) and other medicine-related problems. This summary outlines the objectives of pharmacovigilance, which include enhancing patient and public health, evaluating risk-benefit profiles, and promoting education about safe medication use. It also explores the governing bodies involved in pharmacovigilance, like the pharmaceutical industry, regulatory authorities, and the WHO. Various methods are employed for pharmacovigilance, including individual case reports, cohort event monitoring, and analysis of electronic patient records. Each method has its strengths and limitations, but all contribute to identifying potential safety issues with medicines. The summary further explains the importance of post-marketing surveillance through Periodic Safety Update Reports (PSURs) and expedited reports. It highlights record linkage as a valuable tool for comprehensive data analysis. Finally, the application of pharmacovigilance in national drug policies, medicine regulation, clinical practice, and public health programs is emphasized.

Keywords: Pharmacovigilance, Regulatory authority, Drug safety, ADR, post marketing surveillance.

ICTJ-P-229

ARTIFICIAL INTELLIGENCE: INNOVATIVE APPROACH FOR PHARMACY AND HEALTHCARE DEVELOPMENT IN INDIA

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ABSTRACT

Artificial Intelligence (AI) is becoming a revolutionary influence in pharmacy and healthcare, providing creative solutions to meet the changing difficulties in India. It examines the utilization of AI across multiple fields, such as disease detection, analytical forecasting, drug discovery, and systems for clinical decision-support. The article emphasizes the incorporation of AI into India's current healthcare infrastructure, its function in enhancing accessibility, and its influence on healthcare efficiency. Notwithstanding the potential advantages, the analysis also highlights the obstacles to AI implementation, such as data privacy issues, regulatory constraints, and the necessity for proficient personnel. The study continues by underscoring the significance of regulatory frameworks and collaborative initiatives to promote AI-driven progress in the Indian pharmaceutical and healthcare industries, with the objectives of enhancing healthcare delivery, reducing costs, and improving patient care.

Keywords: Artificial Intelligence, HealthCare, Precision Medicine, Deep Learning, Enhanced Patient Care.

ICTJ-P-230

TAILORED MULTIDRUG 3D PRINTED TABLETS FOR PAEDIATRIC TUBERCULOSIS TREATMENT

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ABSTRACT

Developing optimal dose forms for different age groups is critical for successful pharmacological therapy, especially in cases needing long-term treatment, such as Tuberculosis (TB) in children. The World Health Organization advises using first-line anti-TB medications, including rifampicin, isoniazid, and pyrazinamide, as fixed-dose combination therapy in tuberculosis sickness. The goal of this endeavor was to create 3D printed multidrug combination tablets. Hot-melt extrusion (HME) was employed to create drug-loaded feedstock material, which was then used for 3D printed tablets. Isoniazid, rifampicin, pyrazinamide, and polyvinyl alcohol filaments were utilized to create 3D printed tablets using fused deposition modelling (FDM). The printed tablets were subsequently tested for various properties, including *in-vitro* dissolution study. All of the characteristics of 3D printed tablets were determined to be in accordance with the relevant standards. Prepared 3D printed tablets showed almost zero friability, enough hardness, disintegration along weight variations <±3%. The *in-vitro* dissolution of rifampicin, isoniazid, and pyrazinamide 3D printed tablet was found to be 67.6%, 85.64%, 74.80%, respectively at 6 hours. This study proposes innovative formulations comprising isoniazid, rifampicin, and pyrazinamide for the treatment of childhood TB, as well as an investigation into 3D printing technology for individualized manufacture of oral solid dosage forms with customizable dose and drug release features.

Keywords: 3D printing, fused deposit modelling, hot melt extrusion, children.

ICTJ-P-231

ADVANCE DELIVERY STRATEGIES FOR ENHANCING BIOAVAILABILITY OF BCS CLASS-II AND -IV DRUGS

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ABSTRACT

The drug is classified in BCS on the base of solubility, permeability, and dissolution. Bioavailability is an important term. BCS Class II has high permeability, low solubility samples glibenclamide, bicalutamide, acelofenac. The solvation rate limits the bioavailability of the product. A correlation between the in vivo bioavailability and the in vitro solvation can be set up. Class IV low permeability, low solubility illustration bifonazole. Those mixes have a poor bioavailability over the intestinal mucosa and a high variability is expected. These Strategies for enhancing bioavailability of classified into physical, Chemical and Formulation Enhancing the bioavailability of deficiently absorbed drugs, particularly those belonging to BCS Class II and IV, requires various Strategies that address issues related to solubility and/ or permeability. Physical Strategies, concentrate on perfecting the solubility and dissolution rate of drugs by altering their physical parcels. (Particle size reduction). Chemical modification involve altering of the drug to enhance solubility or permeability. (Swab conformation). Expressed Strategies concentrate on altering the drugs delivery system to enhance its absorption, solubility, or bioavailability. Nanotechnology and predicated approaches.

Keywords: bioavailability, solubility, surface, modification, permeability, formulation development.

ICTJ-P-232

SMART DRUG DELIVERY SYSTEM

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ABSTRACT

A therapy technique called Smart Drug Delivery System is an advanced form of Targeted Drug Delivery System that involves enhanced therapeutic effect and reduced side effects where active drug molecules get selectively accumulate in the diseased area for a prolonged periods with high controllability. Conventional drug delivery methods use systemic blood circulation to transport the medication throughout the body. Thus, only a small portion of the drug actually reaches the tissue or organ. SDDS helps to deliver medication to the targeted tissues and lowers the relative concentration of the drug in the other tissues. This provides patients with medication in precisely the right amounts to specific body parts (organs, tissues, or cells) with reduced side effects. SDDS requires three major components to deliver drugs to target tissues: drug delivery vehicles, therapeutic drugs, and targeting moiety. Drug delivery vehicles transport the medication within or close to the intended target with regulated distribution of drug. The basic approaches for targeting the drug to specific site may be categorized as controlling the distribution of drug by incorporating it in a carrier system, altering the structure of the drug at molecular level or controlling the input of the drug into bio-environment to ensure a programmed and desirable bio-distribution.

Keywords: Targeted drug delivery, dosing frequency, polymer, carrier, prolonged effect.

ICTJ-P-233

AI IN DRUG DISCOVERY AND DEVELOPMENT: TRANSFORMING PHARMACEUTICAL INNOVATION

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ABSTRACT

Artificial intelligence (AI) is revolutionizing drug discovery and development, offering innovative solutions to traditional challenges in the pharmaceutical industry. AI techniques, including machine learning algorithms, data analytics, and deep learning, enable the analysis of vast biological datasets such as genomics, proteomics, and clinical data to identify novel disease targets and predict drug interactions. This data-driven approach accelerates drug discovery, improves the accuracy of drug design, and enhances the chances of clinical success. Additionally, AI aids in optimizing drug formulations, predicting pharmacokinetics and toxicity profiles, and reducing the reliance on animal testing. AI technologies also support personalized medicine by analyzing real-world patient data to provide tailored treatments that improve therapeutic outcomes and patient adherence. Despite the promising potential, challenges like data privacy, model interpretability, and the need for robust clinical validation remain. This poster will explore the role of AI in streamlining drug discovery, formulation, and patient care, while addressing the hurdles that need to be overcome for its full integration into pharmaceutical processes.

Keywords: Drug Discovery, Drug Development, Dosage Form Testing, AI-driven medicine.

ICTJ-P-234

RECENT ADVANCES IN IMMUNOTHERAPIES AGAINST INFECTIOUS DISEASES

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ABSTRACT

Vaccines are essential for preserving world health. Many bacterial and viral pathogens have been targeted by traditional vaccine technologies, but there are several instances in which they have failed, including persistent infections, rapidly evolving pathogens with high sequence variability, complex viral antigens, and emerging pathogens. Since they are well-suited to overcome current technological constraints, novel technologies like viral vector and nucleic acid vaccines have the potential to completely transform vaccine development. Immunotherapies are methods of treating diseases that targets or alter immune system components. Human health is seriously threatened by infectious diseases, as demonstrated by the fact that many nations are still battling new and reemerging illnesses, with the SARS-CoV2 pandemic being the most recent global health emergency. To overcome the problems that current infectious disease prevention and control methods often confront, such as inadequate efficacy, drug toxicity, and the emergence of drug resistance, new and creative therapeutic approaches are required. Over the past decade, the importance of the immune system in modulating carcinogenesis and tumor growth has been extensively recognized. The function of the innate immune responses is less clear, despite the fact that the adaptive immune responses—such as lymphocyte-mediated immune responses—have been thoroughly discussed. There is mounting evidence that a positive prognosis for a number of cancers is associated with tumor-infiltrating lymphocytes (TILs) in cancer tissue.

Keywords: Pathogens, Immunity, Monoclonal Antibodies, Novel technology, Immunotherapy.

ICTJ-P-235

INNOVATIONS IN VACCINES AND IMMUNOTHERAPEUTIC APPROACHES

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ABSTRACT

Vaccines and immunotherapies are pivotal players in global health, effectively preventing the spread of various diseases and empowering the body's immune system to combat conditions like cancer and infections. Complementary to standard treatments such as chemotherapy and surgery, immunotherapies have emerged as powerful allies in the battle against a spectrum of illnesses. Recent years have witnessed remarkable progress in the realm of vaccines and immunotherapies, driven by cutting-edge technologies and innovative methodologies aimed at bolstering disease prevention and treatment. Beyond vaccines, immunotherapies offer a range of promising treatments, including CAR T cell therapy, monoclonal antibodies, oncolytic virus therapy, immune checkpoint inhibitors, and management of autoimmune diseases and cancer. A breakthrough in the identification of genes encoding cancer regression antigens has paved the way for the development of targeted anti-cancer vaccine strategies. These strides in medical innovation hold vast potential for combating diseases, infections, cancer, and immune disorders, ushering in a new era of therapeutic and preventive healthcare.

Keywords: vaccines, treatment, diseases, immunotherapy, cancer, immune system, healthcare.

ICTJ-P-236

FORMULATION AND EVALUATION OF NANO EMULSION BASED GELS LOADED WITH ANTIDIABETIC HERBAL BIOMARKER

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ABSTRACT

The development of novel drug delivery systems is a key focus in pharmaceutical research. This study involves the formulation and evaluation of nanoemulsion-based gels loaded with a biomarker for anti-diabetic activity. The water titration method is a technique used to formulate nanoemulsions by slowly adding an aqueous phase to an oil-loaded drug mixture until a transparent stable nanoemulsion is achieved. The steps for this method are: Dissolving the drug in oil. Add a mixture of surfactant and co-surfactant to the oil-loaded drug. Mix the mixture using a vortex mixer. Titrate the aqueous phase drop by drop until a transparent nanoemulsion is achieved. The prepared formulations were characterized for particle size, zeta potential, polydispersity index (PDI), and viscosity. Drug entrapment efficiency and in-vitro drug release studies were performed to evaluate the potential of the nanoemulsion gels as effective carriers. The formulation exhibiting the most desirable physicochemical properties was further subjected to stability studies and ex-vivo permeation analysis. They are used to treat hyperglycaemia, or elevated blood glucose levels, which are a primary feature of diabetes. Antidiabetic drugs are not designed to cure diabetes, but they can help patients manage their condition and lower the risk of complications. Extracts from the herbal plant can significantly lower blood sugar levels in diabetic rabbits and also promote the glucose uptake potential of cells, replacing insulin in this process. Herbal Biomarkers has very low aqueous solubility and bioavailability, this can be enhanced by using nanogel formulation.

Keywords: Nanotechnology, Nanoemulsion, Antidiabetic, Nanogel formulation.

ICTJ-P-237

HARNESSING ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING FOR TRANSFORMATIVE DRUG DESIGN AND DISCOVERY

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ABSTRACT

A new era in the pharmaceutical industry is being driven by the use of Artificial Intelligence (AI) and Machine Learning (ML), into drug design and discovery, which makes it possible to develop medicines more quickly, economically, and accurately.The effectiveness of virtual screening is increased by advanced methods of machine learning like deep learning as well as neural networks, both of which make it possible to identify new drug candidates from large drug databases. Structure-based drugs development is also made faster by AI-powered technologies that accurately model molecular interactions. Also, study genomics and multiple omics information is made possible by AI/ML techniques, which help create patient-specific personalized care plans.The use of generative models to anticipate new chemical structures, reinforcement learning techniques for de novo drug design based on artificial intelligence tools to address issues like drug toxicity and unwanted side effects are some examples of recent innovations. The combination of AI and ML presents previously unknown chances to speed up discovery pipelines and improve therapeutic results, despite data quality, algorithm transparency, and ethical issues. Having an emphasis on significant developments, applications, and future prospects in this constantly developing field, this presentation demonstrates the revolutionary potential of AI and ML in drug discovery. With creative, data-driven solutions to the world's healthcare problems, these technologies have the potential to reshape the future of medication development completely.

Keywords: Artificial Intelligence, Machine Learning, Drug Design, Drug Discovery, Personalized Medicine.

ICTJ-P-238

HARNESSING AI FOR PERSONALIZED HEALTH MANAGEMENT: ENHANCING CHRONIC DISEASE CARE AND PREVENTIVE HEALTH

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ABSTRACT

AI contributes significantly to the development of personalized health monitoring and management because it provides tailored healthcare solutions based on each patient's needs. Artificial intelligence (AI) algorithms in particular machine learning and data analytics analyze vast amounts of data collected from wearable technology, smartphones and health apps to provide real-time health insights. It is possible to continuously monitor vital signs like blood pressure, heart rate, sleep patterns and physical activity with the use of these technologies. Applications like the AI-powered "Apple Health" and "Google Fit" aggregate data from multiple sources to track user progress and predict potential health risks. Predictive analytics and related approaches enable early intervention of chronic diseases such as diabetes or cardiovascular conditions. By customizing their diet and exercise regimens AI can also assist people in better managing their conditions. In order to help users monitor their health and make better decisions that improve patient outcomes and engagement these applications use data analysis. AI technology development and integration into health monitoring systems promise more precise efficient and patient-centered care.

Keywords: Personalized health monitoring**,** Real-time health insights, Wearable technology.

ICTJ-P-239

RECENT INNOVATIONS WITH DRUGS IN CLINICAL TRIALS FOR TREATMENT OF SKIN CANCER

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ABSTRACT

Skin cancer is a prevalent global health concern, with melanoma and non-melanoma skin cancers emerging as widespread forms of the disease. Treatment options include surgery, radiation therapy, chemotherapy, targeted therapy, and immunotherapy, sometimes requiring lymph node dissection and biopsy for disease assessment. Systemic chemotherapy, despite low response rates, is used in combination treatments or after other therapies. Resistance and side effects of systemic chemotherapy have prompted research for novel approaches. Advanced stages may require a comprehensive approach with targeted therapies and immunotherapies showing significant anti-tumor activity. Targeted therapies inhibit specific molecules like BRAF, MEK, c-KIT, and NRAS, which drive tumor growth and show promise in patients with corresponding mutations. Combinations of BRAF and MEK inhibitors improve progression-free survival, but concerns about resistance and cutaneous toxicities necessitate close monitoring. Immunotherapies utilizing tumor-infiltrating lymphocytes and CAR T cells boost immune responses. Lifileucel, an FDA-approved tumor-infiltrating lymphocyte therapy, improves response rates in advanced-stage melanoma. Ongoing trials are exploring CAR T-cell therapy efficacy for advanced melanoma. Ipilimumab, a monoclonal antibody drug, works by enhancing the body's immune response against cancer cells.

Keywords: Skin cancer, melanoma, treatment, combination therapy, clinical trials.

ICTJ-P-240

PEPTIDES IN NUTRACEUTICALS: ADVANCING CHRONIC DISEASE MANAGEMENT, MARKET GROWTH, AND THE FUTURE OF FUNCTIONAL FOODS IN HEALTHCARE

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ABSTRACT

Nutraceuticals, a term that combines nutrition and pharmaceuticals, refer to food-based ingredients with health benefits that go beyond basic nutrition. First introduced in 1989, nutraceuticals have become popular as alternatives to traditional treatments due to their ability to help manage chronic diseases with fewer side effects. Among them, peptides—short chains of amino acids found in dairy, soy, fish, and plants—have gained significant attention. These peptides are highly bioavailable and have specific biological effects, making them particularly useful for managing oxidative stress, inflammation, heart health, and metabolic disorders, such as diabetes. Peptides work in various ways, including acting as antioxidants, inhibiting enzymes, and influencing gut microbiota. In diabetes, for instance, they help control blood sugar by blocking enzymes like α-amylase and dipeptidyl peptidase IV (DPP IV). Derived from sources like milk, eggs, fish, and plants, these peptides also offer additional benefits, such as reducing inflammation, lowering blood pressure, and fighting infections. Advances in biotechnology and artificial intelligence are expected to further boost personalized health solutions, expanding the market even more. This study emphasizes the therapeutic potential of nutraceuticals, pointing out the importance of rigorous scientific research, clear regulatory guidelines, and continuous innovation to maximize their effectiveness in modern healthcare.

Keywords: Nutraceuticals, Amino acids, Bioavailability, Diabetes management, Artificial intelligence.

ICTJ-P-241

FORMULATION AND EVALUATION OF NANO EMULSION BASED GELS LOADED WITH HERBAL ANTIOXIDANT FOR OCULAR DISORDERS

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ABSTRACT

Antioxidants are used to treat and prevent ocular diseases by reducing oxidative stress and protecting eye tissues. Oxidative stress is an important path mechanism found in numerous ocular degenerative diseases. Oxidant/antioxidant imbalance-induced ocular diseases e.g. keratoconus, cataracts, age-related macular degeneration, and glaucoma. Some herbs have benefits for eye health, including: Eyebright, Gingko biloba, Coleus, Fennel, Brahmi, Shatavari, and Lutein. This formulation is an "Ocular drug delivery system" to enhance efficacy, efficiency and bioavailability of herbal drugs/Biomarker.This study focuses on the formulation and evaluation of nanoemulsion-based gels loaded with herbal antioxidants for the treatment of ocular disorders. Nanoemulsions were developed using a low-energy emulsification technique, with optimized ratios of oil, surfactant, and co-surfactant to achieve stable, nano-sized droplets.The nanoemulsions were subsequently incorporated into a gel matrix to enhance ocular retention and ease of application. The prepared formulations were characterized for particle size, zeta potential, viscosity, and drug encapsulation efficiency. In-vitro release studies demonstrated a sustained release profile, while ex-vivo permeation studies confirmed efficient drug delivery through ocular tissues.This research highlights the potential of nanoemulsion-based gels as Ocular drug delivery system, which is innovative delivery systems for herbal antioxidants, offering a safe and effective solution for managing oxidative stress-related ocular disorders.

Keywords: Nanotechnology, Ocular drug delivery system, Antioxidant, Nanogel formulation.

ICTJ-P-242

IN SILICO STUDIES OF NOVEL HYBRID MOLECULES USEFUL FOR BETTER TREATMENT OF SICKLE CELL ANEMIA

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ABSTRACT

In order to better treat Sickle cell disease, the goal of this study was to conduct a systematic assessment of the literature for scientific information on hybrid molecules fused with amino acids. Hydroxybenzaldehyde derivatives (HFAs) are a class of naturally occurring isoindoline 1,3-dione chemicals that have been shown to have anti-sickling properties in addition to a variety of other pharmacological actions. In this work, the interactions between the protein 2HbS (haemoglobin S) and 16 HFA derivatives were examined using molecular docking techniques, Molinspro software's ADMET analysis, and the molecule that demonstrated the highest binding affinity, which was synthesised in a wet lab. In an attempt to create strong anti-polymerising medications with improved anti-sickling properties, a number of novel hydroxybenzaldehyde-acid analogues were created using coupled against 2HBS. The objective of this study was to conduct a systematic review of the literature for scientific docking studies of analogues created by changing the ring and the meta position (tryptophan) amino acid. The substituent in hydroxybenzaldehyde of HFA exhibits a higher binding affinity of -10.4 kcal/mol towards the protein 2HbS active site than other substituents. This research could open up new avenues for improved care.

Keywords: HFA: Hydroxy benzaldehyde Derivatives, Docking studies, Hb S, Anti – polymerizing drug.

ICTJ-P-243

FORMULATION, EVALUATION AND COMPARATIVE ANALYSIS OF DICYCLOMINE TBLETS WITH MARKETED EQUIVALANTS

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ABSTRACT

Dicyclomine, an antispasmodic agent, is widely used for the treatment of irritable bowel syndrome and related gastrointestinal disorders. This study aims to formulate and evaluate dicyclomine tablets and perform a comparative analysis with marketed equivalents to assess their pharmaceutical quality and therapeutic equivalence.The tablets were prepared using a direct compression method, optimizing formulation parameters to achieve desired physicochemical and mechanical properties. The prepared tablets were evaluated for hardness, friability, weight variation, disintegration time, and drug content uniformity. In-vitro dissolution studies were conducted to determine the drug release profile, and the results were compared with those of selected marketed formulations.Comparative analysis revealed that the formulated dicyclomine tablets demonstrated comparable or superior performance in terms of dissolution efficiency and release kinetics. Stability studies further confirmed the robustness of the formulation under various storage conditions. This study provides insights into the successful formulation of dicyclomine tablets that meet pharmacopeial standards and highlights their potential as effective alternatives to marketed products. The findings also underscore the importance of rigorous evaluation for ensuring therapeutic consistency and quality in generic formulations.

Keywords: Dicyclomine, compression method, marketed products, antispasmodic agent.

ICTJ-P-244

PH DEPENDANT DRUG DELIVERY SYSTEM AND ITS APPLICATIONS

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ABSTRACT

The drug delivery system is a method that offers release of active pharmaceutical agent from a dosage form to achieve desired pharmaceutical response. One of the effective techniques of delivering drugs to the targeted site is pH dependant drug delivery system. Drugs can be administered in predetermined controlled rate to the targeted site such as cells, tissue or organs by using pH dependant polymers. These have wide range of applications in treatment of cancer, GIT related issues, inflammations, IBD etc. Approaches in pH responsive systems include fabrication of liposomes, micelles, hydrogels, nanoparticles, dendrimers and microspheres. For instance, pH dependant doxorubicin (DOX)-loaded mesoporous silica nanoparticle (MSN) coated with polydopamine (PDA) and polyethylene glycol (PEG), used in treatment of breast cancer shows controlled release of the drug in acidic environment (pH 5.0) as the pH of cancerous cells is lower than the pH of normal cell due to acidosis. This technique is also used to treat bacterial and viral infections. Polymers such as chitosan, hyaluronic acid, alginic acid and dextran are examples of pH dependant polymers. PH dependant system serves as intelligent carriers which gives promising result in delivering drug to specific site.

Keywords: pH dependant polymers, Tumor targeting, Controlled release, Nanoparticles.

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REFRAMING FLIGHT FROM CLASSICAL TO AI BASED DRUG DEVELOPMENT

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Drugs are used to treat diseases, improve health and prevent illness. Drug development for society welfare includes various stages – drug discovery and development, preclinical research,clinical research, FDA review and lastly FDA post- market safetymonitoring. The expected average time consumed in drug development process is 10- 15 years, and estimated budget goes over 10 – 15 million rupees. Many of the drugs fails at any stage leads to the wastage of that big amount and time. So, to enhance all this process and ensuring minimum wastage of human resourcesand time there is an introduction of Artificial intelligence on pharmaceutical grounds. John McCarthy in 1956 first coined term Artificial intelligence. Withits super efficiency and efficacy INSO18_055 was the first drug to be entirely discovered by artificial intelligence in 2021, a small molecule inhibitors that treats idiopathic pulmonary fibrosis (IPF)that is in its clinical trial phase today. It's the meet up of a pharmaceutical and technological field that leads up to the greatest revolution for the world. Further we will review how artificial intelligence uses human interpretation with itsmachine learning for drug development and gear up every stage of drug development. Various medicines or Pharmaceutical products has been developedusing AI and seeing its future prospects. AI is on its way to bring a revolution in pharmaceutical field and theflight has been begun.

Keywords: Artificial intelligence, Drug development, Pharmaceutical, Machine learning, Human interpretation.

ICTJ-P-246

NUTRACEUTICALS AND GUT HEALTH

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ABSTRACT

The growing awareness of the relationship between gut health and overall well-being has led to a surge of interest in nutraceuticals—food-derived products offering health benefits beyond basic nutrition. This review explores the pivotal role of nutraceuticals, including prebiotics, probiotics, postbiotics, dietary fibers, and bioactive compounds, in modulating gut microbiota and improving gastrointestinal health. These substances influence gut microbiota composition, enhance the gut barrier, and regulate immune responses, thereby contributing to the prevention and management of conditions such as inflammatory bowel disease (IBD), irritable bowel syndrome (IBS), and metabolic disorders. Advances in omics technologies, coupled with personalized nutrition, are driving targeted nutraceutical interventions tailored to individual microbiome profiles. However, challenges such as inconsistent clinical evidence, formulation stability, and regulatory frameworks persist. This abstract highlights the potential and limitations of nutraceuticals in promoting gut health, emphasizing the need for further research to establish efficacy, safety, and mechanisms of action.

Keywords: irritable bowel syndrome, nutraceuticals.

ICTJ-P-247

PREPARATION AND EVALUATION OF ANTICANCER OINTMENT FOR TRANSDERMAL DELIVERY OF NARINGIN

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ABSTRACT

Naringin, a bioflavonoid found in citrus fruits, exhibits promising anticancer activity by inhibiting tumor growth, inducing apoptosis, and modulating key cellular pathways. This study explores the development of a transdermal ointment formulation for effective naringin delivery, enabling localized and systemic anticancer effects. The formulation was prepared by incorporating naringin into an optimized ointment base with penetration enhancers to improve drug absorption through the skin. Different ointment bases, including hydrophilic and lipophilic matrices, were assessed for their physicochemical properties, stability, and compatibility with naringin. The prepared formulations underwent characterization for spreadability, viscosity, homogeneity, and storage stability. Drug release and permeation studies were conducted using Franz diffusion cells with synthetic membranes and excised animal skin to evaluate the release kinetics and transdermal penetration of naringin. Cytotoxicity studies on cancer cell lines (e.g., MCF-7, A549) were carried out to assess the anticancer potential of the formulation, while skin irritation tests confirmed its safety for topical application.The optimized formulation demonstrated enhanced skin permeation, sustained drug release, and significant cytotoxic effects against cancer cells. Stability studies confirmed the robustness of the formulation under various storage conditions. These results suggest that transdermal delivery of naringin through a well-designed ointment is a viable approach for cancer treatment.

Keywords: Naringin, anticancer ointment, transdermal delivery, drug permeation, cytotoxicity.

ICTJ-P-248

SIX SIGMA CONCEPT: A POWERFUL TOOL TO PHARMACEUTICAL INDUSTRY

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ABSTRACT

Six Sigma is a powerful statistical method designed to systematically address problems. It offers tools to measure and analyze key factors, identify easy-to-implement improvements, and ensure lasting changes through a control process that maintains gains over time. Essentially, in a Six Sigma process, variation is minimized to less than 3.4 defects per million opportunities. There are two main Six Sigma methodologies: DMAIC (Define, Measure, Analyze, Improve, Control) and DMADV (Define, Measure, Analyze, Design, Verify). In the pharmaceutical industry, which is highly regulated, regulatory affairs professionals play a crucial role in product development and act as a bridge between the industry and agencies like the FDA. Six Sigma, as a problem-solving approach, has been applied across various fields to manage and reduce variation. This transformation of established methodologies into new, efficient techniques has made Six Sigma a cornerstone philosophy for leading corporation worldwide, generating substantial business returns. In the past, we believed in the infinite potential for improvement, but there was no structured methodology to support this belief. Now, Six Sigma provides that framework, fostering a culture of continuous learning, sharing, and excitement for improvement.

Keywords: DMADV, Quality Improvement, ISO 9000 series.

ICTJ-P-249

AI FOR THE DIAGNOSIS AND TREATMENT FOR CANCER

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ABSTRACT

Robotics, speech recognition, natural language and image recognition or processing, machine learning, and other fields and technologies are all part of the relatively new field of artificial intelligence (AI) in computer science. There are numerous data types that can be analyzed computationally, such as diagnostic imaging, pathology slides, electronic medical records, and peripheral blood. We give examples of how these data might be used to diagnose cancer. AI, particularly Deep Learning (DL), has been used in many areas of oncology research and has the potential to improve cancer detection and therapy based on cutting-edge computational technologies and a vast amount of medical data. Beyond diagnosis, AI has an impact on therapy choices. Clinical data and AI algorithms can be used to provide individualized treatment plans. AI can give oncologists important insights by evaluating patient features, illness stage, genetic markers, and treatment outcomes. This helps with treatment planning and forecasts how well a given therapy will work. This can result in more focused and efficient treatment plans, which will benefit patients and cut down on needless procedures and adverse consequences. Additionally, AI is essential for preventing cancer. Artificial intelligence (AI) systems can offer real-time insights, enabling prompt interventions and treatment plan modifications. The quality of life and patient outcomes are improved by this proactive approach to disease care.

Keywords: Speech recognition, Artificial intelligences, Oncology, Deep learning, Cancer.

ICTJ-P-250

GREEN CHEMISTRY IN PHARMACEUTICAL DEVELOPMENT: TOWARDS SAFER AND GREENER DRUGS

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ABSTRACT

With the goal of developing safer, more sustainable medications while reducing their negative effects on the environment, green chemistry has become a revolutionary method in pharmaceutical development. Green chemistry has emerged as a transformative approach in pharmaceutical development, aiming to create safer, more sustainable drugs while minimizing environmental impact. Its main objectives include lowering energy use, minimizing hazardous waste, and substituting ecologically safe chemicals for harmful ones. Key innovations include the use of green solvents, biocatalysis and renewable feedstocks to optimize synthetic pathways and enhance atom economy, enhancing efficiency and reducing toxicity. Furthermore, advanced methodologies like continuous flow chemistry and atom economy are streamlining production processes, ensuring resource optimization. This approach not only mitigates ecological harm but also aligns with regulatory demands and public expectations for environmentally responsible practices. Case studies, such as the development of antiviral drugs and biodegradable drug delivery systems, demonstrate the practical implementation and benefits of green chemistry in the pharmaceutical industry. Despite its potential, challenges remain in adopting these practices at scale, including the need for technological innovation, cost management, and workforce training.

Keywords: Green chemistry, Innovations, Atom economy, Environmental impact, Toxicity.

ICTJ-P-251

ARTIFICIAL INTELLIGENCE USED IN DRUG DISCOVERY

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ABSTRACT

Artificial intelligence (AI) plays an important role in daily life. Deep neural networks showed improved predictivity in comparison to baseline machine learning methods. The scope of AI applications for early drug discovery has been widely increased. In drug discovery, clinical candidate molecules must meet a set of different criteria. Next to the right potency for the biological target, the compound should be rather selective against undesired targets and also exhibit good physicochemical as well as ADMET properties. In pharmaceutical industry, large datasets are collected during compound optimization for many different properties. Such large datasets for targets and anti-targets are available across different chemical series and are systematically used for training machine learning models to drive compound optimization. Organic synthesis is a critical part of any small molecule drug discovery program. numerous computational approaches have been developed to assist synthesis planning. Three different aspects can be distinguished: Prediction of the outcome of a reaction with a given set of educts, Prediction of the yield of a chemical reactions as well as retrosynthetic planning. A number of Machine learning based approaches have been described for forward synthesis prediction. For this quantum chemical descriptors have been combined with manual encoded rules and machine learning to predict a reaction and its product(s).

Keywords: Machine Learning, De Novo Design, Compound Optimization.

ICTJ-P-252

UNLOCKING NEUROPROTECTION: POTASSIUM CHANNEL OPENER IN ALZHEIMER'S DISEASE

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ABSTRACT

Alzheimer's disease (AD) is a progressive neurodegenerative disorder characterized by significant impairments in cognitive functions, including memory, behavior, and reasoning. Despite advancements in understanding the disease's pathology, current therapeutic options focus predominantly on symptomatic relief rather than addressing the underlying neurodegenerative processes. This limitation highlights the urgent need for innovative therapeutic approaches that either prevent abnormal protein aggregation or compensate for the loss of neuronal cells. ATP-sensitive potassium (KATP) channel openers have emerged as a promising strategy for combating AD. They regulate neuronal excitability by inducing membrane hyperpolarization, thereby reducing excitotoxic damage caused by overstimulation. They play a role in modulating neurotransmitter release, preventing excessive calcium influx through voltage-gated calcium channels, and mitigating oxidative stress by lowering reactive oxygen species (ROS) production. By addressing these multifaceted pathological pathways, KATP channel openers represent a potential therapeutic avenue not only to protect neurons from ongoing degeneration but also to prevent the progression of the disease. This review explores the diverse cellular mechanisms of KATP channel openers, emphasizing their potential in modulating key pathological features of AD. This insight underscores their relevance in the development of more effective treatments targeting the root causes of this debilitating disorder.

Keywords: Alzheimer, Potassium channel openers, neurodegenerative disease.

ICTJ-P-253

COMBINATORIAL DRUG DELLIVERY VIA MITOCHONDRIAL TARGETING CUBOSOMAL GEL AGAINST NON-MELANOMA

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ABSTRACT

Non-melanoma skin cancer is one of the most common malignancies reported with a high number of morbidities, necessitating advanced treatment options with enhanced chemotherapeutic efficacy. Conventional therapies often fail to achieve optimal outcomes due to high drug resistance. To overcome these challenges, nanotherapy particularly through the development of targeted drug delivery systems aimed at the mitochondria of tumor cells has emerged as a promising approach. This study aimed at the development of TPP functionalized dual drug (5-FU and Lycopene) loaded cubosomal gel that helps to target the mitochondria of non-melanoma cancerous cells. The cubosomes were optimized using a box bhenken design that showed an average particle size of 89 nm and a zeta potential of -14.08 mV. Furthermore, after coating particle size changed to 158.7 nm and zeta potential changed to +10 mV. Findings of UV-Spectra, DSC, and FT-IR characterize the 5-FU and Lycopene. Moreover, the HPLC method was developed for the simultaneous estimation of both 5-FU and Lycopene. However, further investigations are needed to demonstrate the effectiveness of this novel nano-therapy strategy.

Keywords: Skin Cancer, Combination Therapy, Mitochondrial Targeting.

ICTJ-P-254

ARTIFICIAL INTELLIGENCE IN DRUG SAFETY, PREDICTIVE TOXICOLOGY, PHARMACOVIGILANCE, AND CLINICAL TRIALS

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ABSTRACT

Artificial Intelligence (AI) is revolutionizing the pharmaceutical and healthcare sectors by enhancing the safety, efficiency, and accuracy of drug development and post-market surveillance. In drug safety, AI-powered tools analyze extensive datasets to identify adverse drug reactions (ADRs) and improve the accuracy of risk assessment. These systems enable early detection of safety signals, reducing potential risks to patients and ensuring compliance with regulatory requirements. Machine learning models and neural networks analyze molecular structures to predict toxicity profiles, thereby minimizing the reliance on animal testing and accelerating the drug development process. These predictions enhance the selection of safer compounds, reducing development costs and time.These advancements ensure continuous monitoring and enhance post-marketing drug safety. AI also transforms clinical trials by optimizing patient recruitment, monitoring adherence, and analyzing trial data. Predictive algorithms identify eligible participants based on genetic and demographic factors, while AI-driven tools ensure real-time data management and analysis, reducing errors and improving trial outcomes. Despite its potential, challenges such as data quality, algorithm bias, and ethical considerations persist. Collaborative efforts among researchers, regulatory bodies, and industry stakeholders are essential to address these challenges and maximize AI's benefits.

Keywords: Artificial Intelligence, Drug Safety, Predictive Toxicology, Pharmacovigilance, Clinical Trials.

ICTJ-P-255

TRANSFORMING HYSTERECTOMY CARE WITH ARTIFICIAL INTELLIGENCE

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ABSTRACT

Hysterectomy is one of the most commonly performed surgical procedures worldwide, indicated for conditions such as uterine fibroids, endometriosis, and gynecological cancers. A Systematic review of literature from latest examined studies from PubMed, Scopus, and Web of Science on Transforming Hysterectomy Care with Artificial Intelligence. Articles were analyzed to assess the application of AI in imaging diagnostics, surgical robotics, predictive analytics, and recovery monitoring. The review focused on pre reviewed studies with demonstrated clinical or experimental relevance. Diagnostic support: Enhanced imaging analysis for conditions like fibroids and cancer improved preoperative planning. Surgical robotics: Integration of AI into robotic platforms improved precision and minimized intraoperative risks. Postoperative monitoring: AI-powered wearables and telehealth tools facilitated early detection of complications and tailored recovery protocols. AI has the potential to revolutionize hysterectomy care, improving outcomes through enhanced diagnostic accuracy, surgical precision, and personalized recovery strategies. However, challenges remain, including data standardization, integration into clinical workflows, and addressing ethical concerns related to AI implementation. Future research should focus on large-scale clinical trials and cross-disciplinary collaboration to bridge gaps between AI innovation and gynecological practice.

Keywords: Artificial intelligence, hysterectomy, robotic surgery, gynecological care.

ICTJ-P-256

ARTIFICIAL INTELLIGENCE -BASED ADULTERATION DETECTION IN HERBAL MEDICINES

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ABSTRACT

Herbal medicines are widely used for their therapeutic properties, but their efficacy and safety can be compromised by adulteration. Detecting adulteration in herbal products is challenging due to their complex composition and the subtle nature of contaminants. Artificial intelligence (AI) offers powerful tools for addressing these challenges, leveraging machine learning, deep learning, and data-driven approaches to analyze chemical, spectral, and image data for accurate detection. This study explores the application of AI in adulteration detection, emphasizing preprocessing techniques, feature extraction, and classification models. By integrating AI with spectroscopy, chromatography, and imaging technologies, we demonstrate enhanced sensitivity and specificity in identifying adulterants. The proposed AI-driven framework can improve quality assurance in herbal medicine production, ensuring consumer safety and maintaining trust in traditional healthcare systems.

Keywords: Artificial intelligence, adulteration detection, herbal medicine, machine learning, deep learning.

ICTJ-P-257

CATALYSTS IN GREEN CHEMISTRY: DRIVING SUSTAINABLE CHEMICAL TRANSFORMATIONS

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ABSTRACT

Green chemistry is a branch of chemistry that ensures that all the chemical transformations and reaction taking place should not harm the environment. They are a set of principles that reduces or eliminate the use of hazardous substance in the design, manufacture and application of any chemical product. Product that are synthesized should be less or not at all toxic to the environment. Green chemistry helps to minimize the dependence on fossil fuels, sustainable water resources, minimize the Impact of chemical synthesis and manufacturing. Catalysis, like heterogeneous, homogeneous, and biocatalytic approaches, plays a pivotal role in advancing sustainable chemical practices. Heterogeneous catalysts, such as zeolites and metal oxides, offer durability and reusability, contributing to waste reduction in industrial processes. Homogeneous catalysts, including organometallic complexes, excel in precision and control, enabling atom-efficient reactions critical to pharmaceuticals and fine chemicals. Biocatalysts, derived from enzymes, stand out for their environmental compatibility and unparalleled specificity, making them integral to biorefinery and green manufacturing. The integration of renewable feedstocks, water as a reaction medium, and energy-efficient methods—such as photocatalysis and electrocatalysis—has further transformed catalysis into a cornerstone of green chemistry. Despite significant advancements, challenges remain in scalability, cost-effectiveness, and the design of universally applicable catalytic systems.

Keywords: Heterogeneous, Homogeneous, Biocatalytic, Sustainable, Organometallic.

ICTJ-P-258

CLUSTERED REGULARLY INTERSPACED SHORT PALINDROMIC REPEAT (CRISPR) IN THE TREATMENT OF SICKLE CELL ANAEMIA

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ABSTRACT

CRISPR stands for Clustered Regularly Interspaced Short Palindromic Repeats. When the target DNA is found, Cas9 – one of the enzymes produced by the CRISPR system binds to the DNA and cuts it, shutting the targeted gene off. This review explores the potential of CRISPR/Cas9 for treating SCA and evaluates its efficacy, safety, and long-term outcomes compared to traditional treatment approaches. SCA is an inherited disorder that affects the shape of red blood cells which carry oxygen to all the body parts. The round shape of RBCs is changed under oxygen stress that is they lose their shape from circular to sickled or Cresent shaped. The CRISPR-Cas9 gene-edited therapy CTX001 has shown a consistent and sustained positive response in patients treated for sickle-cell disease. Patients remained VOC-free with follow-up ranging from three to 15 months after CTX001 infusion and had hemoglobin levels in the normal to near normal range at last visit, including total hemoglobin from 11.5 to 13.2 g/dL and fetal hemoglobin levels from 31.3 to 48.0%. In December 08, 2023 U.S. Food and Drug Administration approved the first cell-based gene therapies for the treatment of SCA in a patient's 12 years and older. CRISPR-Cas9 can be used to target and modify the three-billion-letter sequence of the human genome in an effort to treat genetic diseases.

Keywords: Palindromic, Hemoglobin, Inherited Disorder, CRISPR-Cas9, Genome.

ICTJ-P-259

DEVELOPMENT OPTIMIZATION AND IN-VIVO EVALUATION OF NATURAL POLYMER BASED MUCOADHESIVE DRUG DELIVERY SYSTEM OF ANTI-DIABETIC DRUG

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ABSTRACT

The study aims to develop, optimize, and evaluate a natural polymer-based mucoadhesive drug delivery system for anti-diabetic drugs, focusing on drug interaction, bioavailability, dose minimization, and patient compliance. Sitagliptin bioadhesive tablets were established by factorial design to formulate the bioadhesive tablet of Sitagliptin are prepared using the tamarind seed polysaccharide as primary natural polymer and HPMC K4M as a secondary synthetic polymer having property (10-80%) in combination with Carbobol 934 as tablet binder (0.75-3.0%) and Magnesium Stearate and Talc used as lubricants. All formulation were were analyzed the various physical parameters of tablet in-vitro drug release, in-vitro swelling studies, in-vitro bioadhesion, in-vivo studies and stability studies were done properly In this study we could develop successfully optimized tablets of sitagliptin exhibited a unique combination of bioadhesion and drug release pattern which can be developed for the treatment of diabetes.

Keywords: Natural polymer, mucoadhesive drug delivery system, antidiabetic drug.

ICTJ-P-260

THE FUTURE OF DIABETIC NEPHROPATHY: PERSONALIZED MEDICINE AND PRECISION THERAPEUTICS

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ABSTRACT

The primary risk factors, in addition to high blood lipids, smoking, and the quantity of proteins in the diet, include genetic predisposition, hyperglycaemia, and hypertension. This trend has been demonstrated to be slowed by interventions such blood pressure management, glycaemic control, and renin-angiotensin-aldosterone system suppression. By leveraging advancements in genomics, proteomics, and metabolomics, we can identify unique biomarkers and genetic factors that contribute to DN progression in individual patients. This knowledge can be used to develop targeted therapies that address the specific underlying mechanisms of disease in each patient. In real-world data and artificial intelligence can be harnessed to optimize treatment decisions and monitor disease progression in real-time. The integration of these technologies will enable the development of individualized treatment plans that maximize therapeutic benefits while minimizing adverse effects, leading to improved patient outcomes and a more effective approach to managing DN. The field's challenge is to interpret the vast amount of new genetic and molecular data to provide researchers and clinicians with accurate DN predictors for better preventive clinical trial design and for tailored clinical management of the millions of people with diabetes around the world.

Keywords: Diabetic Nephropathy, Personalized Medicine, Genetics, Targeted Therapies, Biomarkers.

ICTJ-P-261

HERBAL DRUG DELIVERY SYSTEMS: A REVIEW OF PHYTOPHARMACEUTICALS

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ABSTRACT

Plant-based phytopharmaceuticals have been used for centuries to treat a variety of illnesses. However, their quick metabolism, poor targeting, and poor absorption frequently limit their therapeutic efficacy. Novel phytopharmaceuticals with enhanced safety and efficacy have been developed as a result of recent developments in herbal drug delivery systems. The goal of this review is to give a thorough overview of the state of herbal drug delivery methods, such as solid dispersions, liposomes, phytosomes, and nanoparticles.The review covers each system's benefits and drawbacks as well as how it can be used to treat a range of illnesses, such as cancer, inflammation, and anxiety. Additionally included are the pharmacological and toxicological properties of phytopharmaceuticals. The paper also emphasizes the difficulties and potential paths for phytopharmaceutical development, such as the requirement for clinical trials, regulation, and standardization.The creation of innovative phytopharmaceuticals for better human health may be facilitated by this review's thorough awareness of the state and potential of herbal drug delivery systems.

Keywords: nanoparticles, phytosomes, liposomes, herbal drug delivery systems, phytopharmaceuticals.

ICTJ-P-262

AI-DRIVEN WEARABLES: FUTURE PERSPECTIVE

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ABSTRACT

Continuous monitoring of vital signs, physical activity, and other health parameters is now possible because of wearable health technology, which has completely changed health monitoring and management. Personalized healthcare could be improved by incorporating artificial intelligence (AI) into wearable medical technology, which would allow for real-time data processing and early health issue detection. To accomplish the goal, this study used PubMed, Scopus, and Web of Science to perform a systematic literature review covering the three-year period from 2020 to 2023. The review concentrated on conference proceedings and peer-reviewed publications addressing the incorporation of AI in wearable medical technology for applications pertaining to health. AI-powered wearables have the potential to significantly improve patient outcomes and healthcare delivery by facilitating early diagnosis of health issues and ongoing health monitoring. Future studies should concentrate on creating algorithms that use less energy and making sure they integrate seamlessly with the current healthcare systems. Significant progress has been made in taking account for the sensory data and enhancing decision-making abilities by wearables with AI. Applications are found in many different areas of healthcare, including cancer, diabetes, and heart monitoring, tracking, and early identification of infectious illnesses.

Keywords: Artificial intelligence, health monitoring, personalized healthcare.

ICTJ-P-263

NANOTECHNOLOGY IN CANCER DRUG DELIVERY

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ABSTRACT

Nanotechnology is more effective and safer for cancer therapies. Nanotechnology has the potential to improve the selectivity and potency of chemical, physical, and biological approaches to induce cancer cell death while minimizing concomitant toxicity to non-malignant cells. Nanoparticles (nanometer-sized) offer a new way to deliver anticancer drugs. These particles can be exquisitely modified to bind to nuclear or cytoplasmic receptor sites, the microenvironment, or the membranes of cancer cells. As a result, the targeted cancer cell receives high medication concentrations with less harm to healthy tissue. In the development of cancer drugs, nanomaterials such as carbon nanotubes, polymeric micelles, and liposomes have demonstrated significant pharmacokinetic and pharmacodynamic advantages in cancer diagnosis and treatment. In this review, we provide an overview of nanomaterials widely used in cancer diagnosis and treatment. The chances of nanomaterials such as drug carriers are also discussed for further clinical use. In addition, the application of nanomedicine in immunotherapy is discussed and some remaining issues are addressed.

Keywords: Nanomedicine, Cancer therapy, Drug delivery, Nanoparticles, Nanotechnology.

ICTJ-P-264

IN SILICO BASED SCREENING OF SCOPOLETIN DERIVATIVES TO BE POTENTIAL LUNG CANCER AGENTS

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ABSTRACT

The development of innovative, potent therapeutic medicines is necessary because lung cancer continues to be a major cause of cancer-related death globally. A naturally occurring coumarin derivative called Scopoletin has shown important pharmacological characteristics, such as anticancer action. This study uses screening methods based on molecular docking to examine the potential of Scopoletin derivatives as agents of lung cancer. For in silico assessment, important molecular targets linked to the development of lung cancer were chosen Epidermal Growth Factor Receptor (**EGFR**) (PDB id- **6DUK**). Molecular docking is employed to evaluate most suitable Scopoletin derivative. We used to prepare the scheme of different Scopoletin derivatives by joining different substituted benzene group with Scopoletin. Among them trifluroethyl benzene substituted Scopoletin shows most significant docking result with **-10.1** kcal/mol which compared with the standard drug Doxorubicin dock score **-8.2** kcal/mol. The best candidates showed great promise in blocking important pathways that contribute to the angiogenesis and proliferation of lung cancer cells. This work demonstrates how useful in silico methods are for locating and refining derivatives of Scopoletin as viable options for treating lung cancer. New anticancer drugs that target lung cancer may be developed as a result of future in vitro and in vivo validation of the discovered compounds.

Keywords: EGFR, Lung cancer, Molecular docking, Scopoletin.

ICTJ-P-265

DRUG REPURPOSING AS A STRATEGY TO IDENTIFY NEW THERAPEUTIC AGENTS

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ABSTRACT

Drug repurposing is also called as drug repositioning or drug reprofiling or drug rescuing.This approach is based on virtual screening of drug libraries to identify suitable drugs and their binding interactions with target protein by using computational tools such as molecular similarity and homology modeling. Through this process, new medicinally active agents are designed from the old or existing or pro-drugs or FDA approved clinically used drugs. Recently, in silico methods are employed along with the utilization of structure based drug design (SBDD), ligand based drug design (LBDD) and artificial intelligence (AI) technology to accelerate the drug repurposing process. Drug repurposing provides several advantages such as reduction of the time period spent during research, reduction in complexity and cost of process in comparison with traditional approaches of drug discovery process. Due to the availability of previously collected data related to structural optimization, pharmacokinetic, toxicological, clinical efficacy and safety profile of drugs during traditional drug discovery approach, there is reduction in time of drug development with lower cost and reduced risks of failure or high success rate in drug repurposing. Traditional methods of drug discovery process mainly focus on development of drugs to treat chronic and complex diseases, whereas drug repositioning approach primarily focus on the development of drugs for emerging infectious diseases which are difficult to treat and neglected diseases.

Keywords: Therapeutic agents, drug design, AI, FDA.

ICTJ-P-266

REPORT GENERATION IN CLINICAL DATA MANAGEMENT: AN OVERVIEW

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ABSTRACT

Report generation in clinical data management is a detailed and structured process that is ensuring that all data collected throughout the trial is properly documented, analyzed, and communicated to stakeholders. This involves compiling clinical trial data into standardized reports and produced Reports play a vital role in monitoring trial progress, ensuring patient safety, and communicating trial results to stakeholders. With the increasing complexity of clinical trials and regulatory demands, the use of technology, automation, and collaboration between data managers, statisticians, and regulatory experts is essential for producing high-quality, timely reports. Report generation plays a vital role by offering insights into: Data Tracking: Monitoring subject enrollment, visit completion, and the status of data entry. Query Management: Keeping track of the resolution progress for open, closed, and pending data queries. Safety Surveillance: Creating reports on adverse events (AEs) and serious adverse events (SAEs) for ongoing safety assessment. Site Evaluation: Assessing the performance of clinical sites in terms of data collection accuracy and adherence to the study protocol. Pre-Lock Verification: Priosr to database lock, reports ensure that the data is accurate, complete, and ready for final analysis. This article highlights the processes involved and provides the reader an overview of the Report generation in CDM which is crucial to guarantee that each phase of the clinical trial is thoroughly documented and that decisions are based on accurate, and data driven insight.

Keywords: Clinical Data Management, Report Generation, Safety Surveillance, Data Tracking, Query Management, Pre-Lock Verification.

ICTJ-P-267

COMPUTER AIDED DRUG DISCOVERY & DEVELOPMENT

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ABSTRACT

Over past few years, traditional drug discovery techniques have been effectively used to create new medications, the average cost of the procedure from lead identification to clinical trials is over $1.8 billion and takes more than 12 years. In silico techniques have recently gained popularity due to their ability to speed up drug development in terms of time, labour, and cost. In silico drug design, also known as computer-aided drug design (CADD) and development, involves use of computational techniques and models to identify drug-like molecules using bioinformatics tools and analyse or predict the biological activity of potential drug part, and also predict their physicochemical properties. Both Chemical biology and computational drug design techniques are used in drug discovery to effectively identify and optimize lead molecules and Computer-aided approaches have been widely used in pharmaceutical companies and academic research to improve the efficiency of the drug discovery and development. Commonly used computational approaches include ligand-based drug design (Pharmacophore), structure-based drug design (Molecular docking), and quantitative structure-activity relationships (QSAR). Some of the drugs developed by this method are captopril, ritonavir, triofiban, dorzolamide etc. and continuous improvements are necessary for future drug discovery tools.

Keywords: In silico, CADD, Pharmacophore, Molecular docking, QSAR.

ICTJ-P-268

GENE AND STEM CELL THERAPY ADVANCEMENTS

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ABSTRACT

Recent years have witnessed groundbreaking progress in gene and stem cell therapies, unveiling significant potential in treating a variety of genetic illnesses. These therapies offer promising therapeutic options for serious conditions such as cancer, rheumatoid arthritis, diabetes, Parkinson's, and Alzheimer's disease. The development of induced pluripotent stem cells (iPSCs), which can be derived from a patient's own cells, minimizes the risk of immune rejection. Additionally, gene editing technologies like CRISPR/Cas9 enable precise genetic modifications, paving the way for potential treatments of hereditary diseases. Ensuring safety and efficacy, along with addressing ethical considerations, remains a priority. Advances in delivery technologies, such as nanoparticle-based systems, have further enhanced the precision and effectiveness of these therapies. Ongoing clinical experiments continue to explore optimal conditions for utilizing gene and stem cell treatments, offering a hopeful future for these revolutionary approaches.

Keywords: Gene Therapy, Stem Therapy, Pluripotent stem, Precise genetic, Nanoparticle-based systems**.**

ICTJ-P-269

HUMAN CELL ATLAS

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ABSTRACT

With the congruence in exciting advances in molecular and spatial profiling methods and new computational approaches leveraging artificial intelligence and machine learning (AI/ML), the construction of cell atlases is progressing from data collection to atlas integration and beyond. Here, we discuss five ways in which cell atlases- the Human Cell Atlas, to be among them-are already revealing valuable biological insight and poised to do more in the years ahead. In particular, cell atlases are a census of cells; 3D maps of cells in the body, across modalities and scales; maps connecting genotype causes to phenotype effects; 4D maps of development; and, finally, foundation models of biology that unify all these aspects and help transform medicine.

Keywords: artificial intelligence, Human Cell Atlas, single cell.

ICTJ-P-270

NUTRITIONAL VALUES AND PHARMACOLOGICAL IMPORTANCE OF *FICUS CARICA* (ANJEER): A REVIEW

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ABSTRACT

Ficus carica is the most popular member of the genus *Ficus*, and the family Moraceae. In the Mediterranean region it is so widely used, both fresh and dried, that it is called "the poor man's food." The dried fruits of *F. carica* have been reported as an important source of vitamins, minerals, carbohydrates, sugars, organic acids, and phenolic compounds. The plant has been used in traditional medicine for a wide range of ailments related to digestive, endocrine, reproductive, and respiratory systems, and also cancer. Additionally, it is also used in gastrointestinal tract and urinary tract infection. Phytochemical studies on the leaves and fruits of the plant have shown that they are rich in phenolics, organic acids, and volatile compounds. However, there is little information on the phytochemicals present in the stem and root. Reports on the biological activities of the plant are mainly on its crude extracts which have been proven to possess many biological activities. Some of the most interesting therapeutic effects include anticancer, hepatoprotective, hypoglycemic, hypolipidemic, and antimicrobial activities. Thus, studies related to identification of the bioactive compounds and correlating them to their biological activities are very useful for further research to explore the potential of *F. carica* as a source of therapeutic agents.

Keywords: Fig, Hyperlipidemia, Atherosclerosis, Hypertention.

ICTJ-P-271

SYNTHESIS AND EVALUATION OF BIMETALLIC NANOPARTICLE BASED EFFLUX PUMP INHIBITORS FOR STAPHYLOCOCCUS AUREUS

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ABSTRACT

The rise of antibiotic-resistant bacteria, particularly Staphylococcus aureus, presents a significant challenge to modern medicine. Methicillin-resistant Staphylococcus aureus (MRSA) is notorious for causing severe, hard-to-treat infections. Efflux pumps, which are membrane proteins that expel antibiotics and other toxic substances out of bacterial cells, play a crucial role in this resistance. This study focuses on synthesizing and applying silver-zinc oxide (Ag-ZnO) bimetallic nanoparticles as potential efflux pump inhibitors (EPIs) to combat Staphylococcus infections. Ag-ZnO nanoparticles were synthesized via a direct precipitation method using zinc nitrate and potassium hydroxide (KOH) as precursors. The synthesized nanoparticles were characterized using Dynamic Light Scattering (DLS), UV-visible spectroscopy (UV-Vis), and furnace heat treatment to determine their size, distribution, optical properties, and crystallinity. The antimicrobial activity of the Ag-ZnO nanoparticles was evaluated against Staphylococcus aureus using standard microbiological assays, including the disk diffusion method and broth microdilution method.

Keywords: Methicillin-resistant Staphylococcus aureus (MRSA), bimetallic nanoparticles.

ICTJ-P-272

NANOTECHNOLOGY AND NANOMEDICINE: SMALL PACKET BIG SURPRISE

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ABSTRACT

Nanotechnology is a branch of science which is used to design devices and tools from size 1 to 100nm with specific function at the atomic, cellular and molecular levels. In this method nanoscale materials are employed to serve as means of diagnostic tool or to deliver therapeutic agents to specific targeted site in a controlled manner. Nanotechnology offers multiple benefits in treating many chronic diseases in human by providing target-oriented and site-specific delivery, which ultimately increase efficacy of the drug. The use of nanotechnology in biomedical reseach, clinical practice, medicine and healthcare is referred as nanomedicine, and nowadays it has been used to combat many diseases which includes cancer and cardiovascular diseases as Nano medicine, shows many outstanding applications. Nano-based materials are used in different medical settings which includes diagnosis and providing therapy to variety of diseases, as well as in tissue engineering and regenerative medicine strategies. Increase in usage of nanomaterials are seen in diagnostic, and providing targeting drug delivery effect. Nanotechnology will provide combination of diagnostic/ imaging with therapeutic and will help in prescribing specific medications which is best suitable for an individual. To conclude, nanotechnology is going to improve in future as it helps in increasing efficacy, availability, absorption and other similar factors, thus have wider range of chances.

Keywords: Nanotechnology, nanomedicine, site specific drug delivery system.

ICTJ-P-273

BIOLOGICAL PROPERTIES OF RHYNCHOPHYLLINE: A MULTIFACETED NATURAL COMPOUND

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ABSTRACT

Rhynchophylline, a bioactive alkaloid derived from *Uncaria* species, is essential to traditional medicine and has various pharmacological properties. It has anti-inflammatory, neuroprotective, antioxidant, and cardiovascular properties, and generated considerable interest in its potential therapeutic uses for numerous disorders. The objective of this review is to synthesize existing information about the biological properties of rhynchophylline, elucidate its mechanisms of action, and examine its therapeutic potential in modern medicine. Rhynchophylline demonstrated a wide range of biological effects including anti-inflammatory, cardioprotective, antioxidant, and neuroprotective. It shows anti-inflammatory effects through suppressing pro-inflammatory cytokines (e.g., TNF-α, IL-6) and alleviated inflammation-induced damage in preclinical studies. Its neuroprotective effect caused due to the modulation of NMDA receptors and calcium channels contributes to neuronal protection against excitotoxicity and alleviates neurodegenerative disorders. It shows antioxidant activity by increasing the activity of antioxidant enzymes (e.g., superoxide dismutase), and a decrease in oxidative stress markers. Rhynchophylline also enhanced endothelial function, lowered blood pressure, and exhibited anti-arrhythmic characteristics. Rhynchophylline is a potential natural drug with diverse biological properties. However, future studies on rhynchophylline must include clinical validation, safety assessment, and investigation of synergistic interactions with alternative medicines.

Keywords: Rhynchophylline, Antioxidant, Anti-inflammatory, Neuroprotection, Cardiovascular health.

ICTJ-P-274

ETHICAL IMPLICATIONS IN PRECISION MEDICINE AND GENETIC TESTING

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ABSTRACT

Genetic testing is set to assume a more significant role in obstetrics and gynaecology. To guarantee patients receive optimal care, clinicians must familiarise themselves with the existing range of genetic testing and their limits. Clinicians must identify patients in their offices who qualify for genetic testing. While ethical concerns with genetic testing have been acknowledged for an extended period, they have become increasingly pressing due to the swift advancements in the field stemming from the achievements of the Human Genome Project. Precision medicine, characterized by personalized treatment informed by an individual's genetics, lifestyle, and environment, includes various applications of genetic information such as predictive risk testing, risk assessment, diagnostic testing, pharmacogenomics, tumour molecular profiling, population screening, and direct-to-consumer genetic testing. Precision medicine presents challenges with patient and physician education, counselling, privacy, confidentiality, cost, patient welfare, and fairness. Genomic testing can forecast diseases or identify vulnerabilities but cannot prevent, treat, or cure the diagnosed conditions. It poses distinct issues by recognizing illness risks for both patients and their family members, who may be unaware of or disinterested in acquiring information regarding their disease risk. The primary objective is to incorporate genomics into clinical practice by evaluating the morally suitable applications of precision medicine and genetic testing. The ethical implications of genetic testing intersect with the broader ethical considerations of clinical testing in healthcare.

Keywords: Precision medicine, Genomic testing, Pharmacogenomics, Human Genome Project.

ICTJ-P-275

ADVANCEMENTS IN PREBIOTIC AND PROBIOTIC RESEARCH: IMPLICATIONS FOR DISEASE PREVENTION AND TREATMENT

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ABSTRACT

The human gut microbiota is an intricate ecosystem comprising trillions of the microorganisms, including bacteria, viruses, fungi, and other microbial entities. This vast microbial community plays a multifaceted role in our gut, and its homeostasis has emerged as an indispensable aspect of human health. Recent scientific explorations have revealed that gut microbiota homeostasis is critical for regulating intestinal inflammation, maintaining human metabolic homeostasis, and maturation and regulation of the immune system. The importance of probiotics and prebiotics in the medical field has also been amplified due to their ability to promote health and treat disease through modulation of the gut microbiota. Probiotics are live microorganisms that provide health benefits when consumed in adequate amounts; prebiotics are nondigestible substances that promote the growth and activity of beneficial gut bacteria, and contribute to gut health. Based on growth model data fitting, the growth rate of probiotics clinical research is found to align with the Richards model, with an estimated 1000 studies per year projected for the future. Although the number of registered phase 1−4 clinical trials of probiotics has slowed down in recent years, it has remained at around 40 per year and is expected to increase in 2023.

Keywords: Prebiotics, Probiotics, Microbiota modulation, metabolic disorders.

ICTJ-P-276

ADVANCING DRUG SAFETY THROUGH PHARMACOVIGILANCE AND INFORMATION MANAGEMENT

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ABSTRACT

Pharmacovigilance is a science dedicated to evaluating the safety of medicines and monitoring adverse drug reactions (ADRs). It is essential to drug regulation, clinical practice, and public health. As part of a global network of pharmacovigilance centers coordinated by the Uppsala Monitoring Centre, pharmacovigilance has the capacity to tackle safety issues that transcend national borders, aiding the detection of adverse events that were previously unknown or poorly understood. Information management and sharing are core aspects of pharmacovigilance, where data from healthcare professionals, patients, and other stakeholders is collected, analyzed, and communicated effectively. Data quality is improved by integrating electronic health records, wearable devices, and real-world evidence. Moreover, artificial intelligence and machine learning are reshaping pharmacovigilance by automating monitoring for adverse effects, helping to inform regulatory decision-making. Worldwide pharmacovigilance centers strive to innovate in drug safety, despite challenges in keeping pace with advancements in healthcare and pharmaceuticals. It is important to have structured information sharing between regulatory agencies, pharmaceutical companies, and healthcare providers. This open approach facilitates a swift response to new threats and leads to improved medication safety and risk management decisions.

Keywords: Pharmacovigilance, adverse drug reactions, drug safety, information management.

ICTJ-P-277

ARTIFICIAL INTELLIGANCE AND MACHINE LEARNING BASED- MEDICAL DEVICES

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ABSTRACT

The United States Food and Drug Administration is approving a growing number of artificial intelligence and machine learning-based medical devices via the 510(k) pathway. This pathway permits clearance if the device is substantially identical to a previously approved device (i.e., predicate). The integration of Artificial Intelligence in healthcare is transforming medical analysis and disease prediction, improving diagnostic precision and patient care. The complexity of medical devices has escalated, necessitating the incorporation of design thinking and specialised training for makers, healthcare practitioners, sterilisation experts, and regulators. Properly addressing this aspect would enhance the entire supply chain and logistics, production, processing, sterilisation, safety, regulation, education, sustainability, and circularity. Substantial potential exist to innovate and create suitable digital solutions to enhance efficiencies in these critical domains. This is the publication to raise awareness and delineate various digital technologies that inform and facilitate medical device development from a comprehensive end-to-end life cycle viewpoint. This survey investigates Trustworthy Artificial Intelligence in healthcare, emphasising a patient-centred approach. To enhance patient care, greater emphasis must be placed on the unique attributes of artificial intelligence and machine learning when establishing significant equivalence between a novel artificial intelligence and machine learning -based medical device and predicate devices.

Keywords: AI/ML-based medical devices, Medical Analysis, Patient healthcare.

ICTJ-P-278

INSULIN LOADED NANOPARTICLE FOR DIABETES

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ABSTRACT

Diabetes is a group of diseases characterized by hyperglycaemia and originating from the deficiency or resistance to insulin, or both. The types of diabetes include: Type 1 Diabetes (T1D) and Type 2 Diabetes (T2D). T1D is caused by the T and B cell of immune system and T2D is due to the sedentary life style. The most effective treatment for diabetes involves the subcutaneous injection of insulin. Although the delivery of insulin is an ideal route for diabetic patients, however for oral delivery several limitations have to be overcome such as the rapid degradation of insulin in gastric fluid and low oral bioavailability. Nanoparticles have demonstrated significant advancements in potential oral delivery of insulin. The nanoparticle will protect the insulin from degradation through the transcellular and paracellular pathway. Nanoparticle has been used for insulin carrier to make possible administration without the need of injection via oral or nasal. Nanoparticle consist for particle in the range of nanometre that obtained from different materials like polysaccharide, lipid etc. The main aim of this review article is to explain how nanoparticles-based delivery of insulin could improve the physiochemical property and its bioavailability.

Keywords: Diabetes, Hyperglycaemia, Subcutaneous, Nanoparticle, Bioavailability.

ICTJ-P-279

TRANSFORMATIVE INNOVATIONS IN HEALTHCARE AND PHARMACEUTICALS: ADVANCING PATIENT-CENTERED CARE AND GLOBAL HEALTH SUSTAINABILITY

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ABSTRACT

Innovation in pharmaceuticals and healthcare has drastically transformed treatment delivery, improved patient outcomes, increased access, and reduced costs. Cutting-edge technologies, such as artificial intelligence (AI), machine learning, and data analytics, have played a significant role in this progress. Advances in genomics and biotechnology enable the design of therapies tailored to an individual's genetic makeup. Furthermore, block chain technology is revolutionizing the management of medical records by enhancing security, transparency, and interoperability, fostering trust and cooperation among various healthcare systems. Digital platforms and mobile health applications, by involving patients in the care process, help improve treatment adherence and outcomes. The pharmaceutical industry has also benefited from advanced drug delivery methods, including nanotechnology-based formulations and innovative devices, which increase treatment efficiency and patient compliance. The rapid development of mRNA vaccines during the recent pandemic showcases the industry's ability to respond quickly to emerging health threats. Beyond research, new technologies like CRISPR and regenerative medicine open up exciting possibilities, from correcting genetic disorders to rejuvenating damaged tissues. The shift toward value-based healthcare models emphasizes patient-centered care, focusing on the needs of the individual rather than service volume. New payment structures further ensure that quality care is accessible to all.

Keywords: Healthcare innovation, Pharmaceutical advancements, Artificial intelligence (AI).

ICTJ-P-280

ARTIFICIAL INTELLIGENCE AND DATABASES IN DRUG SAFETY: A PILOT STUDY OF ANTIDIABETIC DRUG INTERACTIONS

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ABSTRACT

Artificial intelligence (AI) has transformed healthcare, especially in the area of medication safety. This pilot study will assess how well AI tools, such as ChatGPT, identify and analyse drug-drug interactions (DDIs) between two frequently prescribed antidiabetic drugs as compared to conventional electronic drug interaction databases. Many times, multiple antidiabetic drugs are prescribed in order to control diabetes which increases the possibility of adverse drug reaction (ADR) due to DDIs. These drug pairs will be evaluated for scope and completeness using the most commonly used databases and ChatGPT. The results will offer insightful information on the advantages and disadvantages of both platforms. This study will show how AI can be used to enhance current systems and promote a more comprehensive approach to medication safety. By comparing well-established databases with ChatGPT, this study will highlight how technology is constantly improving clinical decision-making. The present study is especially important for medical practitioners and clinical pharmacists, as it will create opportunities to incorporate AI into their daily tasks.

Keywords: Artificial Intelligence, Antidiabetic Medications, Drug-Drug Interactions, Electronic Databases.

ICTJ-P-281

ADVANCING BIOMEDICAL RESEARCH WITH 3D CELL CULTURE: A PARADIGM SHIFT IN DRUG DISCOVERY AND TISSUE ENGINEERING

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ABSTRACT

Three-dimensional (3D) cell culture has emerged as a transformative approach in biomedical research, bridging the gap between traditional two-dimensional (2D) models and in vivo systems. Unlike 2D cultures, which fail to replicate the cellular microenvironment accurately, 3D models simulate in vivo-like conditions, preserving critical histological and biochemical features such as the extracellular matrix, cell-cell interactions, and mechanical cues. Recent studies highlight the utility of organoids, tumoroids, and biomimetic scaffolds in unraveling disease mechanisms and evaluating therapeutic interventions. For instance, 3D cultures have proven instrumental in studying tumor heterogeneity and resistance mechanisms, offering a robust platform for screening anticancer drugs. Moreover, the integration of bioprinting and organ-on-chip technologies has paved the way for personalized medicine by allowing the creation of patient-specific models. Despite these advancements, challenges remain, including standardization of protocols and scalability for high-throughput applications. This abstract encapsulates the potential of 3D cell culture in revolutionizing disease modeling and therapeutic evaluation, underscoring its role in accelerating the transition from bench to bedside.

Keywords: 3D cell culture, Organoids, Regenerative medicine, Tumoroids, Bioprinting.

ICTJ-P-282

STANDARDIZATION AND NEUROPROTECTIVE ACTIVITY OF SOME INDIGENOUS PLANTS

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ABSTRACT

Rosa rubiginosa (Sweet Briar Rose) and Cucumis melo (Muskmelon) seeds have garnered significant interest due to their rich chemical compositions and promising neuroprotective activities. Rosa rubiginosa seeds are abundant in proteins, essential fatty acids such as linoleic acid and α-linolenic acid, and phenolic compounds, which contribute to their robust antioxidant properties. These bioactive constituents play a pivotal role in reducing oxidative stress, a critical factor in the progression of neurodegenerative disorders. Similarly, Cucumis melo seeds are enriched with triterpenoids, phytosterols, and fatty acids, which also exhibit strong antioxidant activities. The neuroprotective effects of both seed types are attributed to their ability to alleviate oxidative stress and inflammation, two primary drivers of neurodegeneration. This study underscores the therapeutic potential of Rosa rubiginosa and Cucumis melo seeds in neuroprotection, focusing on their antioxidant mechanisms. These findings suggest that incorporating these seeds into dietary or pharmaceutical applications could offer a natural approach to managing neurodegenerative diseases. Further research is warranted to explore their efficacy and safety in clinical settings.

Keywords: Rosa rubiginosa, Cucumis melo, Neuroprotection, Antioxidant Activity, Oxidative Stress.

ICTJ-P-283

IN SILICO SCREENING OF PYRIDINE ANALOGS SYNTHESIZED BY IMPLEMENTING HANTZSCH REACTION FOR COMBATING PROSTATE CANCER

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ABSTRACT

The Hantzsch Reaction signifies a notable progression in synthesizing pyridine derivatives, utilizing the traditional Hantzsch synthesis framework. This work details the *in silico* screening of ten synthesized compounds and their ADME analysis concerning the androgen receptor, potentially offering a pathway to address prostate cancer. The resulting compounds (5a-j) underwent *in-silico* screening for antiepileptic action, focusing on the Androgen Receptor (PDB ID: 2Q7K). *In silico* screening, findings indicated that compounds 5d and 6c exhibit significantly greater binding energies than the conventional docetaxel (5d -7.5 Kcal/mol; 6c -7.6 Kcal/mol; docetaxel -6.5 Kcal/mol). This method's adaptability facilitates the incorporation of diverse substituents, resulting in the synthesis of new pyridine analogs that will likely yield more powerful molecules with further investigation.

Keywords: *In silico*, pyridine, hantzsch reaction, decetaxel.

ICTJ-P-284

3D PRINTING IN PHARMACEUTICALS

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ABSTRACT

3D printing is an innovative manufacturing technology which gained significant attention in the pharmaceutical industry due to its potential to revolutionize drug production. This technology enables the creation of personalized drug delivery systems, custom dosages, complex drug formulations, and offering a more patient-centric approach than traditional methods. 3D printing allows precise control over the design and composition of drug products. Various methods such as Fused Deposition Modeling (FDM) and Stereolithography (SLA) are employed to manufacture oral dosage forms, implants and controlled release medications. One of the most promising aspects of 3D printing is its ability to create patient-specific drug formulations, accommodating unique needs based on age, weight and medical conditions. Additionally, 3D printing enables the development of multidrug tablets, extended release systems and complex shapes that may not be feasible with conventional techniques improving therapeutic outcomes and patient compliance. The spritam^{R} (Levetiracetam) tablet, the first FDA approved 3D printed drug provides precise doses for epilepsy patients ensuring rapid disintegration and administrated easily to patients. The integration of 3D printing into pharmaceutical manufacturing presents numerous advantages such as the customization of drug dosages and the ability to produce innovative delivery systems. Despite challenges related to scalability, regulatory approval and material optimization, 3D printing holds the potential to transform the pharmaceutical industry. With continued research and development, it is expected that this technology will lead to more efficient, personalized treatments for patients worldwide.

Keywords: 3D printing, complex drug formulations, material optimization, personalized treatment.

ICTJ-P-285

DESIGN AND SYNTHESIZE SOME NOVEL MODULATORS OF BETA-3 RECEPTOR FOR METABOLIC DISORDER

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ABSTRACT
Beta-3 Adrenoreceptor (β3-AR) have a widespread distribution in tissues of human body in contrast with beta-1 and beta-2 adrenoreceptors encompassing adipose tissue, bladder, brain and the cardiovascular system. So these β3- Adrenergic receptor would be the promising drug targets for a broad range of areas in the field of therapeutics in cardiovascular as well as non- cardiovascular including obesity, overactive bladder, metabolic syndrome and also in heart failure. These drugs offers a standpoint for the drug discovery in case of obesity as well as diabetes, the energy expenditure physiology and the pharmacology of the receptors. Some of the beta-3 agonists also stimulates other beta adrenoreceptors, preferentially prompting the oxidation of fat in humans and rodents. This shows that these agents boost insulin sensitivity and bring down the body fat whilst maintaining lean body mass. The beta-3 agonists also provides additive affect to the drugs used to enhances the fat oxidation. Both the adrenoreceptos β1 and β2 can shows atypical pharmacologies like β3-AR. Moreover, a number of pharmacologies can be displayed by the β3-AR of their own, based on the docking studies or functional response measured using radioligands. Various studies on the beta-3 AR reveals both the obstacles of predicting the in vivo effects of agonist drugs from in vitro data and this come up with the opportunities for identifying drugs that act at a single receptor but have different profiles *in vivo.*
Keywords: β3-Adrenoreceptors, Metabolic disorders, Obesity.

ICTJ-P-286

RECENT ADVANCES IN IONIC LIQUID-ASSISTED TOPICAL AND TRANSDERMAL DRUG DELIVERY: A PROSPECTIVE REVIEW

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ABSTRACT
The exceptional ability of ILs to form ion pairs with a variety of ions allows for precise optimization at the molecular level. By utilizing advanced second and third-generation cations and anions, we can create ionic liquids that are essential for developing biocompatible drug delivery systems. These innovative technologies address key issues in traditional topical and transdermal drug delivery, such as poor permeability, high cytotoxicity, and skin irritation. We cannot overstate the importance of investing in research on ionic liquid technology, given its potential to significantly enhance skin permeability and revolutionize the topical administration of medicinal drugs. While most studies have concentrated on the localized effects of ionic liquids through topical applications, exploring the systemic effects of therapeutics administered in this manner presents a promising avenue for future research. Furthermore, transdermal administration offers a solution to the challenges associated with oral medicine delivery and the complexities of first-pass metabolism. This literature study underscores the importance of the design and implementation of transdermal patches for drug administration. It highlights the role of modern technological and inventive progress in the development of intelligent, biodegradable, 3D-printed patches with enhanced loading and release capabilities. The incorporation of ionophores in these patches significantly improves the management of chronic illnesses, inspiring confidence in their potential to enhance overall efficacy and efficiency.
Keywords: Drug delivery system, Ionic Liquid, ionophores and TDDS.

ICTJ-P-287

IMMUNOGENICITY: TRIGGERED BY CELL THERAPIES

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ABSTRACT

Cell-based therapies represent a transformative approach in regenerative medicine, offering potential solutions for various diseases by either replacing damaged or dysfunctional cells or by enhancing endogenous tissue repair mechanisms. These therapies utilize a diverse range of cell types, including pluripotent stem cells, progenitor cells, and differentiated primary cells. These cells shows prominent results in the treatment of cardiovascular, neurodegenerative (e.g., Parkinson's disease, amyotrophic lateral sclerosis, stroke, spinal cord injury), autoimmune (e.g., Type 1 diabetes, multiple sclerosis, Crohn's disease), ophthalmologic, renal, hepatic, and musculoskeletal disorders (e.g., osteoarthritis). A number of cell-based therapies, particularly those involving mesenchymal stem cells (MSCs), have advanced into late-stage clinical trials, with several on the verge of market approval. These therapies function primarily through two mechanisms: direct cellular replacement via engraftment into damaged tissue, or paracrine effects, wherein transplanted cells secrete cytokines and growth factors to stimulate endogenous repair processes. However, the immunogenicity associated with these therapies remains a critical concern. Because the host immune system may recognize therapeutic cells or associated biological molecules as foreign and mount an immune response. This immunogenic potential is driven by factors such as protein structure, post-translational modifications, and the presentation of novel epitopes. Antigen-presenting cells (APCs), including dendritic cells, macrophages, and B lymphocytes, play a central role in this process, interacting with CD4+ T cells via the major histocompatibility complex class II (MHC II). Given the protein-based nature of these therapies, immunogenicity must be carefully evaluated. Especially in the context of long-term treatment, to ensure sustained efficacy and safety.

Keywords: Cell-based therapies, immunogenicity, mesenchymal stem cells, antigen-presenting cells, cytokines.

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