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SOUVENIR AND ABSTRACT BOOK

NATIONAL CONFERENCE

2nd National Conference
on
DE NOVO DRUG DESIGN, DRUG REPURPOSING AND BIOACTIVITY-GUIDED ISOLATION: OPPORTUNITIES, CHALLENGES AND WAY FORWARD
13th-14th October, 2023

Organised by

INSTITUTE OF PHARMACEUTICAL SCIENCES
IET BHADDAL TECHNICAL CAMPUS
ROPAR, PUNJAB

EDITORS

Dr. JITENDER SINGH
Dr. MUBASHIR HUSSAIN MASOODI

IN COLLABORATION WITH

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MESSAGES

Sh. Tejinder Singh
Chairman
IET Bhaddal Technical Campus
Ropar, Punjab-140108

MESSAGE

I am happy with the efforts done by the Institute of Pharmaceutical Sciences to conduct 2nd National Conference on the theme De Novo Drug Design, Drug Repurposing and Bioactivity- Guided Isolation: Opportunities, Challenges and Way Forward" organized by the Institute of Pharmaceutical sciences Bhaddal on 13th and 14th October, 2023 at IET Bhaddal Technical Campus, Ropar in collaboration with the University of Kashmir.

It is really a matter of pride for all the members of IET Bhaddal Technical Campus. Such conferences are always beneficial for the students and teachers and are an important part of academic system to produce graduates with sound knowledge and recent updates of the profession.

I would like to congratulate Principal, faculty, staff and students of the Institute of Pharmaceutical Sciences and Department of Pharmaceutical Sciences, University of Kashmir, Srinagar, Jammu and Kashmir for their commitment and efforts to organize the conference in collaboration.

I welcome and congratulate all the speakers, guests and participants who came across from different Institutes throughout India and made this National Conference a great Success.

I wish you will feel it a good platform for learning and sharing your knowledge.

With Best Wishes!

Tejinder Singh
Chief Patron – 2nd National Conference

Dr. S. S. Bindra
Director Campus
IET Bhaddal Technical Campus
Ropar, Punjab-140108

MESSAGE

On behalf of the IET Bhaddal Technical Campus, I heartily welcome all delegates, renowned Scientists, Faculty, Scholars and students to the campus to participate in 2nd National Conference organized by Institute of Pharmaceutical Sciences, Bhaddal on the theme De Novo Drug Design, Drug Repurposing and Bioactivity-Guided Isolation: Opportunities, Challenges and Way Forward on 13th and 14th October, 2023.

The Presence of dignitaries during two days conference is further a testimony to sincere efforts of IPS team for conduct of National level event and provides a congenial environment to the participants.

I am confident that the conference shall provide an effective platform for innovations, knowledge sharing and generation of research ideas.
I hope this event would be fruitful for every participant.

I assure you that we will make your visit and time spent with us for the conference a memorable one.

I congratulate to the IPS team for planning and conduct of National Conference.

With best wishes!

Dr. S. S. Bindra
Patron – 2nd National Conference

Dr. Mubashir Hussain Masoodi
Professor and Head
Department of Pharmaceutical Sciences
School of Applied Sciences & Technology
University of Kashmir, Jammu & Kashmir-190006
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MESSAGE

Institute of Pharmaceutical Sciences, Bhaddal, Ropar, Punjab decided to organize a National Conference on the theme "De Novo Drug Design, Drug Repurposing and Bioactivity-Guided Isolation: Opportunities, Challenges and Way Forward" during 13th and 14th October 2023 at IET Bhaddal Technical Campus, Ropar, Punjab.

I am pleased to share that it is a great moment for the Department of Pharmaceutical Sciences, University of Kashmir, J&K to participate and provide all the necessary technical support for the successful conduct of 2nd National Conference.

The conference under the leadership of Dr. Jitender Singh is well planned and very impressive. Appreciable efforts have been put up by the whole team of IPS Bhaddal to arrange the conference in a scientific way.

I wish all the best to the speakers, guests and students who shown their interest and participated in this event. I appreciate their interest for learning and sharing their views in the conference.

I congratulate to the whole IPS Bhaddal team and good luck to the participants.

With good wishes!

Dr. Mubashir Hussain Masoodi
Convener and Organizing Secretary-2nd National Conference

Dr. Jitender Singh
Professor and Principal
Institute of Pharmaceutical Sciences
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MESSAGE

Institute of Pharmaceutical Sciences, Bhaddal, Ropar, Punjab and Department of Pharmaceutical Sciences, University of Kashmir, J&K decided to organize the 2nd National Conference on "De Novo Drug Design, Drug Repurposing and Bioactivity-Guided Isolation: Opportunities, Challenges and Way Forward" during 13th and 14th October 2023 at IET Bhaddal Technical Campus, Ropar, Punjab.

I am delighted to share that the conference become more worthwhile by the involvement of resources of both the Institutions. I thank to Dr. Mubashir Hussain Masoodi for providing great technical support during the conference.

Pharmaceutical research is the backbone of pharmaceutical industry. Discovery of the novel drug molecules having good efficacy and lesser adverse effects is the need of healthcare system.

The conference title itself explanatory that it covers all major research segments of pharmaceutical research viz. drug design, isolation of molecules from natural sources, clinical studies, etc. In today's scenario, discovery of new drug has become imminent specially, because of development of resistant microbial species, complex cellular processes involved, disease complications, etc.

The conference is empowered with the good intellectual resources as speakers and guests which make the conference objective feasible. The conference will provides a new insight to students, research scholars, scientists and academicians about the drug design, pharmacology and isolation of drug molecules through novel approach for drug targeting and development tools.

I heartily welcome all the professionals of pharmaceutical and allied sciences, research scholars, students who have participated in the conference. I hope all the participants, speakers and guests will find this conference a good platform for sharing and learning the knowledge.

Good luck to all the participants!

Dr. Jitender Singh
Convener and Organizing Secretary-2nd National Conference

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&
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CHIEF GUEST

Dr Anupam Sharma

Founder, Gem Teletherapy (Novel & Tested Distant Astro-Remedial Technique)

Ph.D., M. Pharm. and M.D. in Alternative Medicines

Founding Director, LR Institute of Pharmacy, Solan

Retd. Professor of Pharmacognosy, UIPS, Panjab University

Dr Anupam Sharma, M. Pharm., Ph. D. from University Institute of Pharmaceutical Sciences, Panjab University Chandigarh has more than 40 years of experience in the field of teaching and research in the area of plant-based CNS depressants, herbal drug standardization, etc. Dr Sharma has published 109 research publications in peer reviewed pharma journals of national and international repute, and 3 book chapters in publications of global repute.

Professor Sharma has guided 19 students for Ph.D. research and 31 students for M. Pharm. research. He has participated in 157 National and International conferences and has worked as Editorial panelist of a number of scientific journals publishing in the area of plant drug research. He has been a member of Board of Studies in a dozen of Indian Universities. He is Life member of multiple Societies including Indian Pharmaceutical Association, Association of Pharmacy Teachers of India, Indian Society of Pharmacognosy and Punjab Academy of Sciences. Professor Sharma has been awarded Best Pharmacy Teacher of India award by Association of Pharmacy Teachers of India in the year 2014.

He was the first to initiate research on hepatoprotective plants employing a wide range of animal models, first to establish protocols for herbal drug standardization using sophisticated tools like HPLC and HPTLC and first to initiate development and execution of distant Astro-remedial technique (Gem Teletherapy). Prof. Sharma has conducted Single Blind Clinical trials on 264 volunteers over a span of eight years that have helped to develop and standardize the technique in line with widely accepted experimental protocols, and proved to be useful in treating a variety of psycho-somatic ailments while also serving as a reliable means to plan and manage one's life. He has to his credit 2500+ beneficiaries of GTT spread over India, USA, Canada, France, Australia and New Zealand including Physicians, Engineers, Architects, Scientists, University Professors and School Teachers.

It is pertinent to mention that he has delivered Guest lectures and Seminars in several Universities with keen focus on disseminating significance of astrological studies to a younger audience in a scientific and analytical manner.

CHIEF GUEST

Dr. Sudipta Banerjee
Vice-President
GESCO Healthcare Pvt. Ltd., Chennai, Tamil Nadu-600098
Director
Allign Consultancy Services Pvt. Ltd., Kolkata, West Bengal-700124
E-mail: sudiptab87@gmail.com

Dr. Sudipta Banerjee is currently working as Vice President at GESCO Healthcare Pvt. Ltd., Chennai and Managing Director at ALLIGN Consultancy Services Pvt. Ltd., Kolkata. He is also the Ex-Founder Director of ED1B Mentors Pvt. Ltd. He has done his MBA in Marketing and his Doctorate in Management Studies. He has more than 30 years of experience in Healthcare University. Dr. Banerjee has received Lifetime Membership from Quality Control Forum of India. He also serves as Mentor for Rayat Bahara University, IEC University, CT University, Center for Entrepreneurship Development, AIESA in collaboration with IIR Hyderabad, Ministry of Science & Technology and Foundation of Innovation & Entrepreneurship Development (FIED) of IIM. Dr. Benerjee also serves as an advisor at Atal Incubation Centre under NITI AYOG.

Dr Sudipta Banerjee has over 30 years of experience in healthcare Industry. He is Life Member of Quality Circle Forum of India and Member of Institute of Scholars. Dr Banerjee is the recipient of Bharatiya Ratna Award as best Industrial Leader. He has been certified by World Health Organization on Infection prevention program. Dr Sudipta Banerjee has been Six Sigma Black Belt Certified Kaizen Practinioner.

Abstract - Talk of Dr Sudipta Banerjee

Harmonizing Success: The Art of Self-Management, Career Flourishing, and the Science of Happiness

Sudipta Benerjee
Vice-President
GESCO Healthcare Pvt. Ltd., Chennai, Tamil Nadu-600098
Director
Allign Consultancy Services Pvt. Ltd., Kolkata, West Bengal-700124
E-mail: sudiptab87@gmail.com

In an ever-evolving world, the pursuit of both personal and professional fulfillment has become a paramount endeavor. This conference talk delivers into the intricate interplay

between self-management, career development, and the happiness index. We will explore strategies to empower individuals to take charge of their own growth, balance the demands of a dynamic career, and cultivate a genuine sense of happiness and well-being. Drawing from the latest research and real-life experiences, this talk will offer practical insights on setting meaningful goals, overcoming obstacles, and embracing change. We will discuss the pivotal role of self-awareness, resilience, and adaptability in today's fast-paced landscape. Furthermore, we will examine how measuring and enhancing the happiness index can serve as a compass for assessing life satisfaction and guiding decision-making. Participants will gain valuable tools to not only advance in their careers but also to find joy and purpose in their everyday lives.

Join us in this enlightening journey toward self-management, career development, and an elevated happiness index, as we explore the keys to unlocking a fulfilling and balanced life.

***Keywords*:** *Skills*, *Self-awareness*, *Decision-making*, *Professional*.

CHIEF GUEST

Prof. (Dr) Kartar Singh Verma
Former Vice Chancellor
Career Point University, Hamirpur, Himachal Pradesh
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Dr KS Verma is an accomplished scientist, teacher and an administrator but with a human face. He has been a scientist par excellence beginning his career in Agriculture having specialized in Soil Science and Water Management, probed the science of Agroforestry, Forestry & Environment Science during his career. Visited many Universities of Europe and Asia viz Germany, Finland, Malaysia, China, Nepal, Italy, Hungary, Belgium, etc.

He is a multi-faceted academic having vast experience in managing agricultural, horticulture & Forestry education; undertaking and co-ordinating research and technology extension. Prior to the present responsibility of Vice Chancellor, Dr Verma served in different capacities as Network project Coordinator; Head, Department of Environment Science; Director Institute of Biotechnology and Environment Science; Founder Dean Clollege of Horticulture and Forestry Neri (Hamirpur); Dean College of Forestry, Solan; Director of Extension Education, Director of Research at DRYSP University of Horticulture and Forestry, Solan H.P.

Dr Verma has worked very closely with Indian Network on Climate change contributing to the India's contribution on "climate change impacts, mitigation and adaptation- Indian scenario" to the United Nations Framework Convention on Climate Change (UNFCCC). He was associated with initiating Higher Education (M. Sc. & Ph. D.) in Agroforestry in India – a UNDP/FAO/World Bank initiative. Similarly, as founder Head, established the Department of Environment Science, framed M. Sc. and Ph. D. degree programmes at University of Horticulture and Forestry, Solan. About 30 students from India and abroad earned their Masters and Doctoral degrees under his mentorship. There are about 120 research papers published in different national and international journals of repute to his credit. Professionally, organized number of national and international conferences/ seminars both within India and in abroad.

Recognizing his pioneer research work "Rejuvenating the Environmentally stressed soils/ degraded sites through nitrogen- and non-nitrogen fixing tree speciesusing short rotation high density plantation practices in western Himalayas" by International Union of Forestry Research Organization (IUFRO) during 1995 at Tampere, Finland Prof. Verma was nominated as Deputy Coordinator (1995-2000) of a Research Group on "Short Rotation Forestry" by the Executive Board of IUFRO. This is an oldest and largest World Body spearheading Forestry Science and Forest Management activities. Later, as Chairman (2000-2010) of the same Research Group.

Prof K S Verma has a distinction of serving as President's Nominee to Jamia Melia Islamia, New Delhi; member HP state Environment Appraisal Committee; Advisor Indian Ecological Society; Secretary Indian Society of Tree Sciences; Editor-in- Chief, Journal of Tree Sciences. Also, associated with Swaminathan Foundation- Chennai".

Taking science to the society kept himself in close contact with the farming communities deep into the rural areas. Successfully helped the small and marginal farmers to diversify farming systems. Enabled the farmers to adopt farm production systems integrating fruits besides medicinal & aromatic plant species with high therapeutic value.

A proud recipient of "Sarvotam Vidyarthi" award at secondary level education, Prof K S Verma has been bestowed with "Life Time Achievement Award- 2017 for his outstanding contributions to Agroforestry and Environment Science" by the Indian society of Ecology, conferred by His Excellency the then Governor of Himachal Pradesh."Himachal Rattan" by All India Conference of Intellectuals in 2021 conferred by Hon'ble Minister of Social Justice and Empowerment, GOI at India International Centre New Delhi.

KEYNOTE SPEAKER

Dr. Anil Kumar
Professor and Chairperson
University Institute of Pharmaceutical Sciences
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Dr. Anil Kumar is currently working as Professor in University Institute of Pharmaceutical Sciences, Panjab University, Chandigarh. He has total working experience of more than 22 years. He has more than 155 research publications, 04 books and 21 book chapters to his credit. He is also reviewer and member of editorial board of various Journals of repute at national and International level. He is also recognized as world top 2% scientist in Pharmacy and Pharmacology category (2022), ICMR Award for Biomedical Scientist, Chandra Kanta Dandiya Prize, Bharat Shiksha Ratan Award, IBRO award, Best Paper award of JCTR, APTI's Young Pharmacy Teacher Award and many more. His area of interest includes Neurodegenerative and Neuropsychiatric disorders: Alzheimer and Huntington's disease Parkinson diseases, Depression, Epilepsy, Stress, stroke and stress-related pathologies, neurobiology of sleep and sleep-related disorders, Diabetes and related complicationsneuropathic pain, nephropathy and Pain and inflammation. Clinical Research- Ethics, Rational use of Drug, Prescription monitoring/ Drug utilization studies. Prof. Anil Kumar research profile has recently been featured in World's top 2% Scientists Ranking by Elsevier and Stanford University, 2023.

Abstract - Talk of Dr. Anil Kumar

Drug Repurposing: A Modern Approach to Conventional Drug Discovery

Anil Kumar
University Institute of Pharmaceutical Sciences (UIPS)-UGC Centre for Advanced Study, Panjab University, Chandigarh-160014

Despite the progress made in drug discovery methods, the development of medications for various illnesses remains a formidable challenge. Consequently, innovative strategies such as drug repurposing are necessary to create therapeutics that can treat both prevalent and uncommon disorders. Drug repurposing is a promising avenue in pharmaceutical research that entails identifying fresh therapeutic applications for existing drugs beyond their initial medical use. Identification of new indications for existing drugs by drug repurposing has the potential to supplement traditional drug development by reducing the substantial monetary

and time costs and hazards associated with the latter. To date, most of the repurposed drugs are the result of serendipitous discovery through careful observations by physicians, medical staffs and basic researchers. Novel strategies, encompassing experimental screening and computational methodologies, have been devised to expedite the repurposing process. The advent of cutting-edge technologies such as proteomics, genomics, transcriptomics and metabolomics coupled with the immense wealth of data stored in databases like drug omics data and disease omics data has opened up a plethora of avenues for discovering drugs through amalgamating all these approaches.

Keywords: *Drug Design, Drug Repurposing, Computational Methods.*

SPEAKER-LEAD LECTURE

Dr. Dinesh Kumar
Associate Professor & Head
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Dr. Dinesh Kumar obtained his Ph. D. in Pharmaceutical Science from Kurukshetra University, Kurukshetra, India. He has total experience of 19 years in teaching and research. He has also worked as ICMR-DHR International Research Fellow at Department of Pharmacology & Biochemistry, Ben-Gurion University of the Negev, ISRAEL from Jan 1, 2020 to Oct. 22, 2020 on a project 'Developing nanoformulations of natural substances and pharmacological evaluation". He is presently serving as an Associate Professor & Head, Department of Pharmaceutical Sciences, Central University of Haryana, Mahendergarh. His research interests are focused on Ethno-pharmacology of medicinal Plants and herbal formulations. He has around 80 papers to his credit published in the journals of national & International repute. In 2023, he has been selected as Member, Scientific Panel on Labeling and claims by Food Safety and Standard Authority of India (FSSAI), New Delhi. He is a reviewer for various International Scientific Journals. His H-index is 26 and i-10 index is 42 with total citation 2775.

Abstract - Talk of Dr. Dinesh Kumar

Unleashing the potential of Drug Repurposing

Dinesh Kumar
Department of Pharmaceutical Sciences, Central University of Haryana,
Mahendergarh, Haryana-123031

Drug repurposing is an approach to identify the novel clinical use of an existing drug approved for a different health problem. In this approach, on the basis of scientific facts, an existing drug molecule is targeted to evaluate for new pharmacological effects through some research experimentations. To conduct research for a new drug molecule, establish clinical significance and to get it approved from USFDA or concerned regulatory agencies is one of the major burden faced by the pharmaceutical industries, not only financial but also, due to the time and resources utilized on the discovery of new chemical entity and the chances of failure of research as well. The drug repurposing concept is widely used in pharmaceutical companies for establishment of new use of the approved existing drug molecule and is become one of the best choices of the pharmaceutical industries researchers. Drug repurposing now a day's become a good choice for the researchers because of several reasons like, it reduces the cost of research, cost of regulatory approvals, time, resources, risk, etc.

Keywords**:** *Drug repurposing*, *Drug design*, *FDA*.

SPEAKER-LEAD LECTURE

Dr Mubashir Hussain Masoodi
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Prof. Mubashir Hussain Masoodi is presently HOD, Department of Pharmaceutical Sciences, University of Kashmir. He has completed his M. Pharm & Ph. D. in Pharmaceutical Chemistry from School of Pharmaceutical Education & Research, Jamia Hamdard, New Delhi. He did his Postdoctoral fellowship (2013-14) from prestigious National Center for Natural Products (NCNPR), University of Mississippi, USA and has experience of more than 23 years in area of Pharmaceutical Chemistry and Natural Product Research. He has travelled to countries like USA, Thailand, Austria, Hungary, Slovenia, Turkey and Portugal for presenting his conference papers. Prof. Masoodi is an experienced researcher cum academician and has completed numerous major and minor research projects sanctioned by different funding agencies. Presently he is running 02 major research projects sanctioned by ICMR and AYUSH-CCRUM worth 50 lacs. He has published 85 research papers in international and national journals of high repute. Dr Masoodi is recipient of many prestigious awards during his scientific career such as, Indo-US UGC Raman Postdoctoral fellowship awarded at University of Mississippi, USA, Young Scientist

Award-2010 by J & K State Council for Science & Technology. International travel grant award by DST, CICS and ICMR. Best publication award by Indian Drug Manufacturer's Association (IDMA), Mumbai. He is also actively involved in guiding M. Pharm and Ph. D. students in their research projects and has till dated supervised 05 Ph. D. scholars and 16 M. Pharm students. He is on editorial and review board of many reputed journals.

Abstract - Talk of Dr. Mubashir Hussain Masoodi

Aqua Marvels: Hydrogels Redefining Biomaterials and Beyond

Mubashir Hussain Masoodi

Department of Pharmaceutical Sciences, School of Applied Sciences & Technology, University of Kashmir, Srinagar, Jammu & Kashmir-190006

Hydrogels, intricate three-dimensional polymeric networks known for their remarkable water absorption and retention abilities, have sparked profound scientific interest owing to their versatile properties and wide-ranging applications. A fundamental comprehension of hydrogels, particularly their structural attributes, is vital for unraveling their practical potential. Notably, smart hydrogels represent a specialized type, demonstrating responsive behavior to external stimuli such as temperature, pH, light, etc. This responsiveness facilitates precise control over drug delivery and allows for the tailoring of desired properties. Nevertheless, ongoing challenges in hydrogel research, encompassing enhancements in mechanical strength, stability, and biocompatibility, present limitations to their widespread utilization. Addressing these challenges holds paramount importance in broadening the scope of hydrogel applications. Looking ahead, the future integration of nanotechnology, advancements in personalized medicine, and the evolving landscape of 3D bio printing are envisioned to unlock unprecedented applications in regenerative medicine, wearable devices, and novel drug delivery systems.

In summary, hydrogels, with their distinct properties, remain a central focus of scientific exploration and innovation spanning diverse disciplines. Their immense potential for transformative applications positions them as crucial assets in addressing global challenges and advancing the frontiers of modern science and technology.

Keywords**:** *Smart hydrogels*, *Polymeric networks*, *Cross-linking*, *Stimuli-responsive drug delivery*.

SPEAKER-LEAD LECTURE

Dr. Jitender Singh
Professor and Principal
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Dr. Jitender Singh is currently working as Professor and Principal at Institute of Pharmaceutical Sciences, IET Bhaddal Technical Campus, Ropar, Punjab. He has studied 10+2 from Jawahar Navodaya Vidhyalaya, Kareera, District Mahendergarh, Haryana and did B. Pharmacy and M. Pharmacy from IPS, Kurukshetra University, Haryana. He did Ph. D. from University Institute of Pharmaceutical Sciences (UIPS), Panjab University, Chandigarh. Dr. Singh has working experience of more than 13 years. Dr. Singh has guided 3 Ph. D. candidates and has published 31 research papers in peer review National and International Journals of repute. He has 11 Book Chapters and 3 Edited Books to his credit. Dr. Singh has been actively engaged in Board of Studies, Academic Council and Institutional Animal Ethics Committee as Chairman; Member of Board of Management at University level. Dr Singh has worked in various reputed academic Institutions of India like, Chandigarh University, Punjab; Career Point University, Himachal Pradesh; IEC University, Himachal Pradesh; etc. He has also served IEC University, Himachal Pradesh as Vice-chancellor (In-charge). His area of interest includes, research on natural products - extraction, isolation, purification, and quantification of bioactive molecules from crude drugs, specially, plants derived drugs; clinical research on experimental animals mainly, antianxiety, antifertility, antiepileptic, antimicrobials; Standardization of crude drugs; Chromatographic studies and Analytical method development of bioactive markers. He has been a reviewer of several International Journals. Dr. Singh has awarded with Research Fellowship in Sciences for Meritorious Students for his Ph. D. program by University Grants Commission, New Delhi (Govt. of India); Best Teacher Award, Best Dean Award by Career Point University, Himachal Pradesh; Academic Excellence Award by IPGA Uttarakhand during the National Conference at Haridwar; Presidential Appreciation Award by Society for Community Mobilization Sustainable Development (MOBILIZATION), New Delhi during the National Conference.

Abstract - Talk of Dr. Jitender Singh

How to Isolate Bioactive Molecules from Plant Drugs: A Bioactivity-guided Isolation Concept

Jitender Singh

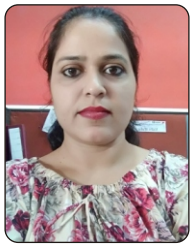
Institute of Pharmaceutical Sciences, IET Bhaddal Technical Campus, Ropar, Punjab-140108

Isolation of bioactive molecules from the plant drugs has been one of the major research done by the natural products researchers, worldwide. Bioactive molecules are the chemical constituents which have bioactivity or have some pharmacological effects on the body. Although, plants derived crude drug contain several primary and secondary phytoconstituents in it but all the phytoconstituents present in a crude drug are not bioactive. The major concern of the natural products researchers has been to unhide the secrete of biological activity of a crude drug. Through some research experiments, researchers are able to find out the name and chemical structure of the molecule, present in the crude drug, due to which the crude drug has been utilized as a solution for a particular health problem. Bioactivity-guided Isolation is one of the widely accepted technique used by the researchers worldwide to isolate the bioactive molecules from the plant crude drugs. As the name indicates, Bioactivity-guided Isolation is the process of isolation of bioactive molecule and is totally bioactivity centric or driven by the bioactivity only.

Initially, the plant extract having bioactivity is fractionated, preferably using chromatographic technique by using several organic solvents of different polarity to separate out the chemical constituents present in the extract on the basis of their polarity. "Like dissolves like" chemical rule works here. All the fractions then undergo evaluation of bioactivity as targeted in the study by using suitable in-vitro or in-vivo methods, as the case may be. The fraction which have bioactivity further fractionated and the fractions undergo evaluation of bioactivity and it continues till to get the bioactive molecules. The chemical nature, properties and characterization can be done by using several physical, chemical, chromatographic and spectroscopic methods. Bioactivity guided-isolation is the scientific experimental method used to isolate the bioactive molecules from the plant extract.

***Keywords*:** *Isolation*, *Chromatography*, *Phytoconstituents*, *Bioactivity*.

SPEAKER-LEAD LECTURE



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Dr. Neelam Sharma, Ph. D. in Pharmaceutical Science has experience of more than 14 years in academics and research. She is highly self-determined and organized pharmaceutical research professional. She has 150 publications in various National/International journal of repute, Scopus h-index 15 and i10-index 20, 08 books, 12 books chapter and filed 19 patents to her credit. She has presented/published 35 review/research abstracts in National/International conferences. She has completed 4 consultancy projects on herbal/homeopathic formulation and received IEDC, Govt of India; prototyping grant of Rs 2.5 lacs for project related to management of ARDS in COVID. She has guided 2 PhD students and 20 M. Pharmacy students and 6 PhD students are pursuing PhD under her guidance. Her areas of interest in research are liposome/niosomes/ SEDDS/nanotechnology based formulation development and solubility enhancement of BCS class II drugs. She has expertise in operation of various statistical analyses tools.

Abstract - Talk of Dr. Neelam Sharma

Approaches in Addressing the Poor Oral Drug Bioavailability Issues: Current Status and Future Perspective

Neelam Sharma
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Poor solubility is still a significant problem for the pharmaceutical business, which is now recognized as emerging topic for biomedical research. About 40% of new molecular entities created in the pharmaceutical research and development using sophisticated combinatorial chemistry and computer-aided drug design methods have poor solubility and bioavailability problems. In addition to these factors, the presence of transporters, enzymatic barriers, and intestine tight junction epithelial cells hinders the absorption of medications taken orally furthermore. The various approaches for enhancing oral drug bioavailability includes

increasing aqueous solubility by solubility enhancement techniques like use of surfactants, solid dispersion and cyclodextrin complexes; prodrug approach, lipid-based nanocarriers like microemulsions, nanoemulsions, SEDDS, SMEDDS and SNEDDS and nanotechnology based approaches like nanogel, nanofibres and polymeric nanoparticles. Poor permeability through gastrointestinal membrane can be increased through use of permeation enhancers. Another approach includes avoidance of first pass metabolism through application of enteric coating. These emerging techniques can revolutionize the application of oral medications for treatment of several fatal diseases and can role play as a boon in pharmaceutical industry.

Keywords: *Oral bioavailability, Solid dispersion, Cyclodextrin complexes, Nanotechnology, Microemulsions, Nanoemulsions, SEDDS, SMEDDS and SNEDDS.*

SPEAKER-LEAD LECTURE

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Dr. Sukhbir Singh, Ph. D. in Pharmaceutical Science has prosperous experience of more than 15 years in academics and research. He is highly enthused, self-determined and organized pharmaceutical research professional. He has 180 publications in National/International Journal of repute, Scopus h-index 18 and i10-index 25, 08 books, 12 books chapter and filed 19 patents to his credit. He has presented/published 40 review/research abstracts in various National/International conferences. He has completed 4 consultancy projects on herbal/homeopathic formulation. He and his team received IEDC, Govt of India, prototyping grant of Rs 2.5 lacs for project related to management of ARDS in COVID. He has guided 7 Ph. D. students and 30 M. Pharmacy students and 6 Ph. D. students are pursuing PhD under his guidance. His areas of interest in research are nanotechnology/liposome/niosomes/SEDDS based formulation development and solubility enhancement of BCS class II drugs. He has expertise in operation of various statistical analyses tools. Dr Sukhbir Singh research profile has recently been featured in World's top 2% Scientists Ranking by Elsevier and Stanford University, 2023.

Abstract - Talk of Dr. Sukhbir Singh

Response Surface Analysis and Numerical Optimization of Nefopam Hydrochloride Nanospheres using Quality-by-Design Approach

Sukhbir Singh

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Nefopam hydrochloride nanospheres (NFH-NS) were developed by quasi solvent diffusion technique using Eudragit RL 100 and Eudragit RS100. Box-Behnken design quality-by-design technique was used for response surface analysis and numerical optimization of formulation. For this purpose, drug: polymer ratio (X_1), surfactant concentration (X_2), stirring time (X_3), DP/CP Ratio (X_4) and stirring speed (X_5) were selected as independent variables. The response variables were entrapment efficiency (% EE), mean particle size, process yield and drug loading (% DL). The model F-value ($p< 0.05$) and lack of fit F-value ($p> 0.05$) epitomized accuracy of data. It was concluded that X_1, X_2, X_4 and X_5 had significant positive effect on % EE. X_1 and X_5 produced remarkable synergistic and antagonistic effect on mean particle size, respectively. X_1 and X_5 exhibited considerable positive effect on % process yield. In-vitro drug release using dialysis bag diffusion technique showed that NFH-NS revealed biphasic release pattern with initial 'burst release' of approximately 22.32% loosely bound NFH on or near surface of particles during first 0.5 h succeeded by release of 52.41% drug within 4 h. Afterwards, sustained release of drug due to diffusion from polymer matrix with maximum drug release of 86.13% over 24 hours was achieved. The application of such type of quality-by-design formulation optimization can be quite helpful for expediting the pharmaceutical industry market.

***Keywords*: *Quality-by-design*, *Response surface analysis*, *Numerical optimization*, *Nefopam hydrochloride*, *Eudragit RL 100 and Eudragit RS100*.**

SPEAKER-LEAD LECTURE

Dr. Tapan Behl

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Dr. Tapan Behl is currently working as Professor Amity School of Pharmaceutical Sciences, Amity University, Mohali, Punjab, India. Dr. Tapan Behl has completed his

doctoral studies from Vallabhbhai Patel Chest Institute, University of Delhi, Delhi, India and thereafter worked as Post-Doctoral Researcher. His areas of interest include diabetes and associated complications, molecular pharmacology and neuropathic pain and its complications. Dr. Behl has published more than 500 research and review papers in International and National journals. He has also published international books and is continuously engaged in exploring the molecular mechanisms in the diabetes and related complications, rheumatoid arthritis and obesity. Dr. Behl is also having numerous patents to his credit. Dr. Tapan Behl is a serving as a reviewer to many reputed journals like PLOS ONE, International Immunopharmacology, Investigative Ophthalmology and Visual Science, Oncotargets, Oxidative Medicine and Cellular Longevity, Biomedical Reports, Journal of Advanced Pharmaceutical Technology & Research, Science Alerts and Journal of Pharmacy and Physiology. Dr. Tapan Behl has been awarded with Gold Medal for his strong and excellent academic performance. He is recipient of Outstanding Researcher Award, DST International Travel Grant by Government of India, National Health Award, Award for Research Excellence, Scientist of the Year Award 2017, Excellence Award in Biomedical Research, Young Scientist Award and Best Scientist Award. Additionally, he has also received prestigious fellowship from Sir Rattan Tata Memorial Trust for his excellence in academics. He is a recognized research guide for Ph. D. and has also supervised students for the award of master's and Ph. D. studies. Dr. Behl has successfully completed 40 research projects. He has also chaired many sessions in International and National Conferences. Dr. Behl has been listed for three consecutive years in top 2% of the scientists worldwide as per the list released by Stanford University and Elsevier BV.

Abstract - Talk of Dr. Tapan Behl

Navigating the Interplay between Artificial Intelligence and Pharmaceutical Sector

Tapan Behl

Amity School of Pharmaceutical Sciences, Amity University, Mohali, Punjab--140306

Abstract

Artificial Intelligence (AI) has become a transformative force in the pharmaceutical sector, offering profound advancements in various aspects of drug discovery, development, and healthcare. It plays an intricate role in pharma domain by expediting drug discovery and development by analyzing vast datasets, identifying potential drug candidates, and predicting their efficacy. This significantly reduces the time and cost associated with bringing new drugs to market. AI's role in target identification by pinpointing disease-related targets more efficiently, aiding researchers in selecting the most promising avenues for drug development. AI also has proved its promising role in precision medicine by leveraging patient data, including genetic information, to tailor treatments based on individual responses. This personalized approach enhances treatment efficacy and minimizes adverse effects. Numerous other pivotal roles of AI in biomarker discovery, patient recruitment, real-time monitoring, supply chain management, diagnosis and

imaging and medical imaging analysis cannot be overlooked. Another fascinating concept of drug repurposing comes where AI facilitates the identification of existing drugs that can be repurposed for new therapeutic indications. This not only saves time but also capitalizes on the safety profiles of established medications. Furthermore, AI plays a crucial role in monitoring and analyzing vast amounts of healthcare data to detect potential adverse events associated with medications. This enhances post-marketing surveillance and ensures the safety of drugs in real-world scenarios. In summary, the integration of AI in the pharmaceutical sector enhances efficiency, reduces costs, and fosters innovation across various stages of drug development and healthcare delivery. As technology continues to evolve, the role of AI in shaping the future of medicine is poised to expand, offering even more sophisticated solutions to complex challenges in the pharmaceutical industry.

Keywords**:** *Artificial intelligence*, *Drug repurposing*, *Target identification*, *Cost management*, *Drug development*.

SPEAKER-LEAD LECTURE

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Dr. Mahaveer Dhobi is working as an Associate Professor at Delhi Pharmaceutical Sciences and Research University (DPSRU), Delhi. He completed his B. Pharm from the University of Rajasthan and M. Pharm from Indian Institute of Technology-BHU. Dr. Mahaveer received his Ph.D. Degree from UIPS, Panjab University, Chandigarh in 2014. Before joining DPSRU he has worked as Research Officer in R & D Centre of Ind-Swift Lab. Ltd., Mohali. The main research area of Dr. Mahaveer is Bioactivity guided isolation and structure elucidation of lead compounds from medicinal plants, Applications of HPTLC, HPLC, UPLC and LCMS in the quality control of herbal medicines, Metabolomics, Phytopharmaceuticals, COVID-19. He has also been involved as an advisor in the development of Coroquil-Zn formulation for COVID-19. He has two patent and peer reviewed publications to his credit in various reputed journals and presented research reports at various national and international scientific conferences. He has also organized

international conference and workshops. Dr. Mahaveer is a recipient of Commonwealth Fellowship-2020 from the Commonwealth Scholarship Commission, UK and notable/distinguished research award from DPSR University. He is a life member of Indian Society of Pharmacognosy, Association of Pharmaceutical Teachers of India (APTI) and Indian Association for the Study of Traditional Asian Medicine (IASTAM).

Abstract - Talk of Dr. Mahaveer Dhobi

Phytopharmaceutical Development and Drug Discovery from Plants using Bioactivity-guided Isolation and In Silico Approach

Mahaveer Dhobi

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As per WHO estimates, traditional, complementary, alternative, or non-conventional medicines are used by 70 - 95 per cent of global population particularly in developing countries for their primary healthcare. The World Health Organization's (WHO) Traditional Medicine (TM) Strategy 2014 - 2023 focuses on promoting the safety, efficacy and quality of TM by expanding the knowledge base and providing guidance on regulatory and quality assurance standards. In India, TM's i.e., Ayurvedic, Siddha and Unani (ASU) drugs have been under the purview of Ministry of AYUSH. As per notification GSR 918 (E) dated 30th Nov. 2015, "phytopharmaceutical drug" gazette notification came which is under supervision of CDSCO. The new phytopharmaceuticals regulation facilitates the development of the herbal drug development using latest techniques of extraction, bioactivity guided fractionation, qualitative and quantitative analysis, formulation development etc. Bioactivity-guided fractionation/isolation is popular concept for profiling and screening of plant extracts for its bioactive chemicals that could be a potential source for phytopharmaceuticals and novel drugs. This technique is used to effectively screen plant extracts and purified isolates using the fractionation process. Phytochemicals that are physiologically active in preclinical *in vitro* investigations are isolated using chromatographic separation methods to separate the components in plant extracts.

The renewed interest of the phytochemists in natural product drug discovery, a number of new approaches accompanied by technological advancement have been developed including bioactivity guided isolation and *in silico* for natural products. These approaches could address the challenges encountered in the discovery and development of new natural products/phytopharmaceuticals owing to the complex behavior of natural products.

In conclusion, these techniques could enable the exploration of the profiles of complex phytochemicals leading to the development of phytopharmaceuticals and isolation therapeutic drugs and novel lead compounds that can address global health challenges.

Keywords**:** *In-silico*, *Drug design*, *Phytochemicals*, *Drug discovery*.

SPEAKER-LEAD LECTURE

Dr. Sonia Dhiman
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Dr. Sonia Dhiman currently holds the position of Professor in Pharmaceutics and is the Head of Pharmaceutical Regulatory Affairs at Chitkara College of Pharmacy, Chitkara University, Punjab. She earned her Master's degree in Pharmacy with a specialization in Pharmaceutics from Kurukshetra University. She obtained her Ph. D. in Pharmaceutical Sciences from Maharishi Markandeshwar University, Mullana, Haryana.

Over the course of the past 14 years, Dr. Dhiman has been deeply engaged in a multifaceted role encompassing teaching, pioneering research, nurturing emerging talent, providing expert guidance, and contributing to administrative aspects of academia. Her research interests are profoundly rooted in the realms of drug delivery and regulatory science, with a particular emphasis on Novel drug delivery systems, Nanocarriers for drug delivery, Modification of polymers for pharmaceutical applications and Quality by design in pharmaceutical development. Dr. Sonia Dhiman is actively involved in mentoring and guiding students at both the postgraduate and doctoral levels. She has supervised 12 M. Pharm. thesis and is currently supervising 8 Ph. D. scholars. She has made significant contributions to the field of pharmaceutics through her research and publications. She has written two books and has contributed seven invited book chapters on controlled and novel drug delivery systems in edited books of reputed Indian and international publishers. She has published a total of 37 publications in various International and National Journals of repute. She has an h-index of 15, i10-index of 22 and more than 921 citations to her credit as per Google Scholar, confirming the influence of her research in the field. Dr. Sonia Dhiman has delivered invited lectures at various conferences, seminars, and symposia. She has presented research papers at both national and international seminar/workshop events, further disseminating her research findings and insights.

Abstract - Talk of Dr. Sonia Dhiman

Drug Discovery by Drug Repurposing: Unleashing the Hidden Potential

Sonia Dhiman

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The traditional drug discovery and development process encompasses multiple stages aimed at discovering new drugs and obtaining marketing approval. It is crucial to explore innovative approaches that can reduce the time required for drug discovery. Drug repurposing involves investigating alternative medical uses for existing drugs, including those that have already been approved, discontinued, shelved, or are still under investigation. This strategy is increasingly being employed to discover novel medications, leveraging previous investments while minimizing risks associated with clinical activities. Repurposing can occur serendipitously, through unintentional fortunate observations or systematic approaches. This explores numerous strategies for discovering new indications for FDA-approved drugs. The appeal of this approach lies in addressing significant gaps in the drug-target interaction matrix and leveraging safety and efficacy data accumulated during clinical studies. The development of experimental drugs is a time-consuming and expensive process that is limited to a relatively small number of targets. In contrast, drug repurposing takes advantage of existing safety, pharmacokinetic, and manufacturing data, enabling the expedited development of innovative medications. This approach has gained particular interest in the fields of rare and neglected disorders. Recent advancements in drug repurposing have led to the emergence of novel treatments.

Key*words*: *Drug repurposing*, *Drug development*, *FDA*, *Pharmacokinetic*.

SPEAKER-LEAD LECTURE

Dr. Vikram Deep Monga

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Dr. Vikram Deep Monga earned his Ph. D. degree in Medicinal Chemistry from highly premier National Institute of Pharmaceutical Education and Research (NIPER) Mohali, India (Pharmaceutical Research Institute of National Importance). After completion of his Ph. D. work, he joined as a Postdoctoral Research Associate at Chicago College of Pharmacy, Midwestern University, IL, USA. He has more than 15 years of experience in teaching and

research. Presently, he is working as Assistant Professor at Department of Pharmaceutical Sciences and Natural Products, Central University of Punjab, Bathinda, Punjab, India. He has published research papers in various referred international and national journals and granted two patents to his credit. He is the recipient of various prestigious National and International awards including the Fast Track Fellowship for Young Investigators from DST, India and Endeavour Research Fellowship (Australia). He is recognized as a certified trainer by AICTE, India. He has guided around 30 Master students and currently guiding 3 Ph. D. students for their dissertation work. He is a reviewer and member editorial board of various peer reviewed international journals of high impact. His area of research interest focuses on design, synthesis, and molecular modelling studies of peptides, functionalized amino acids, and heterocyclic compounds for the treatment of Neurological & Metabolic disorders, Cancer, and Infectious diseases. Dr Vikram Deep Monga research profile has recently been featured in World's top 2% Scientists Ranking by Elsevier and Stanford University, 2023.

Abstract - Talk of Dr. Vikram Deep Monga

Design, Synthesis, and Biological Evaluation of Pancreatic Lipase Inhibitors as Anti-Obesity Agents

Vikram Deep Monga

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De novo drug design is a powerful weapon for drug design. Considering its effectiveness in drug design, a series of new 2,5-disubstituted arylidene derivatives of thiazolidinedione derivatives were designed by using molecular hybridization approach, synthesized, structurally characterized, and explored for their anti-obesity potential *via* inhibition of Pancreatic Lipase (PL). The title compounds were synthesized *via* Knoevengeal condensation of *N*-substituted TZD with various substituted aromatic and hetero aromatic carboxaldehydes. Porcine pancreatic lipase (Type II) was used with 4-Nitrophenyl butyrate (as substrate) for the *in vitro*evaluation of PL inhibitory activity. Amongst the various synthesized derivatives, compound Xpresentedmost potent PL inhibitory activity with IC_{50} = 2.71 ± 0.31 μM, as compared to the standard drug, Orlistat (IC_{50} =0.99 μM). Kinetic study revealed reversible competitive mode of enzyme inhibition by the hit compound with an inhibitory constant value of 1.19 μM. Molecular docking of these compounds was found to be in good agreement with the*in vitro* results. The most promising compound revealedsatisfactory binding mode within the active site of the target protein (human PL, PDB ID: 1LPB)by interacting with various key residues present in the binding pocket of the enzyme. Furthermore, a stableconformation of the 1LPB-ligand suggested the stability of this compound in the dynamic environment. Results of the *in vivo* studies confirmed anti-obesity efficacy of most promising compound, wherein oral treatment with this compoundat a dose of 20 mg/kg resulted in a significant reduction in body weight, BMI, Lee index, feed intake (in Kcal), body fat depots and serum triglycerides. The hit compound significantly decreased the levels of serum total cholesterol (TC) to 128.6±0.59 mg/dl and

serum total triglycerides (TG) to 95.73±0.67 mg/dlas compared to the HFD control group. The present study identified new disubstituted TZD derivatives as promising class of anti-obesity agents acting by the inhibition of PL.

Key***words*****:** *De novo drug design*, *Knoevengeal*, *Thiazolidinedione*, *Pancreatic lipase inhibitors, Anti-obesity agents.*

SPEAKER-LEAD LECTURE

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Dr. Ashwani K. Jangra is currently working as Branch In-charge (Pharmacology) in Gurukul Kangri Vishwavidyalaya, Haridwar, Uttarakhand. He has more than 13 years of teaching and research experience. He has 08 patents (Granted) in his credit and other 07 are in pipeline. He has published many research/review papers in reputed national and international journals. He is currently guiding 02 Ph. D. scholars in Pharmacology specialization. He has participated in more than 70 seminars/conferences/workshops at national and international levels. He has written 04 books and 08 chapterswith national & international publishers of repute respectively. He has delivered the keynote address and also invited talks and guest lectures at more than 10 conferences/seminars at national and international levels. He is an examiner/paper setter (B. Pharmacy, M. Pharmacy & Ph. D. Programmes) for many reputed Universities. He is a life member of pharmaceutical professional bodies of the Pharmacy Profession, like APTI & IPGA. Dr. Jangra also received many awards and recognition from professional organizations.

Abstract - Talk of Dr. Ashwani Kumar

Drug Repurposing: An Emerging Approach in Drug Discovery

Ashwani Kumar
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Drug discovery and development is a time-consuming and costly process, often taking more than a decade and billions of dollars to bring a new drug to market. In recent years, drug

repurposing has emerged as a promising strategy to expedite the drug development pipeline and reduce costs. This approach involves identifying new therapeutic uses for existing drugs, which have already undergone rigorous safety testing. One of the key advantages of drug repurposing is the significant reduction in development time. Since these drugs are already approved or have advanced through preclinical and early clinical stages, the time required for safety and pharmacokinetic assessments is substantially shorter compared to de novo drug development. This expedited process can be critical in addressing urgent medical needs, such as emerging infectious diseases or rare disorders.Furthermore, drug repurposing leverages the vast pool of existing pharmaceutical compounds, enabling the exploration of novel treatment options for a wide range of diseases, including cancer, neurodegenerative disorders, and infectious diseases. Computational approaches, high-throughput screening, and omics technologies have greatly facilitated the identification of potential drug candidates for repurposing.

This abstract discusses the emergence of drug repurposing as a vital approach in modern drug discovery, emphasizing its potential to bring new therapies to patients faster and at a fraction of the cost compared to traditional drug development. It highlights the importance of collaboration between academia, pharmaceutical companies, and regulatory agencies in harnessing the full potential of this innovative approach to meet the ever-growing healthcare challenges. Drug repurposing is poised to revolutionize the pharmaceutical industry by efficiently delivering safe and effective treatments to patients worldwide.

Keywords**:** *Drug discovery*, *Drug repurposing*, *Pharmacokinetic assessments*.

SPEAKER-LEAD LECTURE

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Dr. Debapriya Garabadu is working as an Assistant Professor in the Department of Pharmacology, School of Health Sciences, Central University of Punjab, Bathinda. He has obtained his M. Pharm. (Pharmacology) and a Ph. D. degree from IIT (BHU), Varanasi in the year 2008 and 2015 respectively. He is having teaching and research experience of more

than 10 years in several reputed organizations like APJ Abdul Kalam Technical University, GLA University, Mathura, and Guru Ghasidas Central University, Bilaspur. He has received scholarships from GATE, UGC, CSIR, and MHRD. He has also received travel awards from funding agencies such as ICMR, DST, DBT, and MHRD GoI. More than 100 research/review papers with a cumulative impact factor of more than 150 and an h-index of 21 are added to his credit. He is a regular reviewer of several reputed journals such as the Journal of Ethnopharmacology, Brain Research, Neurotoxicity Research, Pharmacological Reports, and many more. He has served as a chairperson/resource person in several national and international conferences. Several national-level conferences and workshops are organized by him in association with the Indian Pharmacological Society, the Indian Academy of Neuroscience, and many more. To date, 29 Postgraduate and 6 Ph. D. students have been awarded under his supervision. He is having special research interest in neurodegenerative disorders and neurovirology.

Abstract - Talk of Dr. Debapriya Garabadu

Ursolic Acid Attenuates Lysophosphatidylcholine (LPC)-induced Altered Ceramide Biosynthetic Pathways in Primary Astrocyte and Oligodendrocyte Co-culture Model of Multiple Sclerosis.

Debapriya Garabadu

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Multiple Sclerosis (MS) is prevalent in demyelinating diseases, distinguished by the presence of localized demyelinated lesions with partial axonal preservation, reactive astrogliosis, and oligodendrogliapathy. Although very few drugs have been developed in the management of MS, their use is limited due to their serious adverse effects. Hence, an alternate therapeutic target needs to be investigated to impart a better therapeutic effect in MS. Ceramide biosynthetic pathway plays an important role in the maintenance of glial cells and their proliferation. The role of the ceramide biosynthetic pathway in oligodendropathy and astrocytopathy is poorly explained in demyelination. Therefore, in the present study, we hypothesize that the ceramide biosynthetic pathway could be a potential therapeutic target in the pathophysiology of the co-occurrence of oligodendropathy and astrocytopathy. The objective of the study was to evaluate the protective effect of Ursolic acid (UA) on Ceramide Synthase-2 and Sphingomyelin Synthase-1expression in the LPC-challenged primary co-culture of astrocyte and oligodendrocyte model of MS. The prefrontal cortex of Wistar rat pups on postnatal day (1- 10) was collected and cultured in an appropriate media.The mixed oligodendrocyte-astrocyte cultures were challenged by LPC for 24hr followed by treatment with either UA (1, 10, and 100 μM) or Fingolimod for the next 24hr. The present study reported that the IC_{50} of UA was 0.239 in the primary co-culture of astrocyte and oligodendrocyte study. Based on the IC_{50}in cell viability study, the doses such as 1, 10, and 100 μM of UA were considered for further studies. UA (1, 10, and 100 μM) exhibited significant protective activity in the MTT assay against LPC-induced cytotoxicity in the co-culture study. UA (1, 10, and 100 μM) also significantly attenuated the

LPC-induced increase in the level of ROS in the co-culture. All the selected doses of UA also significantly attenuated the LPC-induced increase in the extent of apoptosis in the co-culture. Further, UA (1, 10, and 100 μM) significantly attenuated the LPC-induced increase in the level of expression of GFAP, MBP, ceramide synthase-2, and sphingomyelin synthase-1 in the co-culture. These observations indicate the fact that Ceramide Synthase-2 and Sphingomyelin Synthase-1could be potential targets in the management of astrocytopathy and oligodendropathy in demyelination. Further, UA could be a potential therapeutic option in the management of MS.

Keywords**:** *Astrocytopathy*, *Oligodendropathy*, *Co-culture model Ceramide biosynthetic pathway*, *LPC*, *Ursolic acid*.

SPEAKER-LEAD LECTURE

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Dr. Rajesh Kumar did his Masters in Zoology from Jiwaji University, Gwalior (M.P.) India in 2007 and awarded PhD from same institution in the year 2013. Dr Kumar started his academic career in 2023 and currently working as Assistant Professor in Department of Biosciences, Himachal Pradesh University, Shimla, Himachal Pradesh. He has about 10 years of experience in teaching and research. Dr Kumar has been teaching Animal Physiology, Applied Zoology and Apiculture to post graduate students. His thrust areas of research are Animal Physiology and Applied Zoology in which he is working on honeybees and honey and linking the use of honey in human physiology. Along with this, he pursues his research activities by working in the area of environmental toxicology, waste management and impact of environmental degradation on animal physiology. He is an expert member for delivering lectures during beekeeping training/extension activities by various agencies. Dr. Kumar has successfully completed 02 Major Research Projects and 02 Startup Projects sponsored by Government agencies. He has successfully supervised 03 PhD, 01 MPhil, 43 MSc students for their research work and currently 02 PhD candidates are working under his supervision.

Dr Kumar has been awarded Meritorious Fellowship for the year 2009-2011 by University Grants Commission for working on honey/honeybee. He is life member of Indian Science

Congress, National Bee Board, Applied Zoologists Research Association, Society for Science & Environmental Excellence and affiliate member of International Society of Zoological Sciences. Dr Kumar is Fellow of Himalayan Science and Technology Communications.

He has published about 102 Research Articles including 35 Book Chapters in indexed journals and publishers such as Elsevier/Springer, 12 Research Papers in Full Length Proceedings, 07 Books (Springer Nature, CRC Press, AAP), 04 Monographs, 95 Abstracts by participating in more than 75 national/international conferences. He has earned 12 awards for his excellent research in honeybees/physiology till date. Dr Kumar has successfully organized about 20 seminars/conferences and delivered more than 30 invited talks/extension lectures in different institutions. He is also reviewer of several journals of national and international repute like Journal of Tropical Insect Science, Legume Research, Journal of Stored Products Research and American Journal of Zoology to name few.

Abstract - Talk of Dr. Rajesh Kumar

Herb-Infused Honey as Potential Adjuvant for Metabolic Disorders

Rajesh Kumar

Department of Biosciences, Himachal Pradesh University, Summer Hill, Shimla, Himachal Pradesh-171005

The world is facing numerous challenges and good health is one of the major issues that has attracted the minds of scientists, medical professionals, policymakers as well and Governments of all countries. Honey and herbs have been used by various societies since time immemorial, however, with modernization, the world has turned towards allopathy which has its own barriers and side effects. The miraculous properties of honey and various herbs may help people combat dreadful diseases in the coming time. Mother nature fulfills all the human needs right from cradle to coffin. Herbals represent just one of nature's precious gifts. Medicinal herbs have extensively been used since time immemorial in traditional healthcare practices for the treatment of various diseases. The earliest record of the use of honey and medicinal plants for prevention as well as cure of diseases can be traced in Rigveda which is considered to be the oldest repository of human knowledge. In Ayurveda, the detailed properties and uses of honey and plant-based drugs have been mentioned. According to the reports of the World Health Organization, more than 80% of the world's population still relies on plant-based traditional medicines for primary healthcare management. In recent years, there has been growing interest in alternative therapies and the therapeutic use of natural products, particularly those derived from plants. There have been vigorous efforts globally to conserve, document, and promote the knowledge of plant-based drugs and to develop pharmacological research programs for the benefit of traditional and modern medicinal systems. Worldwide consumption of medicinal plants for various uses worth thousand crores rupees. It has been estimated that the market size of the medicinal plants-based industry is about 60 billion dollars annually. Despite recent developments in synthetic drugs, the majority of people still depend upon traditional medicines because of their low cost, lowest side effects, and accessibility in remote areas. In the present scenario, rich herbal treasures and traditional knowledge are the key

components for bio-prospecting, value addition, and research development. Generally, herbs are mixed with honey to make a paste or electuary, that dates back to our ancient cultures where honey was used to preserve the herbal formulations for longer periods of time. Presently, honey is added in different herbs like tulsi, ginger, etc. to cure several diseases. It is also used for culinary purposes and added to baked goods, salads, and marinades to enhance flavor as well as taste. Herb-infused honey is taken medicinally to cure a large number of diseases like cough, cold, fever, asthma, tuberculosis, jaundice, chest infections, urinary troubles, allergies, diabetes, liver disorders, sexual problems, cardiac disorders, wound healing, immunity enhancer, etc. It is the fact that honey is well known for its healing properties and its infusion with herbs further paves a tasty and healthy way for the treatment of various diseases.

Keywords: *Honey*, *Health*, *bioactive substances*, *Metabolism*, *Nutraceuticals*.

SPEAKER-LEAD LECTURE

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Dr. Pradeep Goyal is currently working as Principal at Saraswati College of Pharmacy Mohali, Punjab. He has a total working experience of more than 15 years. Dr. Goyal has done his M. Pharm. from Annamalai University, Chidambaram (T.N) India and Ph. D. from Rajasthan University of Health Science, Jaipur(Raj.) India. He is also a Nominee of CPCSEA, Health Committee Member of Chandigarh University and Executive member of DQAC. He has more than 30 research publications to his credit. He holds the lifetime membership of APTI, IPGA, and ARP.

Abstract - Talk of Dr. Pradeep Goyal

Clinical Studies on New Drug Molecule: Process, Regulatory Requirements, and Challenges

Pradeep Goyal
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The development of novel drug molecules is a complex and intricate process that demands rigorous scientific investigation, adherence to stringent regulatory requirements, and the navigation of numerous challenges. It provides an overview of the key elements involved in conducting clinical studies on a new drug molecule, focusing on the process, regulatory prerequisites, and the challenges faced by pharmaceutical researchers and developers. The drug development process comprises several phases, with clinical trials being a critical milestone. These trials are designed to assess the safety, efficacy, and pharmacokinetics of the drug candidate. The process begins with preclinical testing, followed by Phase I, Phase II, and Phase III trials, each with specific objectives and participant populations. Post-approval Phase IV studies may also be required to monitor long-term safety and effectiveness. Regulatory requirements are a fundamental aspect of drug development. Regulatory agencies, such as the FDA in the United States or the EMA in Europe, play a pivotal role in evaluating new drug applications. Applicants must provide comprehensive data on the drug's safety, quality, and efficacy, as well as demonstrate adherence to Good Clinical Practice (GCP) guidelines. Regulatory agencies also require the submission of Investigational New Drug (IND) applications, New Drug Applications (NDAs), or Marketing Authorization Applications (MAAs), depending on the jurisdiction. In conclusion, the process of conducting clinical studies on a new drug molecule is a multifaceted journey involving meticulous planning, adherence to regulatory guidelines, and addressing numerous challenges. Overcoming these obstacles is essential to bring safe and effective therapies to patients in need, ultimately improving healthcare outcomes and advancing medical science.

Keywords**:** *Clinical trials*, *FDA*, *Pharmacokinetics*.

SPEAKER-LEAD LECTURE

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Advocate Dhawal Bhandari, being a 2nd Generation Advocate, is having vast experience and substantial practice and deals with all aspects of Indian Law especially dealing with a variety of cases mainly Civil, Criminal, Bank cases & Corporate matters on behalf of

Clients, Companies etc. Advocate Dhawal Bhandari's father Advocate R.K. Bhandari started his Law practice in the year 1984 at Chandigarh [UT] and Advocate Dhawal Bhandari is continuing his father`s legal legacy and has expanded this Legal Legacy to Court(s) in New Delhi. OneUpLegal Law Firm is a creation of Advocate Dhawal Bhandari started in year 2009.

Abstract - Talk of Advocate Dhawal Bhandari

Intellectual Property Rights (IPR) with a Focus on Trademark and Design Registration

Dhawal Bhandari

Advocate, Supreme Court of India and High Court of Punjab & Haryana

Intellectual Property Rights (IPR) serve as a vital legal framework for protecting innovations, branding, and creative works in a rapidly evolving global marketplace. This provides a concise overview of IPR, with a particular emphasis on trademark and design registration, their significance, processes, and benefits. IPR encompasses a range of legal protections, including copyrights, patents, trademarks, and design rights. This abstract zeroes in on two critical components: trademark registration and design registration. Trademarks are distinctive symbols, names, or logos that distinguish goods and services in the marketplace. Registering a trademark provides exclusive rights to use, license, and protect the mark. The process typically involves a comprehensive search to ensure uniqueness, application filing, examination by relevant authorities, and, upon approval, registration. Both trademark and design registration plays a pivotal role in fostering innovation, creativity, and economic growth. They provide legal certainty to creators, inventors, and businesses, encouraging them to invest in research, development, and branding. Intellectual property rights, including trademark and design registration, are indispensable tools for safeguarding the intellectual assets of individuals and businesses. These rights foster innovation, protect brands, and facilitate market competition. Understanding and navigating the processes associated with trademark and design registration are essential steps for anyone seeking to harness the full potential of their intellectual property in today's dynamic and competitive global economy.

Keywords**:** *IPR*, *Copyright*, *Trademark*, *Design registration*.

SPEAKER-LEAD LECTURE

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Mr. Davinder Kumar is currently working as Assistant Professor at College of Pharmacy, PGIMS University of Health Sciences, Rohtak. He has done his PhD from MD University, Rohtak. Dr. Kumar has working experience of more than 13 years. He has more than 35 national and international publications, 05 patents and 09 national and international books to his credit. He is also serving as reviewer for 03 international peer reviewed journals. He is also working as Assistant Clinical Director for Special Olympic Bharat (Voluntary) Haryana state (Health Promotion). His area of interest includes synthesis of heterocyclic derivatives, Computer aided drug design, Quantification and Purification of novel molecules and Research Development in cancer and microbial world.

Abstract - Talk of Mr Davinder Kumar

Transformative Potential of Biosimilar Drugs in Redefining Healthcare

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The landscape of medicine is evolving, and at the forefront of this transformation are biosimilar drugs. As we delve into this cutting-edge field, we will explore the foundations of biologics, the emergence of biosimilars, their development processes, regulatory landscapes, and the profound impact they are poised to make on healthcare globally. Biologics represent a paradigm shift in medicine, with therapeutic agents derived from living cells. Unlike traditional small-molecule drugs, biologics are complex and often large molecules, such as monoclonal antibodies or proteins. Biosimilar drugs have the unique properties and therapeutic potential of biologics, showcasing their versatility in treating diseases ranging from cancer to autoimmune disorders. Biosimilar development is a meticulous journey marked by analytical and clinical comparability studies. Regulatory pathways, both in the United States and globally, will be examined to understand the nuanced considerations governing biosimilar approval. Drawing a clear distinction between biosimilars and

traditional generic drugs is essential for a comprehensive understanding. By juxtaposing biosimilars with generic drugs, we can appreciate the unique strategies required for their development and approval. The journey of biosimilars is not without hurdles. Biosimilar drugs concept will delve into the challenges faced in their development, ranging from scientific complexities to market acceptance. Therefore, biosimilar drugs serve as catalysts, propelling us towards a future where the shackles of disease are met with the boundless potential of therapeutic innovation. The patient, once a passive recipient of care, emerges as an active participant in a narrative that is defined by choices, possibilities, and the relentless pursuit of a healthier, equitable world.

Keywords**:** *Biosimilar*, *Healthcare*, *Monoclonal antibodies*.

SPEAKER-LEAD LECTURE

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Dr. Rohit Goyal is currently working as Professor at Shoolini University, Solan, Himachal Pradesh. Dr.Goyal has done his PhD degree in 2011 from Punjab Technical University, Jalandhar and holds 15 years of teaching and research experience in the field of Pharmacy and Pharmacology. His area of research includes Molecular & pre-clinical Pharmacology, Natural Products, Drug Discovery, Alzheimer's disease, Life-style disorders, Circadian Rhythm dysfunction, Osteoporosis, Asthma. He has 63 research/ review papers (SCOPUS)/ book chapters published and 06 patents filed of his credit. He has guided 35 PG and 5 doctoral research students. He is also nominated as CPCSEA Nominee from Ministry of Environment & Forest-Animal Welfare Division, Govt. of India for several research institutions in Himachal Pradesh involved in animal experimentation.

Abstract - Talk of Dr. Rohit Goyal

Scientific Validation and Development from Traditional Himalayan Plants: A Precise Evaluation of *Zanthoxylu marmatum* DC.

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Aerial parts were procured from native area in Himachal Pradesh, extracted followed by

fractionation performed solvents of graded polarities. Phytochemical characterization using TLC and HPTLC were performed. Scientific evaluation in line to the pathology of tooth disorders as antioxidant, anti-inflammatory, antimicrobial and anti-biofilm were performed. The formulations, dental gel and mouthwash of a bioactive fraction alone and incombination with fractions from Curcuma longa, and clove were prepared and characterized.

The extracts and fractions exhibited significant in-vitro antioxidant activities. The chloroform fraction displayed DPPH radical scavenging at 44 ìg/ml and hydrogen peroxide scavenging at 48 ìg/ml. A significant anti-inflammatory activity was observed by NO scavenging, with values of 41 ìg/ml and 39 ìg/ml, as well as radical scavenging assays indicating inhibition zones of 21 mm and 22 mm. Notably, MIC values of 9.1 ìg/ml and 10 ìg/ml were observed, along with % adherence at 24 hours being 112.92 ± 2.11 and 110.22 ± 1.10, and % adherence at 48 hours being 121.88 ± 0.11 and 118.20 ± 0.10. Additionally, % biofilm inhibition values of 60.23 ± 0.17 and 65.012 ± 0.13 at 24 hours, and 65.44 ± 0.12 and 70.11 ± 0.13 at 48 hours were determined against Streptococcus mutans, illustrating the effectiveness of the antimicrobial properties. This study validates the traditional use of the *Z.armatum*for tooth disorders with a substantial antioxidant, anti-inflammatory, antimicrobial, and anti-biofilm properties.

Keywords**:** *Anti-inflammatory*, *Anti-microbial*, *In-vitro*.

SPEAKER-LEAD LECTURE

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Dr. Atin Kalra is working as an Assistant Professor at Amity Institute of Pharmacy, Amity University Gurugram. He holds an M. Pharm from Manipal University, a Ph. D. from Panjab University, and previously worked as a Patent Analyst at Dr. Reddy's Hyderabad. With over 10 publications, 2 filed patents, and awards in national and international conferences, Dr. Kalra is a distinguished figure in pharmaceutical research and academia.

Abstract - Talk of Dr. Atin Kalra

Unearthing Molecular Interactions Involved in Novel Taste Masked Complexes of Meloxicam

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The objective of present work was to explore the potential of Maltodextrins (MLD) in masking the bitter taste of Meloxicam (MX). Exhaustive computational experiments using Schrodinger® Maestro revealed the formation of double helical complexes between MX and MLD. Complexation between MX and MLD was experimentally realized by solution method with Meglumine as facilitator. Prepared complexes were characterized using different analytical techniques like Fourier transformation infra-red spectroscopy (FT-IR), Differential scanning calorimetry (DSC), Scanning electron microscopy (SEM), Powder x-ray diffraction (PXRD), ^{1}H Nuclear magnetic resonance spectroscopy (NMR) and ^{13}C NMR. Further, taste masked complex was compressed into 2.5 mm oral dispersible tablets using a 8 tip mini-tablet punch die set. The prepared tablets were evaluated for general appearance, disintegration time, content uniformity, hardness, *in-situ* disintegration time and oral pharmacokinetic studies in rats. Finally, taste evaluation was performed by panel consisting of 10 healthy human volunteers.

Keywords: *Maltodextrins*, *Analytical techniques*, *Double helical complexes*, *Oral dispersible tablets*.

SPEAKER-LEAD LECTURE

Dr. Sunil Kumar

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Dr. Sunil Kumar did Ph. D., form PGIMER, Chandigarh. Postdoc (ICMR), Contributed for the Research in the field of Medical Parasitology, Prepared the Nano-capsules, form Malaria treatment with the help of synthetic peptides and human lactoferrin, Submitted for the Patent for ICMR. One patent filed. Published more than 25 publications in National and international conferences, Awarded with the prestigious Postdoc, fellowship by ICMR in 2019 to 2021. Currently working as Research Scientist in Origin Life, Chandigarh.

Published 12 book chapters in National and International Books, two edited books published, Awarded with Best Ph. D. thesis work, Best oral presentations in National and International conferences. Recently Dr. Kumar Launched a Global Community for Mentors and Researchers, for the betterment of the Research and Society to upliftment the women leaders in Research and Academia.

Abstract - Talk of Dr. Sunil Kumar

Empowering Microbiologists in Industry: Role of Microbiologists in Industries

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The role of microbiologists in industries is ever-expanding and increasingly pivotal in today's scientific landscape. This abstract provides a glimpse into the conference topic, "Empowering Microbiologists in Industry: Role of Microbiologists in Industries "Microbiology is no longer confined to the laboratory; it has become an integral component of various industries, spanning pharmaceuticals, food production, environmental management, and beyond. This conference aims to shed light on the multifaceted contributions of microbiologists in these industries, showcasing their role as catalysts for innovation, quality assurance, and sustainable practices. Microbiologists in industry are tasked with ensuring product safety, optimizing processes, and driving research and development efforts. They are instrumental in the discovery of novel microbial-based products, the development of biotechnological solutions, and the maintenance of microbiological quality standards. This conference provides a platform for microbiologists to share their experiences, research findings, and insights into the challenges and opportunities they encounter in industrial settings. The conference will feature presentations, panel discussions, and interactive sessions that delve into the diverse sectors where microbiologists make an impact. Topics will include microbial bioprocessing, industrial microbiome applications, quality control and assurance, and the development of sustainable practices. Additionally, discussions will encompass the integration of emerging technologies, such as genomics and synthetic biology, into industrial microbiology. "Empowering Microbiologists in Industry" serves as a forum for microbiologists to collaborate, learn from one another, and inspire future innovations. By recognizing the indispensable role of microbiologists in industries, this conference aims to empower professionals to harness their skills and knowledge, ultimately contributing to the advancement of industrial practices, product development, and global sustainability. Join us in exploring the vast landscape of microbiology in industry and its transformative potential.

Keywords**:** *Synthetic biology*, *Microbiology*, *Bioprocessing*, *Pharmaceutical industry*.

ABSTRACTS

ANTICANCER POTENTIAL OF S-TRIAZINE DERIVATIVES

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Abstract

1,3,5-triazine derivatives, also called s-triazines, are a series of containing-nitrogen heterocyclic compounds that play an important role in anticancer drug design and development. To date, three s-triazine derivatives, including altretamine, gedatolisib, and enasidenib, have already been approved for refractory ovarian cancer, metastatic breast cancer, and leukemia therapy, respectively, demonstrating that the s-triazine core is a useful scaffold for the discovery of novel anticancer drugs. In this review, we mainly focus on s-triazines targeting topoisomerases, tyrosine kinases, phosphoinositide 3-kinases, NADP+-dependent isocitrate dehydrogenases, and cyclin-dependent kinases in diverse signaling pathways, which have been extensively studied. The medicinal chemistry of s-triazine derivatives as anticancer agents was summarized, including discovery, structure optimization, and biological applications. This review will provide a reference to inspire new and original discoveries.

Keywords:*S-triazines, Antitumor, Drug target.*

HERBAL MANAGEMENT OF NEPHROLITHIASIS

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Abstract

Nephrolithiasis is the term employed for kidney stone which are crystal concretions formed typically in the kidney. Nephrolithiasis affects about 12% of the world population between the ages of 20 to 49. It occurs frequently in men than in women. Kidney stones lead to the risk of chronic kidney disease, end-stage renal failure, cardiovascular disease, diabetes, and hypertension. Kidney stone formation involves physiochemical changes and urine supersaturation. In super saturation, solutes precipitate in the urine leading to nucleation and crystal concretions of stone forming constituents like calcium, phosphorus, uric acid, oxalate, and cysteine. Possible causes include drinking too little water, obesity, weight loss surgery and eating food with too much salt or sugar. Some symptoms are severe pain in your back or side that will not go away, blood in your urine, urine that smells bad and looks cloudy, and a burning feeling when you urinate. Urinary tract infection and kidney damage can occur if the treatment is delayed for too long. Allopurinol an allopathic medicine helps in lowering the formation of uric acid in the body and Tamsulosin inducing selective relaxation of ureteral smooth muscle leading to ureteral dilation. Percutaneous lithotripsy (PCNL), Shock wave lithotripsy, Cystoscopy and ureteroscopy etc are surgeries based treatment for

nephrolithiasis. Small kidney stones can be flushed out of the body by exercise, hydration, diet and herbal remedies. Herbal treatment takes a holistic approach for treating kidney stones through flush therapy and other techniques. Some natural herbs are Boerhaviadiffusa commonly called punarnava which possesses astounding diuretic properties. The *Moringa oleifera* plant removes detrimental free radicals and detoxifies the system. *Elettaria cardamomum*serves as a remarkable diuretic, removing the accrued fluids, calcium salts, uric acid from the body. And *Zingiber officinale* when taken daily serves as a soothing renal tonic, eliminating rigid stone deposits and cleansing the kidneys. Nephrolithiasis patients opt for natural herbal treatments which chooses to uproot the ailment from its roots. Herbal treatment plan is holistic, natural and safe and doesn't cause any side effects to the recipient. This treatment is more affordable than conventional drugs.

Keywords: Nephrolithiasis, Moringa oleifera, Cystoscopy.

ROLE OF SURFACE MODIFIED ELECTROSPUN NANOFIBERS FOR THERAPEUTICS APPLICATIONS

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Abstract

Drug delivery systems are promising tools in the pharmaceutical field, as they are able to maximize the therapeutic effects of the drug while minimizing the undesired side effects. In the past years, electrospun nanofibers attracted rising attention due to their unique features, like biocompatibility, non-toxicity and broad flexibility. Incorporation of active principles in nanofibrous meshes proved to be an efficient method for in situ delivery of a wide range of drugs such as proteins, peptide, antibodies, and small molecule drugs, can be loaded within or on the surface of nanofibers according to their properties. The surface-immobilization of bioactive molecules on nanofibers by physical absorption or chemical conjugation to increase their drug delivery applications. Especially, chemically surface-immobilized proteins on a nanofiber mesh stimulate cell differentiation and proliferation. In this, the principle of electrospinning and different fields of applications are treated to give an overview of the recent literature, underlining the easy tuning and endless combination of this technique, that in the future could be the new frontier of personalized medicine.

Keywords*: Electrospinning, Nanofibers, Drug delivery, Controlled release.*

COMPREHENSIVE INSIGHTS: PICK1'S ROLE IN DEPRESSION AND ITS MOLECULAR CONNECTIONS

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Abstract

Depression, a prevalent and devastating mental health disorder, poses a significant global burden.Protein interacting with C-kinase 1 (PICK1) has been well-established target has received considerable attention because itis the only protein that contains both PSD-95/DlgA/ZO-1 (PDZ) domain and Bin-Amphiphysin-Rvs (BAR) domain. Through PDZ and BAR domains, PICK1 binds to alarge number of membrane proteins and lipid molecules and is thereby of multiple functions.PICK1has gained interest in neurology because of its role in synaptic plasticity bydirecting the transport of glutamate receptors. Herein, our aim is to providea concise overview of the emerging research on the involvement of PICK1 in depression, focusing on its intricate molecular connections. It plays multifarious roles in synaptic plasticity, regulation of neurotransmitters, and mediation of intracellular trafficking. Itsrole has been identified to interact with a number of cellular processes, including calcium signaling, actin polymerization and phospholipid membrane architecture.The best-understood function of PICK1is the regulation of á-amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid (AMPA) receptor trafficking at neuronal synapses via its specific interaction withthe AMPA GluA2 subunit. The lack of potent, selective inhibitors of thePICK1 domain has hindered efforts at exploring the PICK1-GluA2 interaction as a therapeutictarget for neurological diseases.With these efforts, we aim to simplify the complexity of PICK1 and its connecting pathways which can ultimately pave the way for more effective treatment in depression and mental health disorders.

***Keywords**: Depression, PICK1, Glutamatergic Neurotransmission, Intracellular Trafficking.*

PYRROLE-PYRIDINE BASED A NOVEL ANTI-MICROBIAL DRUG

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Abstract

The increasing prevalence of multi-drug resistant Gram-positive and Gram-negative bacteria continues to drive the exploration and discovery of novel antimicrobial agents effective against these pathogens. Pyridine derivatives also play significant role in many biological systems as the component of several vitamins, nucleic acids, enzymes, and protein. It finds application both as an organic solvent and as a ligand for coordination complexes. These complexes have been occupied in the strongest and transport of active

substances through membrane. Pyrroles and its derivatives are essential heterocycles found in various natural compounds, including hem, chlorophyll, vitamin B12, and bile pigments. Moreover, a diverse array of natural products containing a pyrrole core demonstrate a broad spectrum of biological properties. Leveraging heterocycles as bio isosteres for different functional groups is a strategic approach to develop clinically safer drugs, enhancing their affinity and potency towards specific targets. Additionally, the incorporation of heterocyclic moieties can influence properties such as solubility, lipophilicity, polarity, and hydrogen bonding capacity. Both these moieties in conjugation can prove to be a broad-spectrum analogue in the field of Microbial infection. The use pyrrole-pyridine based Anti-microbials to overcome Multiple drug resistance.

Keywords*: Pyrrole, Pyridine, Anti-microbial, Multiple drug resistance.*

BIODEGRADABLE POLYMERIC BASED NANOPARTICLES FOR BREAST CANCER TREATMENT

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Abstract

With a complicated pathophysiology, breast cancer is one of the main causes of mortality and morbidity. Currently, standard methods for cancer therapy including BC are surgery followed by chemotherapy or radiotherapy. However, both chemotherapy and radiotherapy often fail to treat BC due to the side effects that these therapies incur in normal tissues and organs. Side effects including lack of selectivity, cytotoxicity, and multi-drug resistance. Drug efflux transporters that are overexpressed, damaged apoptotic pathways, and hypoxic environments are some of the causes behind cancer medication resistance. It has been demonstrated that overcoming cancer-related medication resistance may be accomplished by using biodegradable polymeric nanoparticles-based targeted drug delivery systems. Polymers play a vital role in any dosage form as excipients. Due to their unique benefits including biocompatibility, decreased toxicity, improved stability, increased permeability and retention effect, and precision targeting make them desirable for treating breast cancer. Mostly nanoparticles prepared from artificial polymeric or inorganic materials. These nanoparticles suffered from several intrinsic drawbacks, especially regarding their biocompatibility and biodegradability. More recently, the research focus shifted to the use of natural materials for the fabrication which are inherently compatible with the metabolic system and have high potential for biological and biomimetic effects. By the promising use of advanced nanotechnology, the efficacy of chemotherapeutics can be further improved via targeting approach by attaching targeting moieties to the nanoparticles.

Keywords*: Breast Cancer, polymeric nanoparticles, chemotherapy, targeted approach, radiotherapy.*

PYRROLE-PYRIDINE LINKED ANALOGUE AS POTENTIAL ANTI-CANCER AGENTS

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Abstract

In recent years, there has been a growing interest in the development of novel anti-cancer agents with enhanced efficacy and reduced side effects. Pyrrole-Pyridine linked analogues such as (Sorafenib I, Regorafrnib II, Crizotinib IV etc,) have emerged as a promising class of compounds in the field of cancer therapeutics. This abstract highlights the significant progress in the design and synthesis of Pyrrole-Pyridine linked analogues and their potential as potent anti-cancer agents. These compounds exhibit remarkable cytotoxicity against various cancer cell lines, often attributed to their ability to target specific cellular pathways involved in cancer progression. Moreover, their unique chemical structure allows for modifications that enhance their bioavailability and selectivity, making them attractive candidates for further preclinical and clinical studies. The mechanisms of action, structure-activity relationships, and recent advancements in the development of Pyrrole-Pyridine linked analogues as anti-cancer agents are discussed, emphasizing their potential to revolutionize cancer treatment strategies and improve patient outcomes.

Keywords*: Cytotoxicity, Cellular pathways, Bioavailability, Cellular pathways.*

BENZIMIDAZOLE BASED A NOVEL ANTI-MICROBIAL AND ANTICANCER AGENTS

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Abstract

In the field of medicinal chemistry, the use of heterocyclic compounds has increased day by day, because in many biological materials a heterocyclic compound is part of its structure. A heterocyclic aromatic organic molecule with nitrogen is called benzimidazole. In medicinal chemistry, it is a preferred structure and a significant pharmacophore. As therapeutic drugs, such as antiulcer, analgesic, and anthelmintic, benzimidazole and its derivatives play an incredibly significant role. Because of their great significance, benzimidazoles have attracted a lot of attention in the drug discovery process. In an effort to assess compounds for potential intrinsic activity, a repository of molecules has been created. Both in terms of their inhibitory efficacy and their favourable selectivity ratio, they are incredibly effective. Due to the uses of these medications in the treatment of microbial infections and other biological processes, it inspires the creation of stronger and more significant medications. These compounds are efficient against different strains of bacteria, according to pharmacological investigations. It has been shown that the majority of the different benzimidazole

derivatives have distinctive biological activity that offers clear promises to treat a wide range of diseases.

Conclusion: The use benimidazole based Anti-microbials and anticancer to overcome Multiple-drug resistant.

Keywords*: Benzimidazole Anti-microbial, Anti-cancer.*

NANOPARTICLES EXHIBIT SPECIFIC HIGH-EFFICIENCY INTESTINAL UPTAKE AND LYMPHATIC TRANSPORT

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Abstract

Herein, we describe a simple and promising nanoparticle oral delivery phenomenon and propose pathways for oral nanoparticle absorption from the gastrointestinal tract (GIT), combining apical sodium-dependent bile acid transporter-mediated cellular uptake and chylomicron transport pathways. This strategy is proven to employ bile-acid-conjugated, solid fluorescent probe nanoparticles (100 nm diameter) to exclude any potential artifacts and instability issues in observing transport pathways and measuring oral bioavailability. The results of the in vitro studies showed that there is no interference from bile acid and no simultaneous uptake of nanoparticles and dextran. The probe nanoparticle exhibited a significantly enhanced average oral bioavailability (47%) with sustained absorption in rats. Particle-size- and dose-dependent oral bioavailability was observed for oral nanoparticle dosing up to 20 mg/kg. The probe nanoparticles appear to be transported to systemic circulation via the gut lymphatic system. Thus, we propose a pathway for oral nanoparticle absorption from the GIT, combining apical bile acid transporter-mediated cellular uptake and chylomicron transport pathways.

Keywords*: Nanoparticles, GIT, chylomicron.*

UNDERSTANDING THE DEPTHS OF DEPRESSION

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Abstract

Depression is a frequent but serious medical illness. It produces severe symptoms that interfere with a person's ability to function in daily tasks like sleeping, eating, and working. As per WHO, 280 million people in the world suffer from Depression. According to the American Psychiatric Association (APA), women are 1.5-3 more likely to suffer from depression. The main cause of this is female hormonal fluctuations during puberty, prior to menstruation, following pregnancy and at perimenopause. People who have gone through

adverse life events (unemployment, bereavement, traumatic events) are more likely to develop depression. In India, the National Mental Health Survey 2015-16 revealed that nearly 15% Indian adults need active intervention for one or more mental health issues and one in 20 Indians suffers from depression. It is estimated that in 2012, India had over 258 000 suicides, with the age-group of 15-49 years being most affected. The symptoms of depression are feeling sad or hopeless, frustration and irritability, sleep issues, insomnia, fatigue, trouble concentrating, thoughts of death or suicide. Natural compounds have gained attention for their potential antidepressant properties and can offer a possible route for novel treatments. Some herbal drugs have shown good antidepressant effect. Some herbal remedies that have been studied for their potential in managing depression are- St. John's Wort (*Hypericum perforatum*), Saffron, Lavender, Ashwagandha etc.

Keywords*: Depression, Herbal drugs, Hormones, Pregnancy.*

ANTI-OBESITY POTENTIAL OF ANTHOCYANINS: A REVIEW

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Abstract

Anthocyanins (ACNs) are prominent flavonoid family members that are hydrophilic and found in plants. Excellent anti-oxidants, anti-obesity, anti-diabetic, anti-inflammatory, anticancer activity, and other properties are present in them. By encapsulating ACNs, one can increase their bioavailability and stability (Nanotechnology). There is an urgent need for innovative solutions to tackle the expanding epidemic of obesity given its significantly rising prevalence. Diet has a significant impact on the emergence of obesity and the risk for developing type 2 diabetes (T2DM), and it may either assist or damage. It is therefore beneficial to take into account the potential for some foods and their bioactive substances to reverse or prevent the pathogenic processes related to metabolic disorder while looking for preventative and therapeutic approaches. Anthocyanins should be thought of as having a prebiotic effect since they have been found to modify the gut, which helps to manage obesity. ACN can increase insulin sensitivity and lower body weight brought on by food, and at least some of these positive benefits are explained by modulating the gut health Future therapeutic tactics and targets for treating a variety of illnesses may be made possible by anthocyanins.

Keywords*: Obesity, Anthocyanins, Therapeutic activity, Nanotechnology, Bioavailability.*

UNVEILING THE INTRICACIES OF ANTIBIOTIC RESISTANCE: A GLOBAL HEALTH CHALLENGE AND NANOTECHNOLOGICAL SOLUTIONS

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Abstract

Antibiotic resistance, the innate ability of bacteria and other microorganisms to withstand and counteract antibiotics, poses a formidable challenge in contemporary health sciences. A pervasive feature across diverse microbial ecosystems, antibiotic resistance has emerged as a pressing public health concern of our era. According to a recent World Health Organization report, the anthropogenic use of antibiotics has triggered an alarming surge in the evolution and dissemination of antibiotic resistance within environmental and human-associated bacteria. Shockingly, at least 2 million individuals receive antibiotic-resistant treatments annually, resulting in 35,000 fatalities. This grim statistic underscores the urgency of addressing antibiotic resistance on a global scale. In response to this escalating crisis, the study of antimicrobial resistance advocates for a comprehensive approach. The integration of a global antibiotic resistance surveillance system is imperative to inform strategic developments and interventions. Herein, nanobioconjugates emerge as potent weapons against antibacterial diseases, capturing significant attention for their customizable physicochemical properties, precise drug targeting capabilities, enhanced cellular uptake, and alternative mechanisms of drug action. The realm of nanotechnology has paved the way for innovative and effective treatment approaches in medical science. Notably, the use of inorganic materials, such as gold and silver nanoparticles, has gained prominence. Gold nanoparticles, in particular, exhibit biocompatibility, negligible side effects, and exceptional optical properties, making them a compelling choice for implementation in the fight against antibiotic resistance. As we navigate the complexities of antibiotic resistance, the integration of nanotechnological solutions not only holds promise for treating multidrug-resistant bacteria and biofilms but also signifies a paradigm shift in our approach toward combating this global health crisis. Together, the pivotal delving and intersection of microbiology and nanotechnology, groundbreaking solutions are engineered to safeguard the efficacy of antibiotics and secure the well-being of generations to come.

Keywords: *Antibiotics, Resistance, Nanotechnology, Nanobioconjugates, Biocompatible.*

NANOTECHNOLOGICAL FACETS OF FLAVONOLS IN RHEUMATOID ARTHRITIS: A UPDATED REVIEW

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Abstract

A persistent autoimmune condition called rheumatoid arthritis (RA) can cause serious joint damage, disability, and even death. RA primarily affects the peripheral joints. Although non-steroidal anti-inflammatory drugs (NSAIDs) and immunosuppressive medications are used to treat this illness, these medications have serious negative effects. RA is characterized by swelling, pain, and stiffness in joints, but it can also damage the heart, eyes, lungs, kidneys, and skin. The conventional treatment approaches for RA mainly includes administration of first line drugs such as non-steroidal anti-inflammatory drugs (NSAIDs) and glucocorticosteroids (GCs), are mainly used for the suppression of pain. To overcome these limitations, there is a rising need for the creation of innovative or novel drug delivery systems, such as nanoemulsion, solid lipid nanoparticles, liposomes, ethosomes, niosomes, and transferosomes, in order to get around these restrictions. A natural flavonol called quercetin (3,3',4',5,7-pentahydroxyflavone) can be found in foods including broccoli, tea, onions, apples, and green leafy vegetables. This flavonol is not poisonous and doesn't have any side effects. In traditional medicine, quercetin-rich plants like Bridelia ferruginea, Betula pendula, and Poligonum hydropiper L. have been used to relieve arthritis pain. Antioxidant, anti-proliferative, anti-inflammatory, antihistamine, antiviral, anticarcinogenic, psychostimulatory, immunosuppressive, and protective qualities are only a few of quercetin's actions that have been identified.

Keywords: *Rheumatoid arthritis (RA), Flavonols, Therapeutic activity, Nanotechnology.*

MICROARRAY PATCHES- A NOVEL POTENTIALLY USEFUL DRUG DELIVERY SYSTEM

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Abstract

Microarray patch technology is being developed or the transdermal delivery of large molecule drugs, without the use of injection. The patch is band aid format, and the surface of the patch is structured with polymer micro needles, from which the drug is delivered. The drugs can be attached to the external surface of the polymer microneedles, integrated into the polymer, or both. When the patch is applied the micro needles cross the stratum, corneum and penetrate into the epidermis. The micro needles do not penetrate deep enough to enter blood capillaries or nerves; hence the delivery is non invasive and pain free. The drugs for delivery are present in a nano structured form, facilitating uptake into the body.

The microneedles are made up of polymer that is biocompatible and biodegradable. This reduces risk of trauma to the skin and infection. The microarray patches have been designed for the delivery of peptides, proteins, hormones, vaccines and skin repair agents. The use microarray patches will enable a wide range of medications effectively delivered to humans in a safe and non-invasive manner.

Keywords: *Microarray, Transdermal delivery, Microneedles.*

INSIGHTS ON HERBAL NUTRACEUTICALS IN THE MANAGEMENT OF DIABETES MELLITUS

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Abstract

The progression of Diabetes mellitus (DM) has posed a difficult obstacle for modern medicine and the worldwide financial system, as well as a severe threat to human well-being. DM is a chronic metabolic disorder in which the pancreas does not produce enough insulin or the body cannot effectively use it. Diabetes prevalence is constantly rising, and India currently ranks third globally. Several dangerous side effects come with this illness. There are numerous kinds of anti-diabetic pharmaceuticals, yet these synthetic drugs fall short in terms of effectively treating diabetes. The increasing trend of nutraceuticals in diabetes treatment makes it important to collect the traditional knowledge of medicines under one heading as it can help researchers to formulate new functional foods and nutraceuticalsthat can either lower the risk or cure DM. The herbal drugs provide a better therapeutic hope with lesser side effects as they contain virtue of richness in essential phytonutrients having antidiabetic properties such asimproved insulin sensitivity hypoglycemic activities, and blood glucose lowering effect. This work attempts to display and remark on some of the most popular herbalnutraceuticals being used as anti-diabetic medications.

Keywords: *Diabetes mellitus (DM), Nutraceuticals, Herbal Drugs, Phytonutrients, Insulin.*

A POTENTIAL ROLE OF QUERCETIN IN PULMONARY DISEASES

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Abstract

Pulmonary disease is a broad term that refers to any condition that affects the lungs, including chronic obstructive pulmonary disease (COPD), emphysema, and asthma. Quercetin, a flavonoid found in many fruits, vegetables, and grains, has been shown to have

potentially beneficial therapeutic effects for several diseases, including cigarette smoking-induced COPD. Quercetin is a plant polyphenol with potent antioxidant and anti-inflammatory properties. Several studies have shown that quercetin has a positive therapeutic potential for chronic obstructive pulmonary disease (COPD) caused by cigarette smoking. In particular, quercetin has been found to improve pulmonary function and prevent emphysema caused by exposure to cigarette smoke in male mice Additionally, quercetin has been shown to prevent the progression of disease in mice exposed to elastase/lipopolysaccharide (LPS) by negatively regulating MMP expression. Another study found that quercetin reduces rhinovirus-induced persistent lung inflammation in mice with COPD phenotype. These results suggest that quercetin may be beneficial in the treatment of rhinovirus-associated exacerbations and preventing the progression of lung disease in COPD. A study also verified the protective effects of quercetin on lung fibroblasts inflammatory damage. The study found that quercetin supplementation was safe and well-tolerated in patients with COPD.

Keywords*: Pulmonary disease, Potential effect, Therapeutic activity, Nanotechnology.*

DATA DAZZLE: A META-ANALYSIS MARVEL

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Abstract

Meta analysis is a quantitative approach for systematically combining results of previous research to arrive at conclusions about the body of research. The first medical researcher to use formal techniques for combining data was Karl Pearson. Meta analysis can be performed when there are multiple scientific studies addressing the same question, with each individual study reporting measurements that are expected to have some degree of error. The main aim is to use statistical approach to derive a pooled estimate closest to the unknown common truth based on how this error is perceived. Meta-analytic results are considered the most trustworthy source of evidence by the evidence-based medicine literature. Meta analysis not only provides an estimate of the unknown effect size, but also has the capacity to contrast the results from different studies and identify the patterns among study results. The study involves a number of research procedures and then the data is presented in the form of various plots such as forest plot, funnel plot etc. The overall effect is calculated by converting all statistics to a common metric by making adjustments as necessary to correct for issues like sample size or bias and then the central tendency (mean effect size & confidence intervals around that effect size) and variability (heterogeneity calculation). A forest plot plays an important role in calculating the heterogeneity in the research process. However, there are some methodological problems with meta-analysis which may be because of systematic bias or journal bias.

Keywords*: Meta-analysis, Plot, Calculation, Research.*

ROLE OF TRANSFEROSOMES FOR THE MANAGEMENT OF RHEUMATOID ARTHRITIS

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Abstract

Rheumatoid arthritis (RA) is a systemic autoimmune disease manifested by chronic joint inflammation leading to severe disability and premature mortality. There is no known cure for RA; the ultimate goal for treatment of RA is to provide symptomatic relief. The treatment regimen for RA involves frequent drug administration and high doses of NSAIDs such as indomethacin, diclofenac, ibuprofen, celecoxib, etorcoxib. These potent drugs often have off target effects which drastically decreases patient compliance. Moreover, conventional non-steroidal anti-inflammatory have many formulation challenges like low solubility and permeability, poor bioavailability, degradation by gastrointestinal enzymes, food interactions and toxicity. To overcome these barriers, researchers have turned to topical route of drug administration, which has superior patience compliance and they also bypass the first past effect experienced with conventional oral administration. Furthermore, to enhance the permeation of drug through the layers of the skin and reach the site of inflammation, nanosized transferosomes carrier have been designed. These drug delivery systems are non-toxic and have high drug encapsulation efficiency and they also provide sustained release of drug. Transfersomes are ultradeformable vesicles consisting of a lipid bilayer with phospholipids and an edge activator and an ethanol/aqueous core. Compared to liposomes, transferosomes are able to reach intact deeper regions of the skin after topical administration delivering higher concentrations of active substances making them a successful drug delivery carrier for transdermal applications. A wide variety of drugs has been successfully encapsulated within transferosomes such as phytocompounds like sinomenine or apigenin for rheumatoid arthritis. Considering the current research and future application of transferosomes, it is believed that transferosomes can be a crucial element in rheumatoid arthritis treatment. This paper covers all currently available pathophysiological aspects of rheumatoid arthritis and treatment options. Future research for the reduction of synovial inflammation should focus on developing multifunction transferosomes capable of delivering therapeutic agents with improved safety, efficacy, and cost-effectiveness to be commercialized.

Keywords *: Rheumatoid Arthritis, Transferosomes, Drug delivery, Treatment, Topical route.*

IMPROVEMENT OF SOLUBILITY AND DISSOLUTION PARAMETERS OF BCS CLASS II DRUG BY HYDROTROPISM AND CCD APPROACH

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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.*

A REVIEW ON NANOSTRUCTURED LIPID CARRIER FOR THE TREATMENT OF CANCER

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Abstract

Nanostructured Lipid Carriers (NLCs) is a novel type of drug delivery system. They are binary system which is stable in a different environment. Nanostructured Lipid Carrier comprises a blend of solid and liquid lipids as a core matrix. NLCs have aggravated the incessant impulsion for developing safe and valuable drug delivery systems due to their exceptional physicochemical and biocompatible characteristics.Additional utilization NLCs is crucial because of overcoming barriers enclosed by the technological procedure of lipid-based nanocarriers' formulation and raised data on the core mechanisms of their transport via numerous routes of administration. NLC it can be easily used as a carrier for drugs via different routes of administration such as oral, parenteral, ocular, and nasal. It imparts many advantages oversolid lipid nanoparticles (SLN)'s such as increased solubility and stability, improved permeability and bioavailability, enhanced drug loading capacity,

drug release modulation flexibility, reduced adverse effects, prolonged half-life, and tissue-targeted delivery. The efficacy of current standard chemotherapy is suboptimal due to the poor solubility and short half-lives of chemotherapeutic agents, as well as their high toxicity and lack of specificity which may result in severe side effects, noncompliance and patient inconvenience. The application of nanotechnology has revolutionized the pharmaceutical industry and attracted increasing attention as a significant means for optimizing the delivery of chemotherapeutic agents and enhancing their efficiency and safety profiles.NLCs are lipid-based formulations that have been broadly studied as drug delivery systems. They have a solid matrix at room temperature and are considered superior to many other traditional lipid-based nanocarriers such as nanoemulsions, liposomes and SLNs due to their enhanced physical stability, improved drug loading capacity, and biocompatibility.This review highlights the NLC with a focus on the structure, preparation methods, characterizationtechniques with special emphasis on their applications as delivery systems for chemotherapeutic agents and different strategies for their use in cancer targeting.

Keywords*: NLC, SLN, Chemotherapeutic agents, Cancer.*

SOLID LIPID NANOPARTICLES SYSTEM: AN OVERVIEW

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Abstract

Development of novel drug delivery has been a keen interest of the researchers. The aim of novel drug delivery includes maximal drug bioavailability, tissue targeting, controlled release kinetics, minimal immune response, ease of administration for patient compliance, and the ability to deliver traditionally difficult drugs such as lipophiles, amphiphiles and biomolecules. Colloidal drug carriers are the most acceptable approach to attain the goals of the novel drug delivery system. Colloidal drug carriers include vesicular drug carriers and microparticulate drug carriers, which are successful to prolong the existence of the drug in systemic circulation and in reducing toxicity. Consequently, several colloidal drug carriers such as liposomes, niosomes, pharmacosomes, virosomes, immunoliposomes, microparticles, nanoparticles, albumin microspheres were developed, but these carriers still have some drawbacks. So, to overcome these drawbacks, Solid Lipid Nanoparticles (SLN) were introduced as a new class of colloidal drug carries. The focus of this review is to bring out the overview, history, superiority, various formulation techniques, effect of various constituents, stability, in-vivo performance of Solid Lipid Nanoparticles (SLNs).

Keywords*: Bioavailability, Tissue targeting, Controlled release kinetics, Solid Lipid Nanoparticles (SLNs).*

EXPLORING LIPOSOMES FOR THE TREATMENT OF SKIN DISORDER

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Abstract

The cutaneous route is attractive for the delivery of drugs in the treatment of a wide variety of diseases. However the stratum corneum (SC) is an effective barrier that hampers skin penetration. Within this context, liposomes are vesicles comprising of spherical phospholipids making them useful for topical applications of drugs. Liposome research has been expanded considerably and nowadays, it is possible to construct a wide range of liposomes varying in size, phospholipids composition and surface characteristics .Liposomes can be used as carriers for hydrophilic as well as lipophilic therapeutic agents because of their amphipathic character. They may improve stabilization of instable drugs by encapsulating them. In dermatological diseases, the topical application of liposomes has proven to be of high therapeutic value. Moreover liposomes have the potential to target drugs into the pilosebaceous structures so can be used for treatment of hair follicle and sebaceous gland disorders. Finally, several skin conditions, including acne, melasma, skin aging, fungal infections and skin cancer, have benefited from liposomal topical delivery of drugs, with promising in vitro and in vivo results. However, despite the existence of some clinical trials, more studies are needed to be conducted in order to explore the potential of liposomes in the dermatological field.

Keywords*: liposomes; therapeutic; targeted drug delivery; dermatological diseases; applications.*

UNVEILING THE POTENTIAL OF NANOENGINEERED LIPID CARRIERS FOR DERMATOLOGICAL CONDITIONS: AN ADAPTABLE PHARMACEUTICAL DELIVERY PLATFORM

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Abstract

Nanoengineered lipid carriers (NLCs) have risen as a revolutionary platform in the field of drug delivery, reshaping a new era of pharmaceuticals characterized by adaptability and precision. The challenge of dermatological conditions necessitates innovative pharmaceutical delivery systems to effectively treat these ailments while minimizing side effects and maximizing patient compliance. Within the field of dermatology, nanoengineered lipid carriers (NLCs) have emerged as an exceptionally versatile and promising solution, presenting a platform with substantial potential for delivering therapeutic agents. NLCs, lipid-based nanoparticles, amalgamate the strengths of conventional lipid carriers with those of solid nanoparticles. Their composition, which includes a mixture of solid and liquid lipids, enables them to overcome various barriers

encountered during dermal drug delivery. Key factors influencing NLC formulation, such as lipid types, surfactants, and size optimization, are discussed in detail. These factors not only determine the physicochemical properties of NLCs but also influence their drug-loading capacity and release kinetics. One of the remarkable attributes of NLCs is their ability to encapsulate a wide range of therapeutic agents, from hydrophilic to hydrophobic compounds, proteins, and nucleic acids, making them highly adaptable for treating different dermatological conditions. NLCs excel in facilitating controlled and sustained drug release, ensuring prolonged therapeutic effects while reducing the frequency of administration. Furthermore, NLCs exhibit remarkable potential in overcoming the formidable skin barriers, such as the stratum corneum and epidermal lipids, that often limit drug penetration. They enhance drug permeation by modifying the skin's microenvironment and promoting drug partitioning into the epidermis and dermis. This explores various applications of NLCs in addressing specific dermatological conditions, including but not limited to acne, psoriasis, atopic dermatitis, and skin cancer. Additionally, it discusses recent advancements in NLC-based strategies, including targeted delivery, combination therapies, and stimuli-responsive NLCs for on-demand drug release. In conclusion, NLCs have the potential to transform the way we approach the management of skin diseases, offering improved therapeutic outcomes and a better quality of life for patients. Their ability to encapsulate a wide range of therapeutic agents, improve drug penetration, and achieve controlled release positions them as a promising solution for enhancing the efficacy and patient compliance of dermatological treatments.

Keywords*: Nanoengineered lipid carriers, Dermatological conditions, Drug delivery, Skin barriers, Pharmaceuticals, Adaptable Platform, Controlled release, Targeted delivery.*

EXPLORATION OF PRECLINICAL EVIDENCE AND MECHANISMS OF NEUROPROTECTION IN CEREBRAL ISCHEMIA

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Abstract

Remote ischemic preconditioning (RIPC) is an intrinsic protective phenomenon in which 3 to 4 interspersed cycles of non-fatal regional ischemia followed by reperfusion to the remote tissues protect the vital organs including brain, heart and kidney against sustained ischemia- reperfusion-induced injury. There is growing preclinical evidence supporting the usefulness of RIPC in eliciting neuroprotection against focal and global cerebral ischemia-reperfusion injury. Scientists have explored the involvement of HIF-1 , oxidative stress, apoptotic pathway, Lcn-2, platelets-derived microparticles, splenic response, adenosine A1 receptors, adenosine monophosphate activated protein kinase and neurogenic pathway in mediating RIPC-induced neuroprotection. The present review discusses the early and late phases of neuroprotection induced by RIPC against cerebral ischemic injury in animals along with the various possible mechanisms.

Keywords*: RIPC, Neuroprotection, Brain, Platlets, Pathway.*

SYNTHESIS, MOLECULAR DOCKING AND BIOLOGICAL EVALUATION OF NOVEL PYRANO-QUINOLINE DERIVATIVES

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Abstract

According to the recent survey cancer is a leading cause of death, nearly one in six deaths in 2020. The very common are breast, lung, colon and rectum and prostate cancers. These cells have uncontrolled proliferation. Pyrano-quinoline scaffold is composed of heterocyclic rings-Tetrahydroquinoline and Tetrahydropyran. The tetrahydroquinoline is a semihydrogenated derivative of quinolone, which is effective as antimalarial, local anesthetic, and as anticancer drug. Tetrahydroquinoline and its derivatives are used to combat many deadly diseases, like cancer, tuberculosis, Parkinson's disease.Tetrahydropyran is a saturated heterocyclic six membered ring with five carbon atoms and one oxygen atom, is widely used as protecting groups for alcohol. Tetrahydropyran derivatives or compounds consisting of this scaffold is useful in cancer and neuronal disease. Molecular docking was performed for breast cancer PDB Id- 6WOK. The 11 designed pyrano-quinoline derivatives showed good dock score of -9.274, -9.206, - 9.156 and so on when docked against the target protein 6WOK. The designed molecule was synthesized in the laboratory usinganaline, aldehyde, terahydropyran and $TrBF_4$ as a Lewis acid catalyst via Aza-Diels Alder reaction. The synthesized compounds were purified using column chromatography and the stickiness of the compound were removed usinf hexane. The synthesized compounds were confirmed using analytical techniques like FTIR, LC-MC, and NMR. After structural conformation the prepared compounds were analysed for their biological activities. Antimicrobial assay for gram positive bacteria *Bacillus subtilis* NCIM-2063 and gram negative bacteria *Escherichia coli* NCIM-5011 was done but it did not show any potent activity.SRB assay was performed for MCF-7 cell line (breast cancer) and compounds P2, P4, P5, P7, and P8 showed better result and is more potent than the standard drug carboplatin. Further anti-cancer activity of the compounds can be investigated.

Keywords*: Docking, Drug design, Derivatives, Pyrano-quinoline.*

NANOSTRUCTURED LIPID CARRIERS: A GROUNDBREAKING APPROACH FOR TRANSDERMAL DRUG DELIVERY

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Abstract

lipid carriers (NLCs) are innovative pharmaceutical formulations that consist of lipids, surfactants, and co-surfactants that are both physiological and biocompatible in nature. Over the course of its development, the second-generation lipid nanocarrier NLC became known as a viable alternative to the first generation of nanoparticles. This review article focuses on the structure, content, different formulation processes, and characterisation of NLCs, which are essential for developing a reliable drug delivery system. Nanoparticle lipid carriers has significant promise within the pharmaceutical and cosmetics industries because to their wide range of therapeutic benefits, including skin hydration, occlusion, improved bioavailability, and targeted delivery to the skin. This review aims to evoke an interest in the current state of art NLC by discussing their promising assistance in topical drug delivery system. The key attributes of NLC that make them a promising drug delivery system are ease of preparation, biocompatibility, the feasibility of scale up, non-toxicity, improved drug loading, and stability.

Keywords*: Nano-structured lipid carriers, Biocompatible and Bioavailability.*

EMERGING BIOMEDICAL APPLICATIONS OF HYBRID HYDROGELS

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Abstract

Hydrogels have been used in biomedical applications for decades, and their engineering potential continues to expand as chemistry and biology advances. However, hydrogels' biological uses are currently limited because to their weak mechanical characteristics and inadequate adhesion. People have investigated novel ways of chemical and physical cross-linking, built new composite hydrogels, and proposed effective energy dissipation mechanisms to broaden the area of its application. New techniques have resulted in the development of more complex hydrogels that combine both synthetic and natural polymers as well as functional domains enabling customizable release kinetics, controlled cell response, and eventual usage in clinical and research applications in biomedical practise. Due to their unique features and many uses, hybrid hydrogels, a type of sophisticated biomaterials, have received substantial interest in the field of biomedical engineering. These hydrogels are often made up of a blend of natural and synthetic polymers, combining the best qualities of each. This integration produces a material with higher mechanical

strength, variable porosity, and better biocompatibility, making it ideal for a variety of biomedical applications. This research focuses on current developments in hybrid hydrogels and their applications in biomedical research. Recent advancements in the sector have provided promising methodologies for the production of physiologically relevant hybrid hydrogel materials that might be used in drug discovery, drug/gene delivery, and regenerative medicine. When compared to ordinary hydrogels, the novel hybrid hydrogels have greatly increased in strength and consequently achieved additional properties in biological applications. Hybrid hydrogels are a promising class of biomaterials that have a wide range of uses in biomedical engineering. They are extremely adaptable for tissue engineering, drug delivery, biosensing, and 3D bioprinting applications due to their ability to combine the benefits of natural and synthetic components, paving the door for creative solutions to challenging biomedical issues.

Keywords*: Hydrogels, Biomaterial, Biocompatibility, Drug delivery.*

DECIPHERING THE ROLE OF LIPOSOMAL IN DRUG DELIVERY SYSTEM

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Abstract

Liposomes, the most widely studied nano-drug carriers in drug delivery, are sphere-shaped vesicles consisting of one or more phospholipid bilayers. Compared with traditional drug delivery systems, liposomes exhibit prominent properties that include targeted delivery, high biocompatibility, biodegradability, easy functionalization, low toxicity, improvements in the sustained release of the drug it carries and improved therapeutic indices. In the wake of the rapid development of nanotechnology, the studies of liposome composition have become increasingly extensive. The molecular diversity of liposome composition, which includes long-circulating PEGylated liposomes, ligand-functionalized liposomes, stimuli-responsive liposomes, and advanced cell membrane-coated biomimetic nanocarriers, endows their drug delivery with unique physiological functions. There are several new approaches to liposome preparation based on drug-lipid interactions and liposome assembly mechanisms, including inhibition of rapid liposome removal through control of particle size, charge, and surface hydration. Most clinical applications target liposomal drug delivery tissues with or without expression of target recognition molecules on the lipid membrane. These range from 0.05 to 5.0 mm. Mechanical dispersion methods, solvent dispersion methods, and detergent removal methods are some of the convection techniques used for liposome preparation and size reduction. Liposomes can be classified by size, charge, lamellae, and other properties based on differences in manufacturing processes and lipid composition. With numerous advantages, liposomes prove their uniqueness in safe drug delivery in various areas of pharmacy and medicine.

Keywords*: Liposomes, drug delivery systems, phospholipids, Bilayered.*

METHOD DEVELOPMENT AND VALIDATION OF DISSOLUTION TEST FOR IMMEDIATE RELEASE TABLETS USING HPLC

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Abstract

Immediate release tablets used in market shows very fast Dissolution profile and release of Active pharmaceutical ingredient more than 85% of its label claim within 30 min. The bioavailability of oral dosage form depends on their drug release profile, dissolution and its permeability through Gastrointestinal Tract. Method development is required to determine quality of Active pharmaceutical ingredient of immediate release tablets, Different dissolution parameters used in USP- Apparatus. Using High performance liquid chromatography is more sophisticated, Advanced and accurate for Qualitative and quantitative determination of Dissolution apparatus sample. Different Validation test are perform for determination of required Dissolution method are accurate, precise and reliable. Without method development and validation, it is impossible to have clinical trials approval and market authorization.

Keywords: Method development and validation, Dissolution apparatus, HPLC, ICH guidelines, Immediate release tablets.

NANOPARTICLES AS A POTENTIAL CARRIER FOR DELIVERY OF ANTITUBERCULAR DRUGS: APPLICATION CHALLENGES FND FUTURE PROSPECTIVES

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Abstract

Tuberculosis (TB) is one of the most devastating lung diseases all over the world. It has been ranked the 13th leading cause of mortality and the most infectious disease ranking second after COVID-19 till date. The causative organism behind TB infection is Mycobacterium tuberculosis (Mtb). It is mainly an airborne disease since Mtb spreads through airborne droplets between individuals. Major challenges encountered in treatment of TB is closely related to prolonged duration of therapy, which leads to poor adherence, loss of follow-up and inadequate drug regimen resulting in treatment failure and drug resistance. A lot of research is going on and many drugs with less toxicity and better efficacy are in pipeline. There is a growing need to have better delivery systems in order to reduce resistance and altering the mechanism so that it may be more effective in less duration of time and may halt the spread of this disease. Considering the above, nanotechnology holds tremendous

potential for the development of more effective and compliant medicines. NPs are capable of target drug delivery of wide range of drug molecules, high loading capacities, possibility of administration by different routes such as oral, inhalational, parenteral and topical with reduced side-effects and better patient compliance. NPs can be broadly classified into four major groups including solid-lipid particulate dosage forms, emulsion-based systems, vesicular systems and miscellaneous structure. Also, extensive research is going on towards development of vaccines against Mtb which will further halt the spread, decrease morbidity and mortality due to this disease. This paper has attempted to discuss pathogenesis of TB and drug treatment strategies employed to treat this disease with special emphasis on potential applications of lipid-based nanoparticles so as to make the drugs more efficacious as compared to the conventional methods.

Keywords*: Pulmonary TB, MDR, XDR-TB, Nanoparticles, Liposomes, Niosomes, Nanovaccine.*

CHALCONES IN MEDICINE: UNVEILING THEIR PHARMACOLOGICAL PROPERTIES

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Abstract

Chalcones are flavonoid compounds resulting from aldehyde and ketone reactions. This study explores the pharmacological potential of modified chalcones produced through two distinct processes: the reaction of benzoin (ketone) and cinnamaldehyde (aldehyde) with sodium hydroxide in ethanol, and a similar process involving camphor (ketone) and cinnamaldehyde. Chalcones can be synthesized via the acetate and shikimate pathways. Their therapeutic properties include anti-inflammatory, anti-microbial, anti-fungal, anti-cancer and anti-diabetic effects. Molecular modifications enhance their anti-proliferative activity by inhibiting tyrosine protein kinase-associated receptor cell lines. Nanotechnology, such as chalcone-loaded liposomes and chalcone capped gold nanoparticles, has shown promise in cancer management. In summary, chalcones, a subset of flavonoids exhibit diverse pharmacological attributes, making them valuable candidates for various therapeutic applications, especially when coupled with nanotechnology-based delivery systems.

Keywords*: Chalcones, Phenolic compounds, Tyrosine protein, Cancer cell lines.*

MEDICATED CHEWING GUM FOR MOUTH CAVITY PROBLEMS

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Abstract

Medicated chewing gum is a novel technique used as drug carrier to deliver the neutraceuticals and pharmaceutical constituents. It is basically solid and unit dosage form which is made to release the medicament slowly by the chewing process. It releases the medicament in oral mucosa by chewing not by dissolving. It is labelled with the instruction not to swallow because it would have to remove from the mouth after some time. Medicated chewing gum contains one or more active ingredients and excipients carried by suitable gum base. It is brilliant drug delivery system that can be administered without any help of water. It can be used for various problems like mouth freshening, smoking cessation, travel illness, throat infections, mouth ulcers and dental cavity. In this study, we prepared medicated chewing gum for problems like halitosis, mouth cavity problems, mouth ulcers, throat infection. We used gum base and added the active ingredients such as; chamomile extract, peppermint oil, orange oil, cinnamon oil, cardamom and guava extract. These ingredients are used for the problems mentioned above. We evaluated the medicated chewing gum for parameters such as; hardness, stickiness, plasticity, colour, weight variation. Other than therapeutic benefits medicated chewing gum offers many advantages like it give attractive and elegant look, acceptable taste and odour, it can formulate in many flavors which give joy to patients and most important it is highly acceptable by children and patients who have problem to swallow tablet.

Keywords*: Medicated chewing gum, Halitosis, Throat infection, Novel drug delivery system.*

BENZIMIDAZOLE DERIVATIVE: AN EMERGING CANDIDATE TO TREAT DIABETES AS ALPHA GLOCOSIDASE INHIBITOR

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Abstract

Diabetes mellitus is the major metabolic disorder affecting a large population of people around the world and also develop severe associated diseases like kidney disorders, heart and nervous system diseases, leg amputation and retinopathy. Currently various drugs are in the marketed to treat diabetes but they are failing in containment of this disorder. So in

the present scenario, there is an important need for novel and potent antidiabetic agents. Postprandial hyperglycemia is the main cause of developing both type of diabetes in the world. This can be treated by delaying the carbohydrate absorption the blood. The main strategy which is used for delation of carbohydrate metabolism is the inhibition of alpha glucosidase which are present on the GIT membrane. Various benzimidazole derivatives have shown their effect to delay the absorption of carbohydrate metabolism. This article includes the details of various benzimidazole derivates who were discovered as potent alpha glucosidase inhibitors. This article also includes the future strategies to discover new benzimidazole derivatives as alpha glucosidase inhibitors.

Keywords*: Diabetes mellitus, Alpha glucosidase inhibitors, Kidney disease.*

PHARMACOVIGILANCE OF HERBAL DRUGS

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Abstract

The importance of herbal remedies in pharmacovigilance systems is becoming one of the primary tasks, due to the constantly ascending potential of herbal products and herbal medicines worldwide. Like all drugs, herbal are not free of risk and many studies suggest for potential adverse reactions and interactions. In the body various physiological effects are produced by active ingredients of plants. Pharmacovigilance encompasses the science and practice related to assessment, detection, prevention and understanding of adverse effects of drugs or any other possible drug related problems. To compete with the growing pharmaceutical market, there is an exigency to develop and scientifically validated more medicinally useful products. So, pharmacovigilance of herbal medicines involves monitoring and assessing the safety of herbal products to ensure they do not cause harm to consumers. This process includes data collection, reporting, analysis, risk assessment regulatory action, monitoring their safety helps protect public health and ensure that consumers can make informed choices when using herbal remedies.

Keywords: *Herbal drugs, Pharmacovigilance, Adverse interaction, Herbal products.*

HONEY AS A POTENTIAL PREBIOTIC: A REVIEW OF ITS EFFECTS ON GUT MICROBIOTA COMPOSITION AND FUNCTION

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Abstract

Honey, a natural sweetener derived from plant nectar, has gained attention for its potential prebiotic properties and its impact on gut microbiota composition and function. This review systematically examines current scientific literature to elucidate the effects of honey on gut microbiota. Honey is a complex mixture of sugars, polyphenols, oligosaccharides, and other bioactive compounds that may selectively stimulate the growth and activity of beneficial gut bacteria, acting as a prebiotic. Honey modulates the gut microbial composition by promoting the growth of Lactobacillus and Bifidobacterium, known for their probiotic potential. Additionally, honey exhibits antimicrobial properties against pathogenic bacteria, contributing to a favorable gut microbial balance. The prebiotic potential of honey is attributed to its non-digestible oligosaccharides, including fructo-oligosaccharides (FOS) and insulin, which can reach the colon intact and serve as substrates for beneficial bacteria. These oligosaccharides encourage the production of short-chain fatty acids (SCFAs), particularly acetate, propionate, and butyrate, which play a vital role in gut health, metabolism, and immune modulation. Moreover, honey-derived polyphenols possess antioxidant and anti-inflammatory properties, potentially influencing gut microbiota and host health positively. In conclusion, honey exhibits promising prebiotic potential by modulating gut microbiota composition and function, promoting the growth of beneficial bacteria, and contributing to the production of SCFAs. Further research is needed to standardize honey composition and elucidate its specific mechanisms of action for optimal utilization as a prebiotic in human nutrition.

Keywords*: Honey, Prebiotic, Gut microbiota, Composition, Function.*

COMPARATIVE ASSESSMENT OF PERCENT YIELD AND PHYTOCHEMICAL SCREENING OF PROPOLIS COLLECTED FROM DIFFERENT ALTITUDES OF NORTH WESTERN INDIA

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Abstract

Honey bees collect the natural substance known as propolis from a number of plants, including leaf buds, gums, resins, conifer secretions, and poplar, palm, and pine trees.

Present study was designed to compare the percent yield and Phytochemistry of propolis according to the altitudinal variation collected from north western India. Following the collection of propolis samples and processed for dewaxination. After the dewaxination propolis samples were mixed with different solvents (70% ethanol, chloroform and water) and then boiled in water bath. Samples were filtered by using whatmann filter paper No. 1. The filtrate obtained was dried under vacuum evaporator and the stored at 4^{o}C till further use. Percent yield showed that Hydroalcoholic extract showed the higher percent yield in comparison to chloroform and aqueous extract. Qualitative screening revealed the presence of different phytochemicals such as polyphenols, flavonoid, flavones and flavonols, alkaloids, terpenes etc. Quantative results revealed that Hydroalcoholic extract higher concentration of flavonoids content as compare to polyphenolic content, flavones and flavonols content. Considering the results of present study it might be revealed that propolis collected from higher altitude showed significantly higher concentration of various phytochemicals like polyphenols, flavonoid, flavones and flavonols, alkaloids and terpenes.

Keywords*: Propolis, Qualitative physiochemical screening, Antimicrobial activity*

DENGUE: A SEASONAL INFECTION, AFFECT THE WORLD HEALTH SYSTEM

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Abstract

Dengue is a viral infection caused by the dengue virus (DENV), transmitted to humans through the bite of infected mosquitoes. About half of the world's population is now at risk of dengue with an estimated 100–400 million infections occurring each year. Dengue is found in tropical and sub-tropical climates worldwide. The disease is now endemic in more than 100 countries regions of Africa, the Americas, the Eastern Mediterranean, South-East Asia and the Western Pacific. The Americas, South-East Asia and Western Pacific regions are the most seriously affected, with Asia representing around 70% of the global disease burden. Rarely, dengue can be severe and lead to death. If symptoms occur, they usually begin 4–10 days after infection and last for 2–7 days. Symptoms may include: high fever (40°C/104°F) severe headache pain behind the eyes muscle and joint pains nausea vomiting swollen glands rash. Individuals who are infected for the second time are at greater risk of severe dengue. Severe dengue symptoms often come after the fever has gone away: severe abdominal pain persistent vomiting rapid breathing bleeding gums or nose fatigue restlessness blood in vomit or stool being very thirsty pale and cold skin feeling weak. Preventing mosquito bites is the best way to avoid getting dengue. There is no specific treatment for dengue. The focus is on treating pain symptoms. Acetaminophen (paracetamol) is often used to control pain. Non-steroidal anti-inflammatory drugs (NSAIDs) like ibuprofen and aspirin are avoided as they can increase the risk of bleeding.

Dengvaxia vaccine for people who have had dengue at least once and live in places where the disease is common. For people of severe dengue, hospitalization is often needed. The mosquitoes that spread dengue are active during the day. Lower the risk of getting dengue by protecting yourself from mosquito bites by using: clothes that cover as much of your body as possible mosquito nets if sleeping during the day, ideally nets sprayed with insect repellent window screens mosquito repellents coils and vaporizers.

Keywords*: Dengue, Mosquito, NSAIDs.*

A BRIEF OUTLINE ON NEEM (SARVA ROGA NIVARINI)

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Abstract

The legendary *Azadirachta indica* is commonly known as margosa or neem. In the Vedas, neem is mentioned as sarva roga nivarini, which means one that cures all ailments and ills. The medicinal benefits make the margosa the most valuable tree on earth. An earlier finding confirmed that neem and its constituents play a role in the scavenging of free radical generation and the prevention of disease pathogenesis. Quercetin and â-sitosterol were the first polyphenolic flavonoids purified from the fresh leaves of neem and were known to have anti-fungal and anti-bacterial activities. The impact of neem also increases over others due to its biological compounds, such as nimbidin, nimbolide gedunin, and mahmoodin. The margosa shows many biological activities like anti-oxidant activity, anti-fungal activity, anti-diabetic activity, anti-viral activity, anti-cancer activity, anti-malarial activity, anti-inflammatory activity, anti-pyretic activity, and analgesic activity. All parts of the neem tree - leaves, flowers, seeds, fruits, roots, and bark—have been used traditionally for the treatment of inflammation, infections, fever, skin diseases, and dental disorders. The role of neem has increased in the modern health care system due to its uncountable medicinal value. Various formulations are available on the market that contain active constituents of neem, and some of them are in trial phases. Thus, the review of this summary is that nature has a cure for every illness.

Keywords*: Azadirachta indica, Sarva roga nivarini, Margosa, Scavenging, Nimbolide.*

PDE7 (PHOSPHODIESTERASE 7): AN INFLAMMATORY ENZYME AND TARGET FOR ANTI-INFLAMMATORY THERAPY - A REVIEW

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Abstract

Phosphodiesterase 7 (PDE7) is an emerging enzyme that plays a pivotal role in the regulation of inflammatory processes within the human body. This review explores the

multifaceted role of PDE7 in inflammation and the promising potential of PDE7 inhibitors as anti-inflammatory agents. Inflammation is a complex immune response essential for defence against infections and tissue repair. However, dysregulated or chronic inflammation is associated with numerous diseases, including autoimmune disorders, neurodegenerative diseases, and cancer. PDE7, a member of the phosphodiesterase enzyme family, modulates intracellular levels of cyclic adenosine monophosphate (cAMP) and cyclic guanosine monophosphate (cGMP), critical second messengers involved in immune responses. This review delves into the cellular and molecular mechanisms by which PDE7 influences inflammation, highlighting its impact on immune cell function, cytokine production, and tissue damage. Additionally, we provide insights into the development and potential therapeutic applications of PDE7 inhibitors, which aim to restore the balance of cAMP and cGMP, thereby dampening excessive inflammation. Furthermore, we discuss recent advances in preclinical and clinical studies evaluating the efficacy and safety of PDE7 inhibitors, emphasizing their potential as a novel class of anti-inflammatory agents. Understanding the intricate involvement of PDE7 in inflammation and the development of PDE7 inhibitors represents a promising avenue for future research and drug development in the field of immunology and inflammation-related disorders.

Keywords*: PDE7, Phosphodiesterase, Inflammation, Inhibitors, Anti-inflammatory agents.*

PCOD (POLYCYSTIC OVARIAN DISEASE): AN OVERVIEW

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Abstract

Polycystic Ovarian Disease is known by many names and this is common lifestyle disorder that occurs in ladies aged 20-30. Every month, ovulation begins and the mid stage may egg is released. If there is no pregnancy then period comes after 14 days, this is called ovulatory cycle. This is repeated every month or due to hormone imbalance the egg does not grow in the ovary and does not reach ovulation and ovary is seen with damaged follicles. This is a mature egg and it looks like a fluid cyst. PCOD patient has two major hormone problem i.e., increase in androgen level in ovary and blood or second insulin which is a hormone to control sugar, its effects are not found in the cell or insulin level increase in body. Due to increase in androgen level in the body, ovulation problems occur and the quality of the egg deteriorated. Some symptoms of PCOD are: irregular period, heavy flow, facial hair growth, dark skin patches and diabetes. Treatment: weight loss, lifestyle modification.

Keywords*: PCOD, Polycystic Ovarian Disease, Disorder, Irregular, Periods.*

PYRROLOPYRIMIDINE: AN ANTI-CANCER SCAFFOLD AND INSIGHT INTO STRUCTURE ACTIVITY RELATIONSHIP- A MECHANISTIC REVIEW

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Abstract

After heart disease, cancer is the second most common cause of mortality. Cancer is the uncontrolled proliferation of cells. Neoplasms and malignant tumors are other words that are used. One characteristic of cancer is the quick development of aberrant cells that expand outside of their normal borders, infiltrate other body components, and eventually move to other organs. This process is known as metastasis. The main reason why cancer patients die is because of widespread metastases. Fused heterocycles are widely used in the field of medicinal chemistry because they have been shown to exhibit a variety of biological actions, including anticancer, antibacterial, antifungal, and anti-inflammatory effects. One of the main classes of fused heterocycles that receives a lot of attention in the literature is pyrrolopyrimidines. According to various investigations, the pyrrolopyrimidine molecule has a more powerful and diversified pharmacological profile than either pyrrole or pyrimidine nucleus alone. As anticancer medicines, various medicinal compounds based on the pyrrolopyrimidine scaffold have been created too far. Strong anti-cancer medications were discovered to include roxolitinib, tofacitinib, oclacitinib, and baricitinib. As multi-kinase inhibitors, several urea-based anti-cancer medications that have received FDA approval include Sorafenib, Regorafenib, and Linifanib. In addition, in the past three years, hundreds of investigations on the synthesis and activity of the pyrrolopyrimidine ring have been published. We have discussed the most recent developments in the medicinal chemistry of pyrrolopyrimidine derivatives in light of the aforementioned facts.

Keywords: *Pyrrolopyrimidine, Anti-cancer, Metastasis, FDA*.

DIABETES: PHARMACOLOGICAL AND NON-PHARMACOLOGICAL TREATMENT

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Abstract

Diabetes mellitus, a chronic metabolic disorder characterized by elevated blood glucose levels, poses a significant global health challenge. The management of diabetes involves a multifaceted approach that combines pharmacological and non-pharmacological interventions. This abstract provides a concise overview of the pharmacological and non-pharmacological treatments for diabetes. Pharmacological Treatment: Diabetes medications aim to regulate blood glucose levels and prevent complications. These include oral antidiabetic agents such as metformin,

sulfonylureas, and DPP-4 inhibitors, as well as injectable insulin therapy. Recent advancements in pharmacotherapy have introduced SGLT-2 inhibitors and GLP-1 receptor agonists, offering improved glycaemic control and cardiovascular benefits. Personalized treatment plans tailored to patients' needs and disease progression are crucial in achieving glycaemic targets while minimizing side effects. Non-Pharmacological Treatment: Lifestyle modifications play a pivotal role in diabetes management. Dietary interventions, focusing on balanced nutrition and portion control, are essential. Regular physical activity helps improve insulin sensitivity and weight management. Additionally, blood glucose monitoring, self-management education, and psychological support are integral components of non-pharmacological strategies. Behavioural changes, such as stress reduction and smoking cessation, contribute to overall diabetes control. Effective diabetes management relies on a holistic approach that integrates pharmacological and non-pharmacological treatments. Tailored interventions, regular monitoring, and patient education empower individuals to lead healthier lives while mitigating the risks associated with diabetes complications. Collaborative efforts among healthcare providers, patients, and families are vital in addressing the multifaceted challenges of diabetes management and improving the quality of life for individuals living with this condition.

Keywords*: Diabetes, Pharmacological, Non-Pharmacological, Treatment.*

PHARMACOLOGICAL MANAGEMENT OF NON-ALCOHOLIC FATTY LIVER DISEASE – A REVIEW

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Abstract

The most well-known long haul liver sickness is "non-alcoholic fatty liver infection." NAFLD is comparable to expanded liver related horribleness and mortality, however it likewise incorporates CVS illness, diabetes and non-liver-related danger. Nonalcoholic steatohepatitis (NASH) is a serious sort of NAFLD that is answerable for by far most of adverse results. Way of life Change and weight reduction can help for NASH, however they aren't regularly enough, and proof based outcomes are hard to obtain. Accordingly, there is a genuine requirement for (pharmacological) care. We take a gander at a portion of the recommendations and difficulties in improving pharmacological consideration in this overview. indeed, momentarily sum up how can be managed a portion of the medicine that are right now accessible for an assortment of side effects yet have shown guarantee in the treatment of NASH At long last, we sketch out, to a limited extent, the main medications/sorts of meds, for the most part dependent on their component of activity, that are at present being grown explicitly to treat NASH and that could before long prompt the accessibility of meds endorsed for non-alcoholic greasy liver Steatohepatitis.

Keywords*: Watchwords CVS infection, Diabetes, Hepatology, Pharmacological treatment, Non-alcoholic steatohepatitis.*

IN SILICO DRUG DESIGN: A PARADIGM SHIFT IN PHARMACEUTICAL RESEARCH

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Abstract

In recent times, computational methods have become a significant asset in modern pharmaceutical research, offering novel solutions to longstanding issues in the drug development process. Conventional drug discovery can be characterized by its protracted timelines, substantial expenses, and notable rates of failure. Conversely, in silico approaches leverage computational techniques to expedite the identification and refinement of potential drug candidates. This summary commences by emphasizing the limitations of traditional drug discovery, where the journey from identifying a target to obtaining clinical approval can span more than a decade and involve substantial financial investments. It underscores the pivotal role of in silico methods in addressing these challenges by providing a quicker and more cost-efficient means of pinpointing promising compounds. The essential components of in silico drug design encompass molecular modelling, virtual screening, and molecular dynamics simulations.

Keywords*: Drug design, Software, Modern pharmaceutical, Computational.*

HONEY AS CONTRIBUTORY SUBSTANCE IN BURNS AND WOUND MANAGEMENT

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Abstract

Honey is a naturally sweet material that honey bees make from plant nectar and honeydew. Since the beginning, it has been one of the most cherished and recognized natural foods and medicines. There are around 300 different types of honey, which are categorized according to its texture, processing, and nectar source. In addition to trace amounts of enzymes, proteins, minerals, amino acids, aroma compounds, vitamins, and polyphones, it is a highly concentrated solution of sugars that also contains over 180 traceable molecules. Wound healing is a complex process; the ultimate goal of this process is to repair skin barrier properties as soon as possible. Though progress in the development of new dressing continues there is not a single dressing that would be suitable for all types of wounds, so different kinds of wounds need different types of dressing. Wound healing is an extensive process but it can be delayed depending upon the disease condition such as Diabetic foot ulcer, Buruli ulcer, etc. Nowadays, during the development of antibiotic-resistant wound

infections, honey is getting attention to be used as wound dressing because of its broad spectrum and greater selectivity. Honey used to be a natural bioactive component from very past life due to its numerous therapeutic efficacies such as anti-bacterial, antioxidant, and anti-inflammatory effects on human health. Honey shows fast healing in different types of wounds, it may be because of its anti - anti-inflammatory and anti-oxidant properties. Honey shows a large variance in therapeutic components depending on their origin. Thus, the floral source of honey plays an important role in its biological properties. From a medical perspective, different types of honey are available in the market. So, it is critically important to choose the right type of honey for the optimal treatment outcome. Multiple bioactive compounds that are involved in therapeutic actions makes it to be used as a pure and natural form of honey rather than attempting to identify individual active component and use a synthesized copy of those. Keeping in view above mentioned points, the work on assessing the effect of honey on wounds and their management shall be taken up so that a herbal de novo formulation may be brought up for curing burns and wounds.

Keywords*: Honey, Wound, Healing, Health, Burn.*

MICRONEEDLES IN SMART DRUG DELIVERY

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Abstract

In biomedical setup, at large, and drug delivery, in particular, transdermal patches, hypodermal needles, and/or dermatological creams with the topical appliance are among the most widely practiced routes for transdermal drug delivery. Owing to the stratum corneum layer of the skin, traditional drug delivery methods are inefficient, and the effect of the administered therapeutic cues is limited. The current advancement at the microlevel and nanolevel has revolutionized the drug delivery sector. Particularly, various types of microneedles (MNs) are becoming popular for drug delivery applications because of safety, patient compliance, and smart action. Herein, we reviewed state-of-the-art MNs as a smart and sophisticated drug delivery approach. Following a brief introduction, the drug delivery mechanism of MNs is discussed. Different types of MNs, that is, solid, hollow, coated, dissolving, and hydrogel forming, are discussed with suitable examples. The latter half of the work is focused on the applied perspective and clinical translation of MNs. Furthermore, a detailed overview of clinical applications and future perspectives is also included in this review. Regardless of ongoing technological and clinical advancement, the focus should be diverted to enhance the efficacy and strength of MNs. Besides, the possible immune response or interference should also be avoided for successful clinical translation of MNs as an efficient drug delivery system.

Keywords*: Drug delivery system, Fabrication strategies, Influencing factors, Microneedles.*

MICROPARTICULATE AND NANOTECHNOLOGY MEDIATED DRUG DELIVERY SYSTEM FOR THE DELIVERY OF HERBAL EXTRACTS

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Abstract

There has been a growing interest in the scientific community to explore the complete potential of phytoconstituents, herbal or plant-based ingredients owing to a range of benefits they bring along. The herbal plants accommodate many phytoconstituents that are responsible for various activities such as anti-oxidant, antimicrobial, anticancer, anti-inflammatory, anti-allergic, hepatoprotective, etc. However, these phytoconstituents are highly sensitive to several environmental and physiological factors such as pH, oxygen, heat, temperature, humidity, stomach acid, enzymes, and light. Hence, there is need for the development of a drug delivery system that can protect the phytoconstituents from both internal and external conditions. In this regard, a microparticulate drug delivery system is considered amongst the ideal choice owing to its small size, ability to protect the environment-sensitive active constituents, in achieving sustained drug delivery, targeted drug delivery, protection of the drug from physiological conditions, minimizing drug-related side effects, etc.

Keywords*: Microspheres; herbal, Microcapsules, Novel drug delivery, Phytoconstituents.*

A REVIEW ON APPLICATION OF DIFFERENT POLYMERS IN CONTROLLED RELEASE MATRIX FORMULATIONS

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Abstract

Controlled release matrix tablet system is a significant tool for controlled and sustained release dosage forms because of their simplicity, increased safety margin of a potent drug, patient compliance and low cost than traditional drug delivery system. In recent years, great attention has laid on replacing conventional administration of drug by controlled rate delivery system. This kind of drug delivery has been at the centre of research because of its numerous advantages over conventional dosage. To control the drug release rate from the formulation, polymers are being used as the principle tool. Utilization of polymer is presently stretched out to controlled release drug delivery system. Polymers are obtained from natural source as well as synthesized chemically. This review aims on the discussion of different materials used to prepare matrix tablets, different types of matrix system that are currently being used and the drug release mechanism from the matrices.

Keywords: Controlled release, matrix system, synthetic polymer, biodegradable polymer

ROLE OF CHOLCHICINE EUTECTOGEL IN THETTREATMENT OF GOUT : A REVIEW

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Abstract

Gout, a form of inflammatory arthritis, is characterized by recurrent and excruciatingly painful attacks resulting from the deposition of urate crystals in joints. Colchicine, a time-tested medication derived from the autumn crocus (Colchicum autumnale), has been a cornerstone in the treatment of gout for centuries. This abstract offers a comprehensive overview of the novel therapeutic approach known as "Colchicine Eutectogel" in the treatment of gout disease. Traditional Colchicine: Historically, colchicine has been administered orally to manage acute gout flares and for prophylactic purposes. However, its use has been limited by gastrointestinal side effects, necessitating careful dosing and monitoring. Colchicine Eutectogel: The innovative development of Colchicine Eutectogel represents a promising advancement in gout therapy. This topical gel formulation, when applied to affected joints, provides a localized and targeted delivery of colchicine. By bypassing the digestive system, it mitigates gastrointestinal side effects while ensuring efficient drug absorption at the site of inflammation. Efficacy and Safety: Initial clinical trials have demonstrated the effectiveness of Colchicine Eutectogel in rapidly alleviating gout pain and inflammation, comparable to traditional oral colchicine. Furthermore, its localized application reduces the risk of systemic toxicity. The gel's ease of use and patient-friendly application make it an attractive option for gout management. Future Implications: Colchicine Eutectogel presents a promising alternative in the treatment of gout, offering the potential to enhance patient compliance and minimize adverse effects associated with traditional colchicine use. As further research and clinical trials are conducted, this novel formulation may play a pivotal role in improving the quality of life for individuals suffering from gout disease. Its development represents a noteworthy advancement in the management of this debilitating condition.

Keywords*: Gout, Colchicine, Inflammation, Eutectogel.*

QUANTITATIVE PHYTOCHEMICAL SCREENING OF PROPOLIS COLLECTED FROM LOWER AND HIGHER ALTITUDES

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Abstract

Propolis is a mixture of numerous plants resinous secretion and then mixed with salivary enzymes such as (Glucose-6-phosphatase, Acid phosphatase, Adenosine triphosphatase, Succinic dehydrogenase) secretions called "Bee-glue" which is a wax like substance present

in hives and used by honey bees. Present study was designed to evulate the quantative phytochemical screening of propolis collected from higher and lower altitudes. Propolis samples were mixed with solvents 70% ethanol and then boiled in water bath. Samples were filtered by using whatmann filter paper No. 1. The filtrate obtained was dried and the stored at $4^{o}C$ till further use. Quantative screening revealed that ethanolic extract of propolis collected from higher altitude was found rich in various biologically important phytochemicals such as flavonoids, polyphenols, flavones and flavonols in comparison to propolis collected from lower altitude. Therefore, it might be inferred that propolis collected from higher altitude might be used for the formulation of different health ailments.

Keywords*: Propolis, Phytochemical assessment, Altitude, Ethanol.*

NANOFIBERS FOR TRANSDERMAL DRUG DELIVERY

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Abstract

Transdermal drug delivery systems (TDDSs) have provided many priorities over other administration routes, despite their advantages, there are some limitations regarding TDDSs, including those dedicated to the use of hydrophobic drugs. The emergence of novel nanostructures has presented various opportunities to develop advanced TDDSs to overcome the challenges on using these systems. Polymeric nanofibers present a unique structure for drug delivery applications due to their large loading capacity and ease of manipulation and functionalization. Natural-based polymeric nanofibers and synthetic polymeric nanofibers can both be used for transdermal drug delivery. Due to their favourable features, namely good biocompatibility, biodegradability, and low toxicity, natural polymeric nanofibers have attracted considerable interest over synthetic nanofibers. However, due to biosphere sources scarcity and low flexibility, they are only used sparingly. Hence, the co-use of natural and synthetic polymers has been suggested to develop efficient TDDSs. So far, different methods have been proposed for polymeric nanofibers fabrication, in which electrospinning has been shown to be the most robust and flexible technique, particularly for natural polymers.

Keywords*: Drug delivery systems, Nanofibers, Naturals.*

ROLE OF GUT HORMONES IN DIABETES MELLITUS

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Abstract

Diabetes mellitus is a lifestyle -disease involving a group of metabolic disorders characterized by hyperglycaemia. The Etiology involves direct or indirect deficiency of insulin hormone, either because of impaired insulin secretion, impaired insulin action, or both. Diabetes mellitus is a major contributor to mortality worldwide. It is dreaded for the various microvascular and macro vascular complications it brings. The micro vascular complications include neuropathy, nephropathy and retinopathy while the macro vascular complications include stroke, peripheral vascular disease and cardiovascular disease. The prevalence of Type - 2 diabetes mellitus is steadily rising globally, and it has become a serious health concern. The gut hormones are a group of hormones secreted by enteroendocrine cells in the stomach, pancreas and small intestine that control digestion of food. Gastrointestinal (GIT) hormones are proteinaceous in nature and are extensively linked to glucose tolerance and glycemic control in human body. Gut hormones are regulated by the autonomous nervous system. They transmit information about the metabolic state of the stomach (food intake, famine, and nutrient composition) to the brain. The function s of gut hormone secretion, and tissue - specific hormone sensitivity are subsequently controlled by regulation of the complex brain pathways. The gut -brain axis is an essential regulator of energy metabolism and hyperglycaemia. Gut hormones have emerged as essential regulators of energy homeostasis. Deregulation of gut hormone physiology is increasingly implicated in obesity pathogenesis and the compensatory biological responses driving weight regain following energy restriction. Furthermore, gut hormones are among key mediators of the weight loss following Rouxen-Y gastric bypass and sleeve gastrostomy, the bariatric procedures which remain the most effective treatment for severe obesity. Gut hormones which are involved in the diabetes mellitus include Incretin (GIP, GLP -1) Cholecystokinin (CCK), Gastrin , peptide YY, and Insulin -like peptide 5 (INS L -5) .

Keywords*: Diabetes mellitus, Gut hormones, GIT Hormones , Insulin, Incretin.*

INSIGHTS INTO A RARE HAEMATOLOGICAL DISORDER: UNRAVELING DIAMOND-BLACKFAN ANAEMIA

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Abstract

Diamond Blackfan anaemia (DBA) is an uncommon congenital hypoplastic anaemia that often manifests in childhood as a gradual pallor. DBA is characterised by aplasia of red blood cells, as well as skeletal deformities and low stature, which often occur soon after

birth. In babies, it usually manifests as severe anaemia, as well as craniofacial deformities, poor development, and other limb and visceral abnormalities. A bone marrow smear is used to diagnose the condition, which reveals a lower number of erythroid precursors but a normal myeloid and megakaryocytic cell population. Haematologically, the patient has normochromic, normocytic, or macrocytic anaemia. The white cell count is normal or slightly lower, whereas the platelet count is normal or slightly higher. In up to 50% of instances, congenital abnormalities are present. Furthermore, the majority of the patients show raised mean corpuscular volume (MCV), enhanced erythrocyte adenosine deaminase activity (eADA), and chronically elevated foetal haemoglobin in their test results (Hgb F). It's a ribosomopathy, which means it's caused by genetic mutations that disrupt ribosome synthesis. This causes apoptosis and erythropoietic failure by generating a cellular deficiency in erythroid precursors. The first DBA gene, RPS19, was discovered to be mutated in 25% of probands with both sporadic and familial. DBA serves as a reminder of the complexities of the human body. The management of DBA requires a collaborative effort between patients, their families, healthcare providers, and researchers.

Keywords*: Diamond Blackfan Anaemia, Hypoplastic anaemia, normochromic anaemia, mean corpuscular volume, ribosomopathy.*

PLANT EXTRACT MEDIATED GREEN SYNTHESIS AND SPECTRAL CHARCTERISATION OF MANGANESE OXIDE NANOPARTICLE-DOPING WITH ZINC AND GADOLINIUM: UTILIZING THE EXTRACT FROM *PINUS ROXBURGHII* NEEDLES, ASSESS THE ANTIBACTERIAL CAPABILITIES THROUGH BACTERIA

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Abstracts

The particle size and the substances utilized in their manufacture have a significant impact on the therapeutic and physicochemical properties of nanoscale materials. The tiny object and their therapeutic qualities also greatly benefit from a variety of forms, including rods, spheres, ovals, and Chemical techniques can be used to create teardrop shapes. Nanoparticles in the shape of triangles and hexagons have been created. with the use of pine cone extract (PCE). Absorption of UV-Vis spectroscopy, SEM-EDS, TEM, FTIR, and X-ray diffraction investigations were used to characterize the nanoparticles. The anisotropy of the nanoparticle shape causes the particles to absorb a lot of near-infrared light. The use of highly anisotropic particles is widespread, especially in health and agriculture. By using the agar well diffusion method, the antibacterial activity was examined against bacterial species. This review also discusses analytical techniques for the characterization of Mgo NPs. Furthermore, recent advances in the application of

biosynthesized Mgo NPs from herbal plants as therapeutic agents against bacteria, fungi, and tumors are considered.

Keywords: SEM-EDS, TEM, Green Technology, Mgo NPs.

RBC DRUG DELIVERY SYSTEM: A STRATEGIC APPROACH

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Abstract

Drug delivery using natural biological vectors, is an emerging trend in the pharmaceutical domain. RBCs are stable, biocompatible, robust biological vectors, and have a long lifespan. Erythrocytes securely transport potent antibiotics to specific E.coli infection sites. A need for such research arises from the ongoing antibiotic resistance crisis. The scientists target the bacterial membrane in response to antibiotics. This research added a novel technique by altering the basic properties of the bacterial membrane with synthetic lipid molecules and converting it to a modified hybrid membrane. The strategic approach initiates functionalizing red blood cells by using them as drug carriers. These drug carriers transport certain drug molecules and anchor proteins to these membranes that target bacterial receptors. The updated research report provides supporting information for the effectiveness of Erythrocytes as potent antibiotic drug carrier. The aim of this study is focused on the efficacy of RBCs as a drug carrier for potent antibiotics. The information gathered from published articles. The authentication of data is confirmed with the help of medical software such as Medscape. This blood delivery system shows promising results for potent antibiotics. Researchers concluded the study with successful results. Red blood cells are the smart blood delivery system in reducing antibiotic resistance.

Keywords*: E. coli, Erythro-Pmb, Erythrocytes, Polymixin B, Smart blood.*

SEXUALLY TRANSMITTED INFECTIONS AND THEIR IMPACT ON REPRODUCTIVE HEALTH

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Abstract

Sexually transmitted infections (STIs) represent a global health concern, involving the transmission of microorganisms between sexual partners through various types of sexual interactions, including oral, anal, and vaginal contact. During pregnancy, childbirth, and breastfeeding, several STIs possess the potential for vertical transmission from mother to child, notably HIV. Eight primary microorganisms are chiefly responsible for STIs. Presently, syphilis, gonorrhea, chlamydia, and trichomoniasis can be effectively treated.

Additionally, hepatitis B, herpes simplex virus (HSV), human immunodeficiency virus (HIV), and human papillomavirus (HPV) pose as life-threatening viral infections transmissible through sexual contact. A surge in newly emerging diseases acquired through sexual activity, such as monkeypox, Shigella sonnei, Neisseria meningitidis, Ebola, and Zika, is being observed. Moreover, previously neglected STIs like lymphogranuloma venereum are resurging. STIs have immediate repercussions on reproductive health, leading to complications like infertility, cancer, and pregnancy-related issues. Additionally, STIs amplify the vulnerability to HIV acquisition. Untreated individuals often suffer severe consequences, encompassing financial burdens, health deterioration, physical impairments, and psychological disorders. Effective education and the consistent use of protective measures play pivotal roles in STI prevention. Addressing this issue necessitates public health professionals to prioritize the widespread adoption of proven strategies for STI prevention, screening, diagnosis, and treatment. This paper aims to provide scientific insights into the profound impact of STIs on reproductive health.

Keywords*: Sexually transmitted infections, Reproduction, Microorganisms, Infertility.*

NIPAH VIRUS: A LETHAL ZOONOTIC PATHOGEN

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Abstract

Nipah virus (NiV) stands as a formidable zoonotic pathogen that has garnered global attention due to its high mortality rate and potential for causing outbreaks with severe public health implications. Belonging to the Henipavirus genus, NiV primarily circulates in fruit bats, particularly of the Pteropus genus, which serve as natural reservoir hosts. The pathophysiology of NiV infection is complex, involving transmission from bats to intermediate hosts and, subsequently, to humans, leading to a range of clinical manifestations, including respiratory and neurological symptoms. NiV transmission occurs primarily through direct contact with infected animals or their contaminated fluids. Human-to-human transmission is also possible, with close contact facilitating the spread. NiV enters host cells, replicates efficiently, and spreads, using its RNA genome to produce viral proteins and genetic material. The host's immune system responds to the infection, but NiV can evade the immune response, contributing to disease severity. NiV infection manifests with a range of symptoms, including fever, cough, and acute respiratory distress syndrome (ARDS), encephalitis, and multi-organ dysfunction. Diagnosis involves detecting viral RNA or antibodies in patient samples. While there is no specific antiviral treatment, supportive care is vital. Measures include isolating infected individuals, contact tracing, and efforts to reduce human-animal contact. Research continues into NiV vaccines and antiviral treatments. In summary, Nipah virus poses a significant threat to public health, necessitating vigilance, robust surveillance, and research to better understand its

pathophysiology and develop effective prevention and treatment strategies. NiV outbreaks demand a coordinated, multidisciplinary response to minimize the impact of this deadly zoonotic pathogen on human health and well-being.

Keywords*: Nipah Virus, ARDS, Encephalitis, RNA Antibodies.*

INDUSTRY BASED STERILIZATION TECHNIQUE EQUIPMENT

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Abstract

Sterilization is a process in which we kill or eliminate microorganisms through physical,chemical,mechanical and radiation methods. It is an important process because it is used to prevent disease transmission and contamination. In Physical Method,it is of two types:- Moist heat sterilization(Autoclave)and dry heat sterilization(Hot air oven). In industries we use different equipment for sterilization. Some are:-Autoclave (used for sterilization bacteriological media {nutrient media }glasswares,filter rubber), Hot air oven(used to sterilize glasswares; scissors;spatula, the pharmaceutical substances such as liquid paraffin), Media preparator (it ensures that maximum sterility is obtained with minimum damage in nutrients component), Ozone sterilizer, Formalin chamber. Chemical method:-In chemical method we use gaseous substances like ethyl oxide, chlorine dioxide, ozone; BPL etc.Radiation method:-In radiation method we use x-rays,gamma rays,cathode rays,pulsed high intensity light.Mechanical method: In mechanical method it is based on filtration. The different types of filters used in it:-Seitz filter, Filter candle, Membrane filter, Sintered glass filter. Sterilization is important in the medical field because it helps us to prevent contamination from bacterias etc. It helps us to prevent disease transmission which is linked with the use of that substance,medicine or item.

Keywords:- *Autoclave,Hot Air Oven,Media Preparator,Formalin Chamber.*

SODIUM ORTHOVANADATE IMPROVES LEARNING AND MEMORY IN INTRACEREBROVENTRICULAR STREPTOZOTOCIN RAT MODEL OF ALZHEIMER'S DISEASE THROUGH MODULATION OF BRAIN INSULIN RESISTANCE INDUCED TAU PATHOLOGY

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Abstract

Alzheimer's disease (AD) is a neurodegenerative disorder characterized by progressive cognitive decline, memory impairment, and the accumulation of pathological tau proteins. Insulin resistance within the brain has emerged as a significant contributor to AD pathology, further exacerbating tau-related neurofibrillary tangles. This study investigates

the potential of sodium orthovanadate (SOV) as a therapeutic agent in alleviating cognitive impairment in a rat model of Alzheimer's disease (AD). The model, induced by intracerebroventricular streptozocin (ICVSTZ), mimics AD-associated brain insulin resistance and tau pathology. Rats treated with SOV exhibit significant improvements in learning and memory, as demonstrated by Morri's water maze and novel object recognition tests. Biochemical and immunohistochemical analyses reveal that SOV effectively modulates tau phosphorylation, mitigating the formation of neurofibrillary tangles. Mechanistically, SOV appears to restore insulin signalling pathways in the brain, counteracting insulin resistance-induced tau pathology. These findings underscore the potential of SOV as a promising therapeutic intervention for AD, emphasizing its role in addressing the intertwined dynamics of insulin resistance and tau-related cognitive decline. This study contributes valuable insights into targeted interventions for AD, paving the way for further exploration of compounds that modulate insulin signalling pathways.

Keywords*: Brain, Alzheimer, Impairment, Rat model.*

NANOSTRUCTURED LIPID CARRIERS: A REVOLUTION IN DELIVERY OF NEUTRACEUTICALS

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Abstract

Nanostructured lipid carriers (NLCs) are an innovative kind of drug delivery system in which lipids of both the solid and liquid types are used as a core for the disordered matrix, preventing the solid lipid from crystallizing and increasing drug loading. Relatively little research has been done on using these nanoparticles as food-grade nanovehicles for nutraceuticals or bioactive substances. There is a growing need for food-compatible NLCs to be developed as nanovehicles for enhancing the water dispersibility, stability, bioavailability, and bioactivities of many lipophilic nutraceuticals or poorly soluble bioactives due to the increasing interest in the incorporation of a wide range of bioactives in food formulations as well as consumer health awareness. They generally consist of liquid and solid lipids, emulsifiers, drugs, and various additives that are chosen for their purity, chemical stability, compatibility, and biodegradability. Along with preventing certain neutraceutical from deteriorating in the stomach's acidic environment, NLC technology additionally protects them from oxygen and light present in the externally. As a delivery mechanism, nanostructured lipid carriers have shown significant potential in the field of research and developement of neutraceuticals. Potential developments in this area are expected to offer more chances for improved neutraceutical delivery and hence, contribute in improving human health.

Keywords*: Nanostructured lipid carriers, Neutraceuticals, Drug Delivery System, Bioactives, High Loading.*

NANOPARTICLES DRUG DELIVERY SYSTEM

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Abstract

The field of drug delivery systems (DDSs) has witnessed significant advancements through the development of engineered nanoparticles as nanocarriers. These nanocarriers offer several advantages over conventional DDSs, addressing their drawbacks and enabling targeted drug delivery to specific affected areas in the body. Various types of nanocarriers have been explored, including polymeric nanoparticles, nanomaterials, carbon nanotubes, dendrimers, liposomes, metallic nanoparticles, nanomedicine, and engineered nanomaterials. Nanocarriers have shown promise in the treatment of diseases such as brain cancer, lung cancer, breast cancer, cardiovascular diseases, and many others. They improve drug bioavailability and absorption time, reduce release time, prevent drug aggregation, and enhance drug solubility in the bloodstream. By encapsulating pharmaceutical elements within nanoparticles, nanomedicine has revolutionized drug delivery, refining therapeutic approaches. Extensive in vitro and in vivo testing has been conducted on these nanocarriers to evaluate their efficacy and safety. Such studies have provided valuable information on the behavior and performance of engineered nanoparticles in drug delivery systems. Looking ahead, nanomedicine holds the potential to significantly enhance human health by incorporating more advanced techniques into drug delivery systems. Continued research and development in this field are expected to lead to further breakthroughs and innovations, ultimately improving the effectiveness of drug delivery and patient outcomes.

Keywords*: Drug delivery system (DBS), Nanomedicine, Nanoparticles.*

TARGET IDENTIFICATION IN DRUG REPURPOSING: NAVIGATING COMPLEX BIOLOGICAL NETWORK

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Abstract

Drug repurposing is a new concept of drug discovery, it aims to find new uses for preexisting drugs and has in recent years gained huge momentum. We wish to explore the complex realm of target identification in drug repurposing, with a particular focus on harnessing the power of biological networks. By examining the remarkable case study of metformin, alongside the success story of Viagra, this article sheds light on the transformative potential of network-based approaches. Biological networks are the great basis of our data structures and are the key to our exploration. These simple networks have revolutionized our understanding of molecular associations and their interactions within biological systems. Repurposing campaigns focus on the target identification system via networks and its

mechanism of action. Without a proper understanding of the drug target information development of any new repurposing protocols is a great challenge. We wish to discuss metformin as a compelling case study, presenting both the promises and challenges associated with repurposing a well-established medication. This diabetes drug's multifaceted mechanism of action, impacting various biological networks, makes it an ideal candidate for investigating network-based strategies. We unravel the complex interplay between metformin and biological networks, emphasizing its far-reaching implications for drug repurposing and therapeutic innovation. Through a comprehensive examination of metformin's mechanism of action, we highlight its potential as a versatile tool in the quest for novel treatments with a greater focus on breast cancer.

Keywords*: Drug repurposing, Biological networks, Metformin, Diabetes, Breast cancer.*

NANOEMULSION CARRIERS FOR OCULAR FUNGAL INFECTION: MAIN EMPHASIS ON KERATOMYCOSIS

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Abstract

Keratomycosis, also termed as fungal keratitis (FK), is an invasive eye condition for which there is a lack of available effective treatments due to pharmacological shortages and vital ocular obstacles. This severe corneal infection typically suppurates and eventually ulcerates ultimately causing blindness or decreased vision. This persistent fungal infection affecting particularly stroma heralds the complications thereby posing difficulty in diagnosis and treatment. However, infections can develop into ocular perforation even after receiving intense care. Delay in diagnosis may cause corneal fungal infections to have irreversible consequences, which are inevitable. According to epidemiological studies, FK is comparatively more prevalent in warm, humid places with an agricultural economy. The most common treatment regimen used in chemotherapy for FK is based on the topical (natamycin 5% is typically first-line therapy) and systemic administration of azole drugs. Novel drug delivery systems based on nanoemulsion are a viable therapeutic option for treating keratomycosis and may be a candidate method for overcoming obstacles in the treatment of many other ocular illnesses when combined with different hydrophobic medicines. Thus eye symptoms in keratomycosis can be effectively addressed using nanoemulsions which has lately gained attention.

Keywords: *Ocular Drug Delivery, Nanotechnology, Fungal Keratitis, Keratomycosis, Management, Antifungal.*

ETHNOPHARMACOLOGICAL OVERVIEW OF TRADITIONAL MEDICINES AND THEIR ROLE IN DRUG DISCOVERY

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Abstract

Therapeutic properties of medicinal plants have been meticulously documented in various traditional medical systems. These plants have played a significant role as a source of remedies, especially in the treatment of chronic inflammatory illnesses prevalent in Indian, Chinese, and Korean medical traditions. The convergence of population growth, constraints in the accessibility and affordability of pharmaceuticals, drawbacks linked to synthetic drugs, and the rise of drug resistance in infectious diseases has heightened the emphasis on harnessing plant-based substances for medicinal purposes, addressing a broad spectrum of human health concern. Ethnomedicinal drugs like Artemisinin, Quinine, Morphine, Aspirin, Digoxin, Taxol and Vinblastine are utilized to treat various diseases. Several techniques, including phytochemical screening, bioassays, high-throughput screening (HTS) are employed for drug discovery. The integration of traditional techniques enhances the efficiency and success of plant-based drug discovery, contributing to the development of novel drugs and therapeutics. The process of extracting medicines from plants is complex and facing challenges during ethnopharmacological research include standardisation challenges, safety concerns, and validation of traditional knowledge to allow the successful and safe creation of therapeutic chemicals from indigenous plants for drug discovery. Phytochemical extraction of plants necessitates interdisciplinary knowledge to unlock the therapeutic potential of botanical sources, as diverse genetic compositions which consistently yield new chemical compounds, serving as pivotal lead molecules in medication development.

Keywords: *Ethnopharmacological, Traditional Medicine, Drug Discovery, Therapeutic, Phytochemical*.

NIGELLA SATIVA MICROEMULSION-LOADED HYDROGEL FOR THE MANAGEMENT OF PSORIASIS: EX-VIVO AND IN-VIVO EVALUATIONS

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Abstract

Psoriasis is a widespread chronic disease affecting 1-3% of the total population. In major cases (>80%), it is treated by topical application of corticosteroids. However, the topical route is very challenging due to the physicochemical nature of the diseased stratum corneum and so no single treatment works for every patient. The oral route showed severe side effects due to systemic immunosuppression, which can be avoided by the topical route.

The research work aimed to investigate Nigella sativa-loaded micro emulsion-based gel for effective N. sativa oil permeation and retention in the skin tissue for psoriasis treatment. The pseudo ternary phase diagram at three Smix ratios (2:1, 1:1, and 1:2; Tween 20: Labrafil M1944) was constructed using N. sativa as an oil phase. The Smix at 2:1 ratio showed a large microemulsion area. The transmission electron microscope microphotographs showed spherical non-aggregated oil globules with a size. The optimized microemulsion was dispersed in Carbopol 934 hydrogel to increase the consistency. The N. sativa-loaded microemulsion gel was tested on an imiquimod-induced psoriasis mouse model. The ex-vivo study showed good permeation (> 24 hr) with microemulsion gel in comparison to N. sativa oil. In drug retention studies, microemulsion-gel showed high drug retention in the skin tissue, which was due to destabilization of microemulsion after penetration in the skin layer causing precipitation of N. sativa. The depot effect due to N. sativa oil precipitates could be helpful for the sustained effect of N. sativa for the effective treatment of psoriasis.

Keywords*: Nigella sativa, Microemulsion, Hydrogel, Psoriasis, Black cumin.*

DEVELOPMENT AND EVALUATION OF POLYSORBATE 80 COATED ALBUMIN NANOPARTICLES FOR BRAIN TARGETING OF PREGABALIN

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Abstract

Epilepsy is a brain disease characterized by abnormal electrical activity causing seizures or unusual behaviour, sensations and sometimes loss of awareness. An epileptic seizure is a transient occurrence of signs and/or symptoms due to abnormal excessive or synchronous neuronal activity in the brain. Pregabalin is an antiepileptic drug belonging to BCS class 1 drugs i.e., having high solubility and high permeability. However, its delayed transport across BBB limits its use in emergency situations. The present work was performed to develop BSA nanoparticles of pregabalin coated with polysorbate 80. The selected formulation DP 1:2 was evaluated for particle size, zeta potential and surface morphology. The in vitro drug release study revealed that DP 1:2 showed maximum drug release as compared to other batches. The in vivo biodistribution study was performed in wistar rats, using two groups i.e., pure drug and DP 1:2 formulation. It was observed from results that PS 80 coated BSA Nanoparticles showed higher amount of drug reaching the brain in comparison to pure drug. Thus, from the results it was concluded that albumin nanoparticles coated with polysorbate 80 could efficiently target the drug pregabalin into brain.

Keywords: *Epilepsy, Nanoparticles, Brain targeting, Bovine serum albumin, Polysorbate 80.*

DEVELOPMENT OF ELASTIC NIOSOMAL GEL FOR TOPICAL DELIVERY OF PIROXICAM

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Abstract

The present study aimed to prepare and evaluate elastic niosomal gel of piroxicam. Elastic niosomes are capable to entrap both lipophilic and hydrophilic drugs and can penetrate across the skin more efficiently in comparison to conventional formulations and niosomes. Piroxicam loaded elastic niosomes were prepared by thin film hydration and ether injection method using span 60, cholesterol, ethanol, drug (piroxicam), and buffer. The formulations were characterized for entrapment efficiency (%EE), particle size, and microscopy. Based on the results of particle size, zeta potential, PDI and %EE, the selected elastic niosomal formulations were observed for vesicle formation by transmission electron microscope (TEM). Piroxicam entrapped elastic niosomal gel was prepared and evaluated for pH, viscosity and *ex-vivo* permeation studies. Finally, *in-vivo* studies were performed by carrageenan induced paw edema method to compare the anti-inflammatory activity of the formulated piroxicam entrapped elastic niosomal gel and marketed anti-inflammatory (piroxicam) gel formulation. The piroxicam entrapped elastic niosomal gel sufficiently reduced the edema and revealed prolonged therapeutic action *vis-a-vis* conventional anti-inflammatory (piroxicam) gel formulation.

Keywords: *Niosomes, Piroxicam, Ethanol injection method, Thin film hydration method, Topical delivery.*

EXEMESTANE ENCAPSULATED COPOLYMERS L121/F127/GL44 BASED MIXED MICELLES: SOLUBILITY ENHANCEMENT AND IN VITRO CYTOTOXICITY EVALUATION USING MCF-7 BREAST CANCER CELLS

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Abstract

The present study aimed to develop a novel therapeutic approach for controlled delivery of exemestane (EXE) to cancer cells using nanostructured polymeric micelles.A simplex centroid design of experiment study was employed for optimizing the polymeric micelle formulation to achieve the desired critical quality attributes, including micelle size, drug loading (DL), encapsulation efficiency (EE), and critical micelle concentration (CMC). The oil-in water (o/w) solvent evaporation method was used to prepare mixed micelles (MMs) of copolymers L121/F127/GL44 for encapsulating EXE. Profile analysis tensiometer methods were used to determine the CMC of the copolymer mixture. EXE-MMs, blank mixed micelles, and lyophilized mixed micelles (Lyp- EXE-MMs) were characterized for other key

quality attributes, such as zeta potential, chemical interactions, and morphology.The optimized ratio of L121/F127/GL44 was 1.98, 0.812, and 1.20, respectively, providing EXE-MMs with small micelle sizes (35.45} 1.20 nm), higher EE (89.75} 2.14%), and DL (5.85 } 2.14%). EXE-encapsulated MMs exhibited an in vitro sustained release profile with improved cytotoxicity against MCF-7 cells than that with pure EXE. The cellular growth inhibitory concentration (IC50) of EXE-MMs was 0.225} 0.124 ìg/ml, while that of naive EXE was 7.58} 0.145 ìg/ ml. Moreover, in vivo pharmacokinetic parameters of EXE micellar formulation showed significant improvement in Cmax and AUC (0–72 h), viz. 207.54} 18.65 ng/ml and 3530.77} 212.25 ng h/ml, respectively, suggesting enhanced bioavailability than that of pure EXE.

Keywords: *Exemestane, Simplex centroid design, Polymeric mixed micelles, Breast cancer, MCF-7.*

NIOSOME: A FUTURE OF TARGETED DRUG DELIVERY SYSTEM

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Abstract

Over the past several years, treatment of infectious diseases and immunisation has undergone a revolutionary shift. With the advancement of biotechnology and genetic engineering, not only a large number of disease-specific biological have been developed, but also emphasis has been made to effectively deliver these biologicals. Niosomes are vesicles composed of non-ionic surfactants, which are biodegradable, relatively nontoxic, more stable and inexpensive, an alternative to liposomes. This presentation reviews the current deepening and widening of interest of niosomes in many scientific disciplines and, particularly its application in medicine. This presentation also presents an overview of the techniques of preparation of niosome, types of niosomes, characterisation and their applications.

***Keywords**: Bilayer, Drug entrapment, lamellar, Niosomes, surfactants.*

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PHARMACOGNOSTIC AND PHYTOCHEMICAL EVALUATION OF *RUMEX ACETOSA*

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Abstract

The extract of *Rumex acetosa* is traditionally used to treat gastritis, and depicts numerous biological activities as an anti-ulcerogenic, anti-inflammatory, antitumor, anti-proliferative, antioxidant and anti-viral. It is widely spread across eastern Asia and

traditionally used in the treatment of different ailments. It contains generous amount of biologically active chemical combination of anthraquinones, flavonoids, tannins, stilbenes, diterpene alkaloids, terpenes, lignans and carbohydrates in major amount. Another study reported that the leaves contain a variety of flavonoids, including rutin, quercetin, and kaempferol.Under histological evaluation, pretreatment with *Rumex acetosa*extracts has the potential to reverse negative effects, such as inflammation, edema, moderate hemorrhage and loss of epithelial cells. Hyperin is an important flavonoid found in different parts of this vital plant which can be utilized as an antioxidant, anti-inflammatory, anticancer, antiviral, antibacterial, antiparasitic, cardioprotective, hepatoprotective, and antispasmodic. Overall, the pharmacognostic and phytochemical evaluation of *Rumex acetosa* has shown that the plant contains a variety of novel chemical compounds with potential medicinal properties. However, more research is further needed to confirm their complex and unpredictable effects on the human body. Despite these challenges, there is a growing body of scientific evidence to support the use of *Rumex acetosa* for the treatment of a variety of medical conditions.

Keywords*: Biological activities, Ailments, Inflammation, Flavonoids, Hyperin.*

ROLE OF NEUTRACEUTICALS IN PARKINSON'S DISEASE

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Abstract

Parkinson's disease (PD) is a neurodegenerative disorder that progresses over time and is characterized by cognitive decline and mood swings, tremors, bradykinesia, and rigidity. Nutraceuticals, which are imperative bioactive substances rich in food and dietary supplements, have the potential to play a therapeutic role. Recent studies demonstrate the possibility of some nutraceuticals that can exhibit neuroprotective effects in PD. Antioxidants like coenzyme Q10 and vitamin E exhibit promising role in lowering oxidative stress, a significant factor in neuronal damage in Parkinson's disease (PD). Additionally, the anti-inflammatory and antioxidant qualities of polyphenols, rich in foods like green tea, berries, and dark chocolate, have been linked to a reduction in neuroinflammation, another characteristic of PD pathology. A number of nutraceuticals, including creatine and nicotinamide adenine dinucleotide (NAD+) precursors like nicotinamide riboside, have been studied for their potential to support mitochondrial function and energy production in neurons because mitochondrial dysfunction plays a significant role in the pathogenesis of Parkinson's disease. These substances may enhance cellular resistance to PD-related stressors. Omega-3 fatty acids, found in fatty fish and flaxseeds, have drawn attention because of their potential to reduce inflammation and encourage synaptic plasticity, both of which may be helpful for PD patients. Curcumin, a substance derived from turmeric, may

have anti-inflammatory and neuroprotective properties that could be used to treat Parkinson's disease (PD). Despite the promise of nutraceuticals in PD management, it's important that research is still in its early stages, and clinical trials are required to establish their efficacy and safety. Nutraceutical interventions may vary from person to person, highlighting the significance of customized treatment plans for PD. In conclusion, nutraceuticals offer a fascinating strategy for managing Parkinson's disease by potentially focusing on a number of the disease's intricate pathophysiology. More extensive research and carefully planned clinical trials, is required to fully understand the potential of nutraceuticals as adjunctive or complementary treatments for Parkinson's disease.

Keywords:*Parkinson's disease, Nutraceuticals, Neuroprotection, Cognitive decline, Clinical trials.*

ENHANCING SOLUBILITY THROUGH COCRYSTALLIZATION: A PROMISING APPROACH IN PHARMACEUTICAL FORMULATION DEVELOPMENT

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Abstract

The main obstacles during new product development are poor solubility and inadequate bioavailability of an active medicinal component. Improvements in the solubility of weakly soluble drugs can be achieved through an array of methods. There has been a lot of emphasis in recent years on the design and synthesis of pharmacological co-crystals. This innovative approach involves the strategic combination of active pharmaceutical ingredient, along with coformer in a stochiometric ratio, leading to the formation of a new crystalline structure. Cocrystals are non-ionic supramolecular complexes that potentially can be employed to improve the API's physical properties including solubility, stability, and bioavailability without altering the chemical structure. Broadly cocrystals can be categorised as, ionic cocrystals (ICCs) that are made up of at least one ionic coformer, which is a salt, whereas molecular cocrystals (MCCs) only include neutral components (coformers). Solvent evaporation, anti-solvent treatment, grinding, and hot melt extrusion are the most frequently used preparation techniques. Pharmaceutical cocrystals can be identified and characterized using several different experimental techniques, including X-ray diffraction, thermal methods, nuclear magnetic resonance, Fourier transform infrared spectroscopy, and Raman spectroscopy. As pharmaceutical development continues to evolve, cocrystals stand as a valuable tool in overcoming solubility challenges and optimizing drug delivery. Cocrystals are a captivating area of investigation and utilization in the pharmaceutical sciences due to the potential influence they have on therapeutic efficacy of the drug. Further exploration and refinement of cocrystal strategies hold great promise for revolutionizing drug formulation and delivery in the years ahead.

***Keywords**: Cocrystal, Coformer, Solubility.*

SAFEGUARDING HEALTH: THE VITAL ROLE OF PHARMACOVIGILANCE

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Abstract

Pharmacovigilance stands as a cornerstone in modern healthcare, functioning as an indispensable system for monitoring, evaluating, and ensuring the safety of pharmaceuticals and medical devices.Pharmacovigilance primarily serves as a proactive sentinel, constantly scrutinizing real-world data for Adverse Drug Reactions (ADRs) and unexpected safety concerns. Through systematic data collection, assessment, and analysis, it enables the early detection of potential risks associated with medications. Timely identification of safety issues empowers healthcare practitioners, regulatory authorities, and pharmaceutical companies to make informed decisions, such as product recalls, label modifications, or adjustments in treatment regimens.Furthermore, pharmacovigilance plays a critical role in evaluating the overall risk-benefit profile of pharmaceuticals. By meticulously weighing the therapeutic benefits against potential risks, it contributes to evidence-based decision-making, ensuring that patient safety remains paramount.In the context of regulatory compliance, pharmacovigilance is integral. Regulatory agencies worldwide, including the Food and Drug Administration (FDA) and European Medicine Agency (EMA), mandate pharmaceutical companies to maintain robust pharmacovigilance systems. Compliance with these regulations is fundamental to obtaining market approval and, subsequently, for the ongoing monitoring and assessment of products.Pharmacovigilance is not only confined to regulatory compliance but extends to quality assurance as well. It is instrumental in identifying issues related to product manufacturing, labeling, packaging, and distribution. This comprehensive oversight assures the sustained quality and safety of medications throughout their lifecycle.This abstract explores the pivotal role of pharmacovigilance within the healthcare ecosystem, emphasizing its significance in safeguarding patient well-being and optimizing therapeutic outcomes.

Keywords: *Pharmacovigilance, Adverse Drug Reactions, Healthcare ecosystem.*

FORMULATION AND EVALUATION OF CUBOSOMAL GEL FOR LOCALIZED TOPICAL DELIVERY: QBD-DRIVEN OPTIMIZATION USING BOX BEHNKEN DESIGN

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Abstract

Design of experiment is a powerful statistical technique employed for variable screening and optimization. It is based on the simultaneous variation of numerous factors with the aim of finding the configuration of parameters that optimizes one or more outputs of interest, while using the minimal number of extensive experimental trials required for testing, minimising costs and time requirements. The purpose of the present study was to optimize drug loaded cubosomes using the principles of quality by design. Based on risk assessment, the effect of various formulation variables on the critical quality attributes were investigated. A three level 3 factors Box-Behnken design with 17 runs was used for correlation between independent variables and dependent variables using Design-Expert software.A robust model was achieved, which had potential of being explored for the identification of design space. The responses (particle size, zeta potential, entrapment efficiency) were later overlayed to find the optimality region and an optimized batch. The drug loaded cubosomes were prepared using a thin film hydration technique exhibiting a particle size of 150.2 ± 5.1 nm, zeta potential of -28.3 mV, and encapsulation efficiency of 74.76%. The loaded cubosomes showed a release pattern having 85.12% cumulative release within 24 h. The optimised formulation was further incorporated into carbopol gel. The designed gel had the potential to prolong the drug release, exhibited good spreadability and rheology and did not show any significant changes in stability.

***Keywords**: Box-Behnken design, Cubosomes, Design of experiment, Quality by design.*

LIPID POLYMER HYBRID NANOCARRIERS AS DRUG DELIVERY PLATFORM

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Abstract

Lipid polymer hybrid nanoparticles are novel systems which are potentially emerging in the era of nano-medicine. They are core-shell nanostructures which comprise of polymer and phospholipids used in the preparation of polymeric nanoparticles and liposomes respectively. This combinatorial venture bequeaths combined attributes of nanoparticles and liposomes with respect to enhanced stability, biocompatibility, and cellular uptake. Due to their small scale, hybrid nanoparticles can be used in a number of applications, including anticancer therapy, gene delivery, vaccine delivery, and bioimaging.

These nanoparticles (NPs) are also self-assembled in a reproducible and predictable manner using a single or two-step nanoprecipitation process, making them significantly scalable. Polymeric nanoparticles demonstrate the distinct drawbacks of toxic decay and toxic monomer accumulation, as well as a toxic degradation mechanism that hinders their utility. The lipid nanoparticles also exhibit poor drug-loading capacities, low membrane retention properties, physical state instability of lipids, and diminished cell membrane fluidity, all of which contribute to lipid NPs' loss of stability (drug expulsion, gelation, etc.) during storage and administration. To overcome the limitations of both lipid NPs and polymeric NPs, lipid polymer hybrid nanoparticles have emerged. The word "hybrid" is used as the NPs have the properties of both polymeric and lipid particles. The polymer regulates the drug release, while the utility of the lipid is to improve the permeation of drugs across the membrane and loading. Lipid polymer hybrid nanoparticles have the ability to improve the biocompatibility and physical stability of drugs, paving the way for their promising use in robust drug delivery.

Keywords: *Lipid polymer hybrid nanoparticles, Polymeric nanoparticles, Nanomedicine, Hybrid nanoparticles.*

PHARMACOGNOSTIC PROFILING, ANTIOXIDANT ASSESSMENT, AND PHYTOCHEMICAL ANALYSIS OF HYDROALCOHOLIC EXTRACT FROM *THUJA OCCIDENTALIS* IN A SCOPOLAMINE-INDUCED DEMENTIA

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Abstract

Thuja occidentalis (Cupressaceae) has a rich history in traditional medicine in a wide spectrum of health conditions, from metabolic dysfunctions to neurodegenerative disorders. This research article seeks to comprehensively analyze the phytochemical composition of the hydroalcoholic extract of *Thuja occidentalis* (HAETO) and explore its potential in scopolamine-induced dementia animal model. The primary objective of this study is twofold: (1) to conduct an exhaustive phytochemical fingerprinting analysis of the HAETO and (2) to assess its potential in a well-established scopolamine-induced dementia animal model. *Phytochemical Screening*: The initial step of this investigation involved a detailed phytochemical screening. This screening utilized a battery of confirmatory tests to identify and quantify phytoconstituents within the extract. *Quercetin Quantification*: The quantification of quercetin within the extract was carried out using a high-performance thin-layer chromatography (HPTLC) densitometric scanning technique. *ESI-MS/MS Fingerprinting Analysis*: To gain further insights into the composition of the extract, an electrospray ionization mass spectrometry/mass spectrometry (ESI-MS/MS) fingerprinting analysis was performed in both positive and negative ion modes. *In VivoAssessment*: To assess the *in vivo* activity of the hydroalcoholic extract, a scopolamine-induced dementia animal model was employed. Scopolamine (0.4 mg/kg, i.p.) was administered to induce

dementia-like symptoms in the experimental animals. Behavioral parameters were evaluated using the Morris water maze and passive avoidance tests. Additionally, various biochemical parameters related to oxidative stress (superoxide dismutase, glutathione, catalase, and TBARS), inflammation (TNF-á and IL-1â), and acetylcholinesterase (AChE) activity were assessed using ELISA techniques. *Phytochemical Composition*: HAETO unveiled a diverse array of phytoconstituents, with a particular richness in phenolic compounds and flavonoids. *Antioxidant Activity*: HAETO exhibited substantial antioxidant activity. *Amelioration of Dementia*: In the scopolamine-induced dementia animal model, HAETO in behavioral parameters assessed through the Morris water maze and passive avoidance tests indicated significant improvements compared to the disease control group. Furthermore, biochemical analyses revealed that HAETO effectively countered oxidative stress (SOD, GSH, Catalase, and TBARS), inflammation (TNF-á and IL-1â), and AChE activity. Because of high flavonoids and phenolic content, the HAETO's aerial component has outstanding antioxidant properties. In a scopolamine-induced dementia animal model, this extract reduced oxidative stress, inflammation, and behavioural impairments, demonstrating its pharmacological promise in dementia treatment.

Keywords: *Thuja occidentalis*, *Phytochemical Screening, Antioxidant activity, Phytoconstituents.*

DEVELOPMENT AND EVALUATION OF NOVEL FORMULATION OF CHEBULINIC ACID FOR COLON SPECIFIC DRUG DELIVERY

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Abstract

Terminalia chebula, is employed as major ingredient in Ayurvedic formulations. Chemical analysis of these formulations have revealed a number of pharmacologically interesting components including chebulinic acid. Chebulinic acid has shown to exhibit antiulcer activity since it possesses antisecretory, antioxidative and anti-inflammatory action. In spite of huge potential of chebulinic acid in gastrointestinal problems, its use in pharmaceutical field is limited because of its high hydrophobicity and poor aqueous solubility. The present research work aimed to formulate chebulinic acid loaded alginate microspheres for local treatment of ulcerative colitis. The best-optimized microsphere was compressed in the form of matrix-forming tablet for the colon targeting. Chebulinic acid loaded microspheres was prepared employing emulsion cross linking method and were evaluated for particle size and PDI by master sizer and Entrapment efficiency by ultra centrifugation, on the basis of them microsphere were selected. The entrapment of chebulinic acid inside microsphere was confirmed by XRD, DSC and FT-IR. Further, chebulinic acid- loaded matrix tablets were evaluated for *in vitro* release kinetics in colonic condition. Particle size of microspheres were with in the range of 927.8 – 1439 nm, and PDI range with in 0.168 – 0.764nm. Spherical shaped microspheres were confirmed by scanning

electron microscopy. *In vitro* release kinetic showed regression coefficient of microsphere matrix tablet formulation was found to be 0.9552, it shows that drug release follows peppas model for matrix tablets. Thus, study suggest that chebulinic acid based microsphere loaded matrix tablet is appropriate for colon target. The present study proved that chebulinic acid microsphere loaded matrix tablets can be the ideal delivery system for colonic delivery.

Keywords: *Terminalia chebula, ulcerative colitis, Chebulinic acid, Microspheres, Colon targeting.*

GASTRIC ULCER HEALING BY CHEBULINIC ACID SOLID DISPERSION-LOADED GASTRORETENTIVE RAFT SYSTEMS: PRE-CLINICAL EVIDENCE

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Abstract

Chebulinic acid (CA), a component in *Terminalia chebula*, exhibits antiulcer activity, but has poor aqueous solubility. Raft-forming systems incorporating solid dispersions (SDs) of CA, were developed to overcome its poor biopharmaceutical properties and to prolong the gastric residence time for maximum activity. SDs were formulated by a solvent evaporation method using Eudragit EPO. Raft formulations consisted of sodium alginate as a polymer. Release of CA in the dissolution medium was 40%, whereas SDs showed 95.45% release. The CA raft system (20 mg/kg) showed curative efficacy in an alcohol-induced gastric ulcer model and increased protection when compared with omeprazole (10 mg/kg) and CA suspension (20 mg/kg). These studies demonstrated SD raft systems to be a promising approach for antiulcer therapy by CA.

Keywords*: Antiulcer, Chebulinic acid, Raft system, Solid Dispersion, Terminalia chebula.*

DEVELOPMENT AND EVALUATION OF METHOTREXATE - LOADED TRANSETHOSOMAL TOPICAL FORMULATION FOR PSORIASIS

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Abstract

Psoriasis is a chronic inflammatory skin disease that affects 1 to 3% of the world population, with equal gender distribution. Methotrexate is an antimetabolite which is used as a golden drug to treat psoriasis. Therefore, the present study involves the preparation of methotrexate transethosomal formulation for psoriasis and to evaluate and study its transethosomal gel potential in Imiquimod-induced psoriasis animal model to treat symptoms of psoriasis. MTX transethosomes was prepared by the cold method and

optimized on the bases of three key parameters i.e. Particle size, zeta potential, entrapment efficiency. After that, the optimized formulation was incorporated into gel. Psoriatic Area and Severity Index (PASI) score & histopathological examination were done for checking Antipsoriatic potential of MTX transethosomal gel by using the imiquimod-induced psoriasis model. Optimized MTX transethosomes exhibited particle size of 125nm, EE (Entrapment efficiency) of 65% and zeta-potential of -16mV. TEM images showed nearly spherical shape of the methotrexate-loaded transethosomes. FTIR confirmed presence of methotrexate within the transethosomes. Ex-vivo skin permeation study demonstrated that methotrexate-loaded transethosomal gel had higher skin permeation when compared to plain marketed methotrexate gel(1%), suggesting a significant role of drug-nanocarriers on topical administration. Transethosomal formulation showed 71.6% skin retention as compared to 52.4% from plain marketed methotrexate gel. The developed MTX-transethosomal gel formulation can be a promising alternative to existing MTX formulation in topically treating psoriasis.

Keywords: *Transethosomes, Methotrexate, Topical therapy, Psoriasis, Skin permeation.*

EXPLORING THE POTENTIAL OF HERBAL DRUGS IN PHARMACOGNOSY

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Abstract

A growing interest in herbal medicines has sparked a rebirth in pharmacognosy, a multidisciplinary field at the crossroads of botany, chemistry, and pharmacology. This in-depth analysis highlights the potential of herbal medicines within pharmacognosy as it examines the changing landscape of herbal medications. Herbal medicines, which are made from plants, have played a significant role in traditional medical practices around the world for thousands of years. They are becoming more and more popular today since they are thought to be safer, more effective, and have fewer side effects than modern medications. These natural products are examined by pharmacognosy for their various bioactive components, such as alkaloids, flavonoids, terpenoids, and polyphenols. Herbal treatments have long been used to treat a variety of illnesses as part of traditional medical systems, which are firmly rooted in diverse cultures. By examining phytochemical components and recognizing synergistic interactions, pharmacognosy aims to understand the scientific foundation for their medicinal efficacy.In order to isolate, recognize, and describe bioactive chemicals and support standardization and quality control, modern pharmacognosy uses cutting-edge analytical techniques. Pharmacological investigations deepen our understanding of a variety of biological processes, from anti-inflammatory and antioxidant effects to antibacterial and anticancer potential. The emphasis of this review, which synthesizes a multitude of data, is the incorporation of herbal medicines into modern

treatment. To guarantee the long-term availability of medicinal plants, sustainable sourcing, cultivation, and conservation approaches are stressed. This review is an invaluable tool for encouraging a greater awareness of the potential and difficulties of herbal medications within contemporary pharmacological paradigms as they become more prominent in pharmacognosy.

***Keywords**: Pharmacognosy , Herbal medicines, Modern medications, Standardization.*

NEED OF HERBAL PHARMACOVIGILANCE

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Abstract

The manufacturer has to prove in well-designed clinical trials for the safety and efficacy of a drug for obtaining its marketing authorization. These premarketing trials have the disadvantage of involving small numbers of patients, for short periods of time in strictly controlled conditions. To fill this void, premarketing trials have to be supplemented with pharmacoepidemiological. This type of research has become very popular termed as postrnarketing surveillance or pharmacovigilance. It can be defined as the study of the safety of marketed drugs under the practical conditions of clinical usage. According to the World Health Organization it is the "science and activities relating to the detection, assessment, understanding and prevention of adverse effects". It involves aspects such as safety, adverse drug reactions, risks, benefits and communicating drug safety concerns and forms the cornerstone of patient safety. There has been a heightened awareness and interest in the medical community about its role. This science is constantly evolving and includes the herbals, traditional and complementary medicine, blood products, biological, medical devices and vaccines. Its main aim is to improve patient care and safety in relation to medicines, medical and paramedical interventions, encouraging their rational, effective use and promote clinical training. There is an increasing awareness to develop these practices because of the extensive use of herbal medicines. The ways in which herbal medicines are named, perceived, sourced, utilised and regulated raise important challenges making it essential to build up reliable information on their safety. The approach should be to include them in the national pharmacovigilance systems which should be closely linked to the national drug regulatory systems. Healthcare professionals should remain vigilant for potential interactions between herbals and prescription medications. Last but not the least the safety and quality of herbal medicine should be ensured through greater research, pharmacovigilance, regulatory control and better communication between patients and health professionals.

***Keywords:** Pharmacovigilance, Patient safety, Herbal medicines.*

EVALUATION OF THE PROTECTIVE ROLE FOR GA IN MITIGATING THE DAMAGE CAUSED BY RIR

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Abstract

Renal ischemia- reperfusion injury (IRI) is a complex and often debilitating condition that arises when blood supply to the kidneys is temporarily interrupted and subsequently restored. This phenomenon can occur in various clinical contexts, including kidney transplantation, cardiac surgery, and conditions like acute kidney injury (AKI). The pathophysiology of renal IRI involves a cascade of intricate events, ranging from tissue hypoxia during the ischemic phase to oxidative stress and inflammation upon reperfusion. As a consequence, renal IRI can lead to substantial damage to the renal parenchyma, which may manifest as acute kidney injury, chronic kidney disease, or even long – term graft dysfunction in transplant recipients. In this study, the potential protective effects of the antioxidant, gallic acid (GA), on RIR in an in vivo rat model have been evaluated. Adult male Sprague Dawley rats were randomly divided into three groups receiving defined doses of GA pretreatment prior to induction of RIR. To induce RIR, the umbilical arteries were obstructed on both sides and clamped with mild pressure for 45 min. Following the 45 min ischemia, the clamps were removed to allow for the induction of reperfusion. The reperfusion phase was 24 hours. At last, the observations are recorded and results are evaluated. Throughout this exploration, we have seen the compelling evidence of GA'S multifaceted properties, ranging from its potent antioxidant capabilities to its anti-inflammatory and anti- apoptotic effects. These attributes collectively contribute to its potential in safeguarding cells, tissues and organs from the deleterious consequences of oxidative stress, inflammation and injury.

Keywords: *Renal ischemia- reperfusion injury (IRI), Acute Kidney injury(AKI), Chronic kidney Disease(CKD), Hypoxia, Gallic Acid (GA).*

PRODURGS FOR IMPROVED DRUG DELIVERY

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Abstract

The concept of prodrug has existed for centuries but was well described in late 1950s. Prodrug are naturally occurring biological inert chemical drugs which on reacting with mammalian metabolic system produces chemically active parent drug and then produces their effect. Optimal prodrugs need to have effective adsorption, distribution, metabolism

and elimination (ADME). There are many powerful drug discovery techniques which help to formulate new and effective drug, such as "The use of chemical synthesis method which makes it possible to prepare even upto millons of compositions in a single process", and "High-Throughput Screening (HTS) which is a drug discovery process that allows automated testing of large number of chemical or biological compounds for a specific biological target". Nanoparticle based drug delivery in the fight against cancer is a study which is chemically proven very efficient. Scientists have isolated(growing) human caner cells in culture dish, for most of cancer drug to be active and effective they have go inside the cancer cell. Scientist have developed tiny-nano particles which are chemically engineered such that the nanoparticles get attached to the cancer cell and gets carried inside the cancer cell. To make sur that only cancer cells are attacked they are professionally modified, the nanoparticles are engulfed inside by the cancer cell. The nanoparticle reaches to a compartment inside the cancer cell known as ENDOCELL, the endocell digests the nanoparticle and releases the drug which then kills the cancer cell. Nanoparticle drug delivery provides a way of attacking cancer without the side effects of conformist chemotherapy.

Keywords*: Endocell, Nanoparticle, ADME, HTS.*

MURASHIGE AND SKOOG (MS)MEDIUM USED IN PLANT TISSUE CULTURE ON *SELAGINELLA BRYOPTERIS* (SANJEEVANI BOOTI)

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Abstract

Medicinal plants have been used all over the world since ancient times to the present day as a healing source to treat various human health disorders. They are an important natural wealth. They provide basic medical care to people from all walks of life. They serve as important therapeutic agents as well as important raw materials for the production of traditional and modern medicines. Plants are one of the most important sources of medicine. Essential components of medicinal plants used as medicines or for basic needs are seeds, flowers, roots, leaves, fruits, peels and even the entire plant. Medicinal plants contain a variety of metabolites with enormous properties that are excellent for treating many diseases. These bioactive substances include carbohydrates, tannins, flavonoids, alkaloids, terpenoids and steroids. Due to the development of modern techniques, several specific protocols have been developed for the commercial production of a wide range of secondary plant metabolites. Plant tissue culture has recently made significant contributions and today represents an indispensable tool for the progress of agricultural science and modern agriculture. All treatments can induce shoot and leaf formation. However, the most effective treatment we observed was the 1.5 mg/L concentration of BAP. *In vitro*, cultured *Selaginella bryopteris* planted in a pot grew for about 2-3 months in the polyhouse condition for future

studies. This research would allow us to analyze the development of plant tissue cultures for agriculture, human health and general well-being.

Keywords*: Selaginella bryopteris, Health disorders, Entire plant, Enormous properties, Modern agriculture*

TIRZEPATIDE: A REVOLUTIONARY HOPE IN THE BATTLE AGAINST DIABETES

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Abstract

A chronic metabolic condition called diabetes is characterized by high blood glucose levels.The immune system's attack on insulin-producing cells causes type 1 diabetes, which necessitates lifelong insulin therapy. Insulin resistance and relative insulin shortage are features of type 2 diabetes, which is frequently related to lifestyle choices. During pregnancy, gestational diabetes can develop. Other forms, such monogenic and secondary diabetes, are brought on by underlying illnesses or genetic abnormalities. Metformin, sulfonylureas, and DPP-4 inhibitors are common drugs for managing diabetes. Injections of insulin such as Humalog and Lantus are also widely used. A breakthrough medication with simultaneous GLP-1 and GIP receptor activation for enhanced diabetes management, Tirzepatide, a product of Eli Lilly & Company, emerged from their expertise in diabetes research. Tirzepatide is supplied subcutaneously, unlike insulin injections, however it is not insulin itself.It reduces cardiovascular risks, which gives it a distinct benefit over some drugs. Due to its adaptability, tirzepatide can be used to manage both type 1 and type 2 diabetes, potentially revolutionizing treatment modalities. Tirzepatide represents a significant advancement in the treatment of diabetes and offers newfound hope for improved health and well-being due to its remarkable potential to not only regulate blood sugar but also improve metabolic health and weight management. Numerous clinical trials and studies have shown how effective tirzepatide is at lowering HbA1c levels, encouraging weight loss, and enhancing metabolic health in people with type 2 diabetes. In conclusion, tirzepatide is a groundbreaking development in the treatment of diabetes. It gives hope for better glycemic control, weight management, and improved general health for people with diabetes thanks to its dual receptor agonism and outstanding efficacy.

Keywords*: Metformin, Sulfonylureas, DPP-4, GLP-1, GIP, Tirzepatide.*

GMP PARAMETER VALIDATION PROCEDURE AND ITS IMPORTANCE IN THE US FOOD AND DRUG ADMINISTRATION

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Abstract

Validation is the best-known and most important GMP parameter. This article provides an introduction to process validation of the pharmaceutical manufacturing process and its importance according to the US Food and Drug Administration (FDA). This work aims to provide an introduction and a general overview of the process validation of the pharmaceutical manufacturing process. Quality cannot be ensured by sampling, testing or releasing materials and products. Quality assurance techniques must be used to build quality into the product at every step rather than testing at the end. Process validation of a process ensures the production of a drug with reproducible quality. In the pharmaceutical industry, process validation takes on this task to integrate quality into the product, as it has proven to be an important tool for drug quality management according to ISO 9000:2000.

Keywords: *Quality assurance, Process validation, GMP, pharmaceutical industry*

GMP AND COMPREHENSIVE INSPECTION POLICIES HELP DRUG MANUFACTURERS PRODUCE THE HIGHEST QUALITY PRODUCTS

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Abstract

Quality assurance (QA) is the management technique used to provide sufficient confidence that a product, service or result meets quality requirements and is suitable for use. Any monitoring program or assessment must aim to generate accurate, reliable and sufficient data for the stated purpose. Data quality objectives are qualitative and quantitative standards used to create a system that keeps the level of uncertainty within permissible limits and at an acceptable level. Quality assurance will increase public and donor confidence. Unconfirmed observations should not be used until they can be verified. A robust pharmaceutical quality assurance system ensures that products are effective and safe. Adhering to good manufacturing practices (GMP) and adopting comprehensive inspection

policies help drug manufacturers produce the highest quality products and avoid reputational incidents. Product Quality Review (PQR) is a mechanism that ensures that the data collected by the Pharmaceutical Quality System (PQS) is reviewed for trends. This tool can support a continuous improvement environment. PQRs are used to identify and implement recommendations for needed improvements. Quality control and quality assurance tasks are about ensuring that the drug has been manufactured correctly, is safe to use and has the desired effect. Without these two functions of quality management, a pharmaceutical company would find it difficult to achieve consistent production. Quality assurance (QA) is a systematic process for determining whether a product or service meets certain requirements. Quality assurance establishes and maintains established requirements for the development or manufacture of reliable products.

Keywords*: ISO, Quality assurance, Monitoring program, Quality*

QUALITY CONTROL AND QUALITY ASSURANCE REPRESENT INCREASINGLY IMPORTANT CONCERNS FOR PROJECT MANAGERS

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Abstract

Quality assurance is an essential part of health care and nursing. While many nurses are familiar with the words “quality assurance,” most are not directly involved in the process. Because of increased requirements for licensure and accreditation, and an increased desire for cost-containment, more nurses will become active members in quality assurance programs. Some institutions are making participation in quality assurance part of the desirability of the process. The development industry has been scuffling with quality issues for several years, and therefore the cost to our economy is dramatic. The price could possibly be reduced significantly if the industry were to embrace the idea of quality assurance that has been used with great success by many other sectors of the economy. Building owners also have to be compelled to be educated on what quality assurance is so they’ll begin using their voices to encourage modification of this method to guard their investments and reduce the price of construction. Internal Quality control (QC) and Quality Assurance (QA) represent increasingly important concerns for project managers. Defects or failures in constructed facilities may result in extremely large costs. Even with minor defects, re-construction is also necessary and facility operations are impaired. Increased costs and delays are the result. Quality Assurance and internal control are an important part of any construction process to boost the standard and uniformity of the project. The need for QA and QC in construction projects has increased substantially in recent times because of significant changes, developments in technology and high expectations of the users. The QA

and QC maintain uniformity in the construction process and ensure more economical utilization of materials leading to a significant drop in cost to the users. The extra cost involved in QA and QC is directly proportional to the advantages. A technique has been developed for QA and QC in the housing industry. The methodology accomplishes the required quality in the construction process. Ultimately the existence of quality is vital. So generally, we can define the standard in several ways: Quality is conformance to requirements or specifications. Quality is fitness to be used. Quality is the extent to which a collection of inherent characteristics fulfils requirements.

Keywords: *Quality Assurance, Quality Control, Extremely Large, Project Managers.*

TOOL ADOPTED TO ACHIEVE PRODUCT DESIGN IMPROVEMENT SYSTEM TO ENABLE T CONSISTENT DELIVERY OF MEDICINES WITH APPROPRIATE QUALITY CHARACTERISTICS

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Abstract

In pharmaceutical manufacturing, quality assurance is the parameter used to ensure that prescribed medications actually have the desired effect on the person taking them. The PQS, part of the QS system, was developed to help manufacturers achieve the goal of high-quality finished pharmaceutical products. This leads to the required level of drug regulation and ensures patient effectiveness and safety. Parameters for approaching these goals include: The pharmaceutical product is designed to meet the need and performance requirements. The process is designed to consistently meet the critical quality characteristics of the product. Processes, equipment, personnel and deviations are appropriately identified and controlled. The entire manufacturing process is constantly monitored and updated to ensure consistent quality over time. The application of pharmaceutical quality systems in pharmaceutical products can extend to pharmaceutical development intended to facilitate innovation and continuous improvement of prescribed drugs. It is the tool used to achieve product realization through design, planning, implementation, maintenance and continuous improvement can be a system to enable the consistent delivery of medicines with appropriate quality characteristics.

Keywords*: Pharmaceutical Quality, Equipment, Implementation, Maintenance*

EXPLORING ANXIETY THROUGH ANIMAL MODELS: A MULTIFACETED APPROACH

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Abstract

Using animals to study anxiety can help us understand the biological causes of anxiety disorders and develop better drugs and behavioral therapies. However, some of the ways we simulate anxiety in animals may not precisely mirror real human conditions. While these animal models have provided insights into the brain and behavior associated with anxiety, they may not always align with what we observe in people with anxiety disorders. Researchers employ animal models to investigate anxiety, aiding our comprehension of anxiety disorders and the development of improved treatments. Nevertheless, certain animal models only replicate extreme anxiety that falls within the normal range. While these models have enhanced our understanding of the brain and behavior linked to anxiety, they may not perfectly replicate real clinical cases.Animal models play a crucial role in deepening our understanding of the molecular mechanisms underlying anxiety and enable the screening and development of new anxiety medications, a task often unfeasible in human studies. Human research has already established a genetic basis for anxiety, and animal studies further strive to elucidate its genetic components. In the field of anxiety research, animal models can be broadly categorized into two main types. The first type focuses on how animals respond when conditioned to stressful and sometimes painful situations, such as exposure to electric foot shocks. The second type centers on ethologically-based approaches, exploring how animals naturally react to stressors, including fleeing, avoiding, or freezing in response to stimuli like a brightly lit test chamber or the presence of a predator. This comprehensive review sheds light on the diverse facets of animal anxiety models, which are instrumental in advancing research in this field.

Keywords*: Anxiety, Animal models,Biological causes, Anxiety disorders ,Drugs, Behavioral therapies.*

GASTRORETENTIVE DRUG DELIVERY SYSTEM: ENHANCING THERAPEUTIC EFFICACY

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Abstract

Oral route is most of the times more advisable for administration of drug due to it's easy administration and pliability in production. But it is the route which have various drawbacks like reduced gastric residence time (GRT). Gastroretentive drug delivery system (GRDDS) have emerged as a promising approach to improve the bioavailability and therapeutic effectiveness of various drugs. GRDDS is the approach that enhance the gastric residence time through focusing site specific drug release in stomach intended local or systemic effects by drug absorption enhancement and reduction in frequency of dosing. GRDDS predominantly consist of floating, bioadhesion, swelling, high density and magnetic system to enhance the bioavailability of the drug and the delivery of the controlled release of the drug for prolonged duration of time. GRDDS is convenient perspective for the drugs that have narrow therapeutic window or those requiring sustain release. The key advantages of GRDDS include improve patient compliance, reduce side effects and enhanced therapeutic outcomes. They are especially relevant in the treatment of chronic conditions such as gastroesophagus reflux disease (GERD), peptic ulcers and diabetes. furthermore, GRDDS have the potential to overcome challenges associated with pediatric and geriatric patient populations. Gastroretentive drug delivery system represent a promising frontier in pharmaceutical research. Their ability to optimize drug delivery, improve patient adherence and address therapeutic challenges positions them as a vital component of modern healthcare.

Keywords: *Gastroretentive drug delivery system, Floating, Bioadhesion, Gastric residence time, Bioavailability.*

THERAPEUTIC EVALUATION OF *COSTUS IGNEUSNAK* LEAF EXTRACT AGAINST THE STREPTOZOTOCIN INDUCED DIABETIC BIOCHEMICAL, HISTOLOGICAL AND MOLECULAR IMPAIRMENTS IN HEPATORENAL SYSTEM

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Abstract

This study aimed to assess the therapeutic efficacy of *Costus igneus* Nak. leaf extract in mitigating diabetes-induced hepatorenal injury in male albino rats. Diabetes was induced by a single streptozotocin injection (55mg/kg). Animals with blood glucose levels exceeding

250 mg/dL were considered diabetic. The rats were randomly divided into seven experimental groups, including control, diabetic, and various doses of *C. igneus* Nak. leaf extract and glibenclamide. Treatment commenced 24 hours post-diabetes induction and continued for four consecutive weeks at doses ranging from 100-300mg/kg. At the end of the experimental period, animals were sacrificed, and blood and tissue samples were collected for biochemical, serological, and histopathological evaluations. The results demonstrated a dose-dependent recovery in biochemical parameters related to oxidative stress, liver and kidney function, glycogen content, serum protein levels, and inflammatory cytokines. The 300mg/kg dose exhibited significantly higher recovery. Based on the comprehensive analysis, this study concludes that the *C. igneus* Nak. leaf extract effectively mitigated the adverse effects of type 1 diabetes on rat hepatorenal function.

Keywords: *Diabetes, Liver, Kidney, Herbal medicine, Oxidative stress, Streptozotocin.*

APPLICATIONS OF PLANT-DERIVED NATURAL PRODUCTS IN DRUG DISCOVERY

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Abstract

Medicinal plants are the valuable source of molecules with therapeutic potential and have vital potential for identification of novel drug leads. Several drugs which are currently used as therapeutic agents have been developed from plant resources. Several plant species such as opium (*Papaver somniferum*), myrrh (*Commiphora* species), and licorice (*Glycyrrhiza glabra*) are used either alone or as one of the ingredients of herbal formulations for the treatment of various diseases. Various compounds from these plant resources are used either as pure drug or phytomedicine or serve as lead molecules for the development of drugs. A number of such active constituents being in clinical application include morphine, codeine, noscapine, papaverine, quinine, artemisinin, paclitaxel, etc. These drugs are divided into plant-made biologics, small bio-molecules and phytopharmaceutical drugs based on the ethnopharmacological approach associated with traditional medicinal system. Recently, the use of plant extracts, molecules and fractions holds promising scope to formulate appropriate drugs. This article summarizes applications of plant-derived natural products in phytopharmaceutical drug development.

Keywords*: Natural Products, Plant Resources, Drug Discovery, Therapeutic, Phytomedicine.*

PHARMACOVIGILANCE: SAFEGUARDING GLOBAL HEALTH THROUGH DRUG SAFETY SURVEILLANCE

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Abstract

Pharmacovigilance, a pivotal aspect of healthcare, serves as a vigilant guardian of public health by systematically monitoring, evaluating, and ensuring the safety of pharmaceutical products. This abstract provides a comprehensive overview of pharmacovigilance, highlighting its critical role in safeguarding global health.In an ever-evolving landscape of pharmaceutical innovations, pharmacovigilance stands as the sentinel against potential risks and adverse effects associated with medications. Its primary mission is to detect, assess, understand, and prevent adverse reactions, enabling healthcare providers, regulatory agencies, and pharmaceutical companies to make informed decisions regarding drug causali.The pharmacovigilance process encompasses the collection of adverse event reports, signal detection, causality , and risk management. It operates on a global scale, with a network of healthcare professionals, regulatory authorities, and patients contributing essential data to the pharmacovigilance databases.In recent years, the digital age has revolutionized pharmacovigilance through the utilization of big data analytics, artificial intelligence, and real-world evidence. These advancements empower pharmacovigilance to identify safety signals more efficiently, enabling rapid responses to emerging risks.Pharmacovigilance is not merely a reactive discipline; it actively shapes the future of drug safety through risk minimization strategies, label updates, and post-marketing surveillance. This ensures that the benefits of medications continue to outweigh their potential risks.In conclusion, this abstract underscores the paramount importance of pharmacovigilance in maintaining the safety and integrity of global healthcare systems. As pharmaceutical landscapes evolve, pharmacovigilance remains an indispensable cornerstone, dedicated to the continuous improvement of drug safety and the protection of public health worldwide.

Keywords: *Global Health, Artificial intelligence, Drug Safety Surveillance*

BIOLOGICAL ACTIVITIES OF COUMARIN AND IMIDAZOLINE DERIVATIVES

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Abstract

Various derivatives of coumarin and imidazoline have been reported to have a wide range of biological activities and they can be further modified to synthesize more effective and potent drugs. Coumarin-2H-chromen-2-one and its derivatives are widely distributed in nature.

Coumarin belongs to a group as benzopyrones, which consists of a benzene ring joined to a pyrone nucleus. Coumarin and imidazoline regarded as a promising class of bioactive heterocyclic compounds that exhibit a range of biological activities like anti-microbial, anti-viral, anti-diabetic, anti-cancer activity anti-convulsant, anti-inflammatory and antihypertensive activities etc. the review article mainly focused on the coumarin and imidazoline as they possess number of biological activities. The aim of presentation is to provide the vigilance towards such compounds that can further utilize for medicinal research purpose.

Keyword: Coumarin derivatives, Imidazoline derivatives, Anti-microbial, Anti-viral, Anti-diabetic, Anti-cancer activity, Anti-convulsant, Anti-inflammatory and Antihypertensive activities.

MOLECULAR PATHOGENESIS BEHIND ZOONOTIC VIRUS : NIPPAH

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Abstract

High Mortality have been triggered by viral diseases in the past. The “Nippah” virus is spread by bats and is responsible for a wide range of illnesses, from minor infections to serious respiratory infections. It belongs to the Henipaviral subclass. Through surface glycoproteins like Protein G and F, it enters the target cell. However, the precise pathophysiology of the disease and its processes are not well understood.It is quite natural for the encapsulated Henipaviral, which contains NiV, to penetrate target cells after binding as a result of the coordinated efforts of glycoprotein fusion and attachment. Class B ephrin (the viral receptor) interacts with NiV glycoprotein in host cells, causing conformational changes that lead to F glycoprotein activation and membrane fusion. The newly created precursor (F) protein (F0) cleaves two components, namely F1 and F2, by host protease. The F1 subunit contains the virus’s merging peptide, which aids in interaction between the virus and the host cell. The viral M protein participates in budding and morphogenesis. G protein antibodies are crucial for reducing NiV infectivity.Clinical symptoms include central nervous system parenchymal lesions, significant vascular abnormalities in numerous organs, and weight loss. The choroid plexus, a set of blood veins in the cerebrum, are where the virus enters the central nervous system (CNS). This infection may affect the blood-brain barrier (BBB), which ultimately results in a number of neurological issues.The pathophysiology of the Nipah virus as well as its mode of transmission have been the subject of in-depth study over the past few decades. Some effective prevention methods can be created and put into place by involving multiple industries and multi-sector approaches. Along with public hygiene, people should also be cognizant of food hygiene. In order to identify potential treatment regimens and stop new NiV outbreaks, health officials urgently need to perform clinical studies.

Keywords: *Nippah virus, Glycoproteins, Neurological, Zoonotic.*

SYNTHESIS AND BIOLOGICAL ACTIVITY OF COUMARIN CLUBBED 2-AMINO BENZOTHIAZOLE DERIVATIVES

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Abstract

A series of five derivatives(7-Hydroxy-4-methyl-3-(benzothiazole-2-ylamino)-2H-chromen-2-one)8(a-e), derivatives were synthesized, characterized and biologically evaluated for in vitro antimicrobial activity against two bacterial strains, Gram positive bacteria Staphylococcus aureus (MTCC 87),) and Gram negative bacteria Escherichia coli (MTCC 40). All the synthesized compounds showed good to moderate antibacterial activity against Escherichia coli and Staphylococcus aureus with all the concentrations (100ìg/ml, 250ìg/ml and 500ìg/ml) and were compared with standard Ciprofloxacin and DMSO. All compound 8a, 8b, 8c, 8d, 8e was found to have marked activity with zone of inhibition of 8a is 4mm (100µg/ml), 9mm (250µg/ml), 12mm (500µg/ml), Compound 8b with zone of inhibition is 8mm (100µg/ml), 14mm (250µg/ml), 20mm (500µg/ml). Compound 8c with zone of inhibition 6mm (100µg/ml), 14mm (250µg/ml), 20mm (500µg/ml), Compound 8d with zone of inhibition is 10mm (100µg/ml), 17mm (250µg/ml), 18mm (500µg/ml), and the compound 8e with zone of inhibition is 16mm (100µg/ml), 20mm (250µg/ml), 23mm (500µg/ml) against *Staphylococcus aureus*. The Compound 8a, 8b, 8c, 8d, 8e was found to have marked activity with zone of inhibition of 8a is 8mm (250µg/ml), 13mm (500µg/ml), Compound 8b with zone of inhibition is 6mm (100ìg/ml), 11mm (250µg/ml), 17mm (500µg/ml). Compound 8c with zone of inhibition 17mm (250µg/ml), 22mm (500µg/ml), Compound 8d with zone of inhibition is 7mm (100µg/ml), 12mm (250µg/ml), 22mm (500µg/ml), and the compound 8e with zone of inhibition is 10mm (100µg/ml), 19mm (250µg/ml), 21mm (500µg/ml) against *Escherichia coli.*

Keywords*: Coumarin, 2-Amino benzothiazole, Bacterial Strain.*

RECENT UPDATES ON ANTIDEPRESSANT DRUGS

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Abstract

Depression is a chronic feeling of emptiness, sadness, or inability to feel pleasure that may appear to happen for no clear reason. It is distinct from grief and other emotions. It can affect adults, adolescents, and children. Depression often persists in spite of a change of circumstances and causes feelings that are intense, chronic, and not proportional to a person's circumstances. Depression can last for several weeks, months, or years. For many people, it is a chronic illness that gets better and then relapses. Depression can have psychological and physiological symptoms like: continuous depressed mood, loss of interest

in their regular work or in daily activity, change in appetite and loss in body weight, fatigue, lack of sleep or oversleeping and the major ones are the thoughts of suicide or death. There are several forms of depression like: major depression, postpartum depression and depressive disorder with seasonal pattern. It can be caused by several factors like imbalance in neurotransmitter's levels, genetically, social factors etc. For the treatment of depression, we use different methods like psychotherapy, supporting them or motivating them but at last when we don't get any results we use antidepressant drugs. These drugs are used to balance the neurotransmitter levels in our body that will result in cure of the depression. Some of antidepressant we use are selective serotonin reuptake inhibitor (SSRI), tricyclic antidepressants, monoamine oxidase inhibitor (MOI). Each class of these drugs acts as on different neurotransmitters. These drugs also have side effects like nausea, diarrhoea, weight loss or weight gain and sexual dysfunction. In some case's we don't even need drugs to cure patient, we use other different methods to cure them. Some of them are psychotherapy, by food and diet or by just supporting them.

Keywords: Antidepressant drug, SSRI, MOI, Neurotransmitter.

GLOBAL PREVALENCE OF FATTY LIVER DISEASE ASSOCIATED WITH CLINICAL TRAIL

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Abstract

The Most Common Metabolic Liver Disorders Are Non-Alcoholic Fatty Liver disease (NAFLD) and alcoholic fatty liver disease (AFLD). Fatty Liver Disease represents a wide spectrum of clinical entities ranging from asymptomatic hepatic steatosis to more advanced non- alcoholic steatohepatitis (NASH), cirrhosis, and hepatocellular carcinoma and is commonly seen in patients with diabetes mellitus (DM) and metabolic syndrome (MetS). Currently, the global burden of the NAFLD and AFLD on the health system is rapidly increasing with alarming prevalence and mortality rate. In the modern world, indiscriminate human activities impelled environmental toxicity through heavy metals such as cadmium (Cd) and high fat diet that poses significant health hazards. The pathogenesis of NAFLD and AFLD is linked to lipid buildup, oxidative stress, insulin resistance, inflammation, and dietary behaviours. NAFLD & AFLD is a chronic liver disease that, in its initial stages, is directly associated with fatty liver and hepatic insulin resistance. Researchers are studying many aspects of nonalcoholic fatty liver disease (NAFLD), nonalcoholic fatty liver (NAFL), and nonalcoholic steatohepatitis (NASH). For example, researchers are studying new treatments for NASH, how genes may increase the risk for NAFLD, how liver diseases, such as NAFLD, develop and progress over time. www.ClinicalTrials.gov has conducted studies to advance understanding of the causes, development, complications, and treatment of NASH in children and adults. These results

led to a large worldwide study that is still being evaluated to determine whether drugs are safe and effective treatment for fatty liver disease.

Keywords: *Non- alcoholic steatohepatitis, Fatty liver disease, Clinical studies, NAFLD, ALD.*

RECENT UPDATES ON ANTICANCER DRUGS - A REVIEW

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Abstract

Cancer is characterized by uncontrolled cell growth, which can be caused by a large number of possible signal disruptions. Cancer is caused by the failure of genetic mechanisms that control the growth and proliferation of cells. In most cases, cumulative damage to multiple genes via physical and chemical agents, replication errors, etc. Contribute to oncogenesis. However, a person's inherited genetic background also may strongly contribute. In cancer, a single transformed cell grows to become a primary tumour, accumulates more mutations and becomes more aggressive, then metastasizes to another tissue and forms a secondary tumour. Cancer chemotherapy strives to cause a lethal cytotoxic event or apoptosis in the cancer cells that can arrest a tumour's progression. Ideally, these anticancer drugs should interfere only with cellular processes that are unique to malignant cells. Unfortunately, most currently available anticancer drugs do not specifically recognize neoplastic cells but, rather affect all kinds of proliferating cells, both normal and abnormal. Recently, a Breakthrough for medical science observed as England approves World's 1st 7-minute Cancer treatment injection i.e Atezolizumab, sold under the brand name TelCentris, is a monoclonal antibody medication used to treat urothelial carcinoma, non-small cell lung cancer, small cell lung cancer, hepatocellular carcinoma and alveolar soft part sarcoma, but discontinued for use in triple-negative breast cancer. It enhances patient's immune system to identify & eliminate cancer cells.

Keywords*: Transdermal, Homeostatic, Penetration, Corneum, Lipophilic.*

MEDICALLY ADMINISTRATION ROUTES – A REVIEW

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Abstract

The route of administration is the way through which the dosage form is administered into the body for treatment of various diseases and disorders. Various routes of administrations play a marked role in the bioavailability of the active drug in the body. In present review these routes are included with their advantages and limitations. This is an attempt for the initials of field to familiarize with the routes of administrations with their significances.

Routes of administration are usually classified by application location (or exposition).The route or course the active substance takes from application location to the location where it has its target effect is usually rather a matter of pharmacokinetics (concerning the processes of uptake, distribution, and elimination of drugs). Exceptions include the transdermal or transmucosal routes, which are still commonly referred to as routes of administration.The location of the target effect of active substances are usually rather a matter of pharmacodynamics (concerning e.g. the physiological effects of drugs). An exception is topical administration, which generally means that both the application location and the effect thereof is local.Topical administration is sometimes defined as both a local application location and local pharmacodynamic effect, and sometimes merely as a local application location regardless of location of the effects.

Keywords*: Disorder, Bioavailability, Exposition, Pharmacokinetics, Pharmacodynamics.*

DEVELOPMENT AND CHARATERISATION OF TRANSDERMAL DRUG DELIVERY SYSTEM FOR ANTIHYPERTENSIVE DRUGS

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Abstract

Clindipine is an antihypertensive drug use for the management of hypertention.It is the half life of 2.5 to 3hr and oral bioavailability of 13 percent due to first pass metabolism. The total daily dose of clindipine is 5 to 10 gm. hence it is require frequent dosing. Transdermal patch of clindipine were prepared for sustain release and improve bioavailability of drug and patient compliance. The purpose of this search was to develop a matrix type transdermal therapeutic system containing drug clindipine with different ratio of hydrophilic polymeric system by the solvent casting method by using 30 percent w/w of dibutyl phthalate and PEG-400 to the polymer weight, incorporated as plasticizer. Dimethylsulphoxide was used to enhance the transdermal permeation of cilindipine. The physiochemical compatibility of the drug and the polymer studied by differential scanning calorimetric and infra-red spectroscopy suggested absence of any incompatibility. Formulated transdermal film were physically evaluated with regard to thickness, weight variation, drug content ,flatness, percentage of moisture content and in vitro and in vivo release rate.

Keywords: *Clindipine, Transdermal patch, Hydroxyl propyl cellulose*

NIOSOMES: AN EMERGING TOOL FOR ANTI-AGING COSMECEUTICALS

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Abstract

The intricate biological process of ageing is not being fully understood. Numerous variables, including genetic factors, environmental factors including illnesses, lifestyle factors, and social factors, have an impact on human ageing and lifespan. Age-related disorders including cognitive decline, diabetes mellitus, and frailty are all brought on by ageing. Additionally, greater health and looks have long been priorities for people all throughout the world. In order to retain a youthful appearance as a cosmetic product and to stop the onset of degenerative illnesses, the optimum antiaging formulation should be suitable in both cases. The creation of new items and their marketing have been more easier because to the growing advances in science and technology as well as the increased availability of product information via social media. Formulations that blend cosmeceuticals and nanotechnology are becoming more popular these days. Therefore, we may conclude that innovative cosmetic delivery methods are next-generation carrier systems with tremendous promise. Since its successful usage in the 1960s, novel drug delivery methods like liposomes have been developed. However, because of their problems with stability, other delivery methods, including niosomes, were found to be more stable. Niosomes have been utilised in the cosmetics industry since the early 1970s. In comparison to other colloidal carrier systems, they are less irritating, stable, and have high penetrating capability. The function of niosomes as a carrier for topically applied anti-aging products is the main theme of this review paper.

Keywords*: Niosomes, Skin Ageing, Topical Application, Non-Ionic Surfactants.*

A PREVALENT MENTAL HEALTH DISORDER

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Abstract

Depression, a prevalent mental health disorder, has gained increasing attention due to its significant impact on individuals and society. This abstract provides a concise overview of depression, encompassing its definition, prevalence, etiology, symptoms, diagnosis, and treatment options. Depression is characterized by persistent feelings of sadness, hopelessnessand a loss of interest or pleasure in daily activities. It affects millions of people worldwide, making it a global public health concern. Multiple factors contribute to the

development of depression, including genetic, biological, environmental, and psychological elements. Diagnosing depression involves assessing symptoms and their duration, often through structured clinical interviews and questionnaires. Various treatment modalities, such as psychotherapy, medication, lifestyle changes, and support systems, exist to address depression. Timely diagnosis and appropriate treatment are essential in managing this condition effectively and improving the quality of life for those affected. Increased awareness, reducing stigma, and fostering a supportive environment are crucial steps in combating the multifaceted challenges posed by depression.

Keywords: *Depression, Hopelessness, Clinical Review, Psychotherapy, Medication, Lifestyle.*

FORMULATION AND EVALUATION OF NANO-EMULSION OF LULICONAZOLE FOR TOPICAL APPLICATION

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Abstract

The aim of present research to design and develop nano-emulsion of luliconazole as effective treatment for tineapedis, tineacruris, and tineacorporis in fungal disease. Luliconazole is an imidazole-based antifungal agent with broad antifungal range of optical activity & demonstrates impressive antifungal activity against dermatophytes. It belongs to BCS class II i.e low soluble and highly permeable drug. Due to its poor solubility, it is incompletely adsorbed after topical application and bioavailability varies among individuals.According to the Noyes-Whitney equation a decrease in particle size will lead to an increase in effective surface area, which in turn increases the drug solubility. Therefore, to overcome these problems nano-emulsions have been designed. Topical nano-emulsions containing luliconazole with different oils (oleic acid), surfactant (tween 20), co-surfactant (PEG 200, PEG 400, and ethanol) and distilled water by the spontaneous emulsification method. The nano emulsion formulations that passed thermodynamic stability tests were characterized for for appearance, pH, FTIR, TEM, viscosity, drug content, % drug entrapment efficiency and in-vitro drug release study of luliconazole determined by Franz diffusion cell and stability study.

Keywords: Nano-emulsion, Luliconazole, Anti-fungal, Nano-particles.

DESIGN AND CHARACTERIZATION OF BILASTINE LOADED ETHOSOMAL GEL

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Abstract

Bilastine is a peripheral histamine H1-antagonist used to treat seasonal allergic rhinitis. Its belong to BCS II class with low solubility and high permeability. This investigation deals with development of a novel ethosomes-based topical formulation of bilastine for effective delivery because it terminate gastrointestinal blockage to drug, passes first pass metabolism or act locally and effectively .Stratum corneum, the nature of the drug and carrier, and delivery conditions are barrier for transdermal drug delivery. To overcome this problem Ethosomes are use. Ethosomes are soft malleable vesicles composed mainly of phospholipids, ethanol (relatively high concentration), and water. These soft vesicles represent novel vesicles carriers for enhanced delivery through the skin, The formulation consisting of drug(bilastine),soya lecithin, ethanol, Carbopol, triethanolamine. Ethosomes are prepared by cold method, this is the most common and widely used method for ethosomal preparation.The prepared formulation is characterized for entrapment efficiency, percentage drug diffusion, kinetics modelling data, particle size distribution, zeta potential,particle morphology and stability studies. Seven formulations of ethosomes were prepared with different quantities of soya Phosphatidyl choline. Formulation 2nd has highest drug entrapment efficacy that is 88±0.8%.

Keywords: Bilastine, Ethosomes, Antihistamine, Transdermal drug delivery system.

A BRIEF REVIEW OF DRUG DISCOVERY AND DEVELOPMENT

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Abstract

Drug discovery and development is a multifaceted and arduous process aimed at identifying, developing, and ultimately delivering novel pharmaceuticals to address various diseases and medical conditions. This process is a complex, high risk and potentially highly rewarding endeavor. Corporations literally burn cash through the enduous process, to the tune $800 millon per drug. The development of new drug requires a major investment of capital, human resources and technological expertise, but the achievement if desired molecular entities into the market is not inclining proportionality. As a result, an approximate of 0.01% of new new molecular entities are approved by FDA. This incrinate journey begins with identification of specific molecular targets associated with a particualr ailment. The process unfolds through several critical phases. Initial stages involves the

screening of chemical compounds to identify potential candidates. Promising compounds are then subjected to rigorous optimization to enhance there safety, efficacy and pharmacological properties in lead compounds. Prior to human testing, entensive preclinical assessments occur in laboratory settings and animal models. Clinical trials encompasses three pivotal phases: phase I focuses on the safety and dosing in healthy individuals. Phase II expands to patient population for efficacy and safety. Phase III involve large scale, efficacy and side effects. Successful out comes leads to the submission of a New Drug Application (NDA). Post-approval, rigorous post-market serveillence in real world sinarios. In conclusion, this is complex processes that play crucial role in advancing healthcare and improving patients' lives. Collaborating between academia, industries and regulatory agencies is key to advance the field and bringing safe and effective drug to market. Continues advancement in the technology and a deeper understanding of biological hold the promise of accelerating drug discovery and development in future.

Keywords: Multifaceted, FDA, NDA.

DESIGN AND FORMULATION OF GLIMEPIRIDE LOADED BUCCAL PATCHES

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Abstract

Glimepiride is a second-generation sulfonyl urea agent. Glimepiride is a medication that, when taken with a proper diet, helps reduce high blood sugar levels by making the pancreas release more insulin. Glimepiride is a potent drug used against diabetes mellitus II with the half life of 3-5 hrs. Glimepinde has 100% oral absorption, due to high first pass metabolism its bioavailability is less. Buccal patches were formulated using polymer HPMC(K4M, K15M) and NaCMC in various proportions and combination PEG 400 was used as a plasticizer. The buccal patches were prepared by solvent casting method. In this method. The drug and excipients were co-dispersed in an organic solvent and mixed properly to get the clear solution and poured into petri plate which contains the mercury. After solvent evaporation, a thin layer of films was performed. Then the films were dried and cut into small patches of desired size and shape.The design patches were evaluated for Thickness, folding endurance, weight variation, swelling index Surface pH. Tensile strength In-vitro diffusion studies were conducted for 6 hrs in phosphate buffer using dialysis membrane.No significant changes were observed on physical characteristics, drug content and on drug release of patches. So, it was concluded that the prepared patches were stable under these stress condition.

Keywords : Glimepiride, Buccal patches, HPMC, Solvent casting method

PATHOPHYSIOLOGY OF HYPERTENSION: UNRAVELING THE SILENT KILLER

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Abstract

Hypertension, often referred to as the "silent killer," is a global health concern characterized by elevated blood pressure levels. This abstract provides an overview of the pathophysiology of hypertension, shedding light on the intricate mechanisms underlying this prevalent and potentially life-threatening condition.Hypertension pathophysiology is multifaceted and involves various physiological systems, including the cardiovascular, renal, neural, and endocrine systems. One of the primary drivers of hypertension is the constriction of blood vessels, primarily arterioles, leading to increased vascular resistance. This constriction can result from endothelial dysfunction, oxidative stress, and the dysregulation of vasoactive substances such as nitric oxide and angiotensin II. These factors promote a state of chronic vasoconstriction, elevating systemic blood pressure.Renal dysfunction plays a pivotal role in hypertension pathophysiology. Abnormalities in the renin-angiotensin-aldosterone system (RAAS) and sodium handling by the kidneys can lead to volume expansion and increased blood pressure. Additionally, impaired pressure natriuresis, a phenomenon where the kidneys fail to excrete excess sodium in response to elevated blood pressure, further exacerbates hypertension.The sympathetic nervous system, responsible for regulating heart rate and vascular tone, becomes overactive in hypertensive individuals. Increased sympathetic outflow leads to heightened heart rate, cardiac output, and vasoconstriction, all of which contribute to elevated blood pressure. Moreover, chronic stress and emotional factors can further stimulate sympathetic activity, perpetuating hypertension.Hormonal dysregulation, particularly involving aldosterone and cortisol, can also contribute to hypertension. Aldosterone promotes sodium and water retention, increasing blood volume and pressure. Similarly, excessive cortisol levels, often seen in chronic stress, can lead to hypertension through various mechanisms, including impaired endothelial function and insulin resistance.A comprehensive understanding of these mechanisms is crucial for the development of effective therapeutic strategies and preventative measures to mitigate the global burden of hypertension and its associated cardiovascular complications.

Keyword: *Elevated blood pressure, RAAS, Increased sympathetic outflow, Hormonal dysregulation.*

PATHOPHYSIOLOGY AND CURRENT TREATMENT STRATEGIES FOR ALLERGIC CONJUNCTIVITIS

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Abstract

Allergic conjunctivitis is a common ocular condition characterized by inflammation of the conjunctiva in response to allergens and sub conjunctivitis hemorrhage. Allergic conjunctivitis is primarily mediated by immunoglobulin E (IgE)-mediated hypersensitivity reactions. Exposure to allergens, such as pollen, dust mites, or pet dander, triggers the release of histamine and other inflammatory mediators from mast cells and eosinophils. These mediators, including histamine, leukotrienes, and prostaglandins, result in conjunctival vasodilation, increased vascular permeability, and activation of inflammatory cells, leading to redness, itching, and tearing. Chronic exposure to allergens can cause chronic allergic conjunctivitis and lead to complications like papillary conjunctivitis.*Antihistamines:* Topical antihistamine eye drops (e.g., olopatadine, ketotifen) help relieve itching and redness by blocking histamine receptors. *Mast Cell Stabilizers:* Cromolyn sodium eye drops prevent mast cell degranulation. *Decongestants:* Eye drops with vasoconstrictors like naphazoline provide temporary relief from redness. *Corticosteroids:* These are reserved for severe cases due to the risk of side effects. *Immunotherapy:* Sublingual or subcutaneous immunotherapy (SLIT or SCIT) can help desensitize the immune system to specific allergens, reducing allergic reactions over time. *Biologic Therapies:* Monoclonal antibodies like omalizumab and dupilumab have shown promise in the treatment of severe allergic conjunctivitis by targeting specific pathways involved in allergic inflammation. *Nasal-to-Ocular Delivery*: Innovative drug delivery methods aim to provide targeted therapy to the eyes via nasal-to-ocular routes, improving drug efficacy while minimizing systemic side effects. *Gene Therapy*: Ongoing research explores gene therapy approaches to modify the immune response, potentially offering a long-term solution for allergic conjunctivitis.Conventional treatments focus on symptom relief, while emerging techniques, such as immunotherapy, biologic therapies, novel drug delivery methods, and gene therapy, hold promise for addressing the underlying immune response and providing more targeted and long-lasting relief for individuals suffering from allergic conjunctivitis. Further research and clinical trials are essential to validate the safety and efficacy of these emerging treatments and enhance the management of this prevalent ocular condition.

Keywords: *Conjunctivitis, Antihistamines, Mast cell stabilizers, Immunotherapy, Gene therapy*.

CURRENT OUTLOOK OF POLYCYSTIC OVARY SYNDROME, PATHOPHYSIOLOGY, TREATMENT, METHOD & ITS CURRENT UPDATE

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Abstract

PCOS remains one of the most common endocrine disorders affecting people of reproductive age, with an estimated prevalence of around 5-10% worldwide. The exact cause of PCOS is not fully understood, but it is believed to involve a combination of genetic and environmental factors. Some key pathophysiological features include: *Insulin Resistance*: Many individuals with PCOS have insulin resistance, which can lead to elevated insulin levels and contribute to hormonal imbalances. *Hyperandrogenism:* Elevated androgen (male hormone) levels are common in PCOS, leading to symptoms like hirsutism (excessive hair growth) and acne. *Ovulatory Dysfunction*: Irregular or absent menstrual cycles are often seen in PCOS due to disrupted ovulation. *Polycystic Ovaries:* On ultrasound, the ovaries may appear enlarged with numerous small follicles (cysts).The management of PCOS is tailored to an individual's specific symptoms and goals. Treatment options may include: *Lifestyle Modifications*: Diet and exercise to improve insulin sensitivity and promote weight management. *Birth Control Pills*: Oral contraceptives to regulate menstrual cycles and reduce androgen-related symptoms. *Anti-Androgen Medications*: Drugs like spironolactone can help with hirsutism and acne. Metformin: Often used to improve insulin sensitivity in those with insulin resistance. *Fertility Treatments*: If pregnancy is desired, ovulation-inducing medications may be prescribed. *Bariatric Surgery*: Considered in cases of severe obesity and associated metabolic issues.PCOS is associated with several long-term health risks, including an increased risk of type 2 diabetes, cardiovascular disease, and endometrial cancer. Regular monitoring and management of these risks are crucial.Ongoing research continues to shed light on the underlying mechanisms of PCOS and potential new treatment options. Some areas of research include the role of gut microbiota, epigenetics, and targeted therapies.Education and support are vital components of PCOS management. Patient advocacy groups, online communities, and healthcare providers play a significant role in raising awareness and providing resources for those with PCOS.

Keywords: *Insulin Resistance, Hyperandrogenism, Ovulatory Dysfunction, Gut microbiota, Epigenetics*

DIABETIC GASTROPARESIS: CURRENT THERAPETIC GOALS AND FUTURE PROSPECTIVE TREATMENT OPTIONS

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Abstract

Diabetic gastroparesis is a complication of diabetes that affects the normal functioning of the stomach muscles, leading to delayed gastric emptying and a range of digestive symptoms. The primary goals of therapy for diabetic gastroparesis are to alleviate symptoms, improve gastric motility, and manage blood glucose levels. Patients are often advised to make dietary changes to manage symptoms. This may include consuming smaller, more frequent meals with lower fat and fiber content. Liquids and pureed foods are sometimes better tolerated. Several medications may be used to help manage symptoms and improve gastric motility. Eg. Prokinetic Agents, Antiemetic Drugs, Pain ManagementMaintaining stable blood glucose levels is essential, as poorly controlled diabetes can exacerbate gastroparesis symptoms. For some individuals with refractory gastroparesis, gastric electrical stimulation with devices like the Enterra system may be considered to improve gastric motility. Researchers are exploring new prokinetic agents that may have fewer side effects and better efficacy in improving gastric motility. Some studies are investigating the use of biological therapies, such as botulinum toxin injections into the pyloric sphincter, to improve gastric emptying. Experimental studies are exploring the use of stem cells to regenerate damaged stomach muscles and improve motility.

Advances in neuromodulation techniques, such as non-invasive vagus nerve stimulation, may offer new avenues for treatment. Ongoing research into dietary modifications and lifestyle interventions may yield more effective strategies for symptom management. More research is needed to confirm the safety and efficacy of these potential treatments. Patients with diabetic gastroparesis should work closely with healthcare providers to explore the most appropriate treatment options based on their individual needs.

***Keywords**: Diabetic gastroparesis, Antiemetic Drugs, Novel Prokinetic Agent, Biological Therapies, Stem Cell Therapy, Neuromodulation*

CRYOPRESERVATION "THE BASIC NEED OF THIS ERA"

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Abstract

Cryopreservation is a process that preserves organelles, cells, tissues, or any other biological constructs by cooling to very low temperature. The responses of living cells to ice formation are of theoretical interest and practical relevance. Stem cells and other viable tissues, which have great potential for use in basic research as well as for many medical applications, cannot be stored with simple cooling or freezing for a long time because ice crystal formation, osmotic shock, and membrane damage during freezing and thawing will cause cell death. The successful cryopreservation of cells and tissues has been gradually increasing in recent years with the use of cryoprotective agents and temperature control equipment. The goal of embryo cryopreservation is long term storage and reproducible high survival rates of embryos following warming, leading to the successful establishment of pregnancy and live offspring following embryo. From some resent research papers, we found that,(1) two severed fingers were cryopreserved because the patients' conditions were not allowed to undergo the replantation immediately. The fingers were perfused with the cryopreservation solution through the digital artery at a speed of 1 ml/min. One finger was cryopreserved for 10 days and the other for 30 days. Both fingers were successfully replanted when the patient get better. (2) the effects of an antimicrobial forcing solution (8-hydroxyquinoline citrate and sucrose, 8-HQC) on the cryosurvival and recovery of dormant buds of fruit and nut species. This overview analysis the resent application of Cryopreservation in the medical and pharmaceutical sector.

***Keywords**: Cryoprotectants, Replantation, Cryoprotectant.*

PROBABLE SIGNALLING MECHANISM AND PATHOGENESIS OF HUNTINGTON'S DISEASE: AN UPDATE

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Abstract

Huntington's disease (HD) is a complex neurodegenerative disorder with a well-defined genetic basis. Its probable mechanisms and pathogenesis involve a series of interconnected processes. Genetic Mutation: The root cause of HD lies in a mutation within the HTT gene, which provides instructions for creating the huntingtin protein. The mutation involves an expanded CAG repeat, where the CAG sequence is repeated more times than normal.

Mutant Huntingtin Protein (mHTT) Formation: The expanded CAG repeat in the HTT gene leads to the production of a mutant huntingtin protein (mHTT) with an abnormally long polyglutamine (polyQ) tract. This mHTT protein is prone to misfolding, aggregation and protein Clearance: mHTT has a tendency to misfold and aggregate within neurons. These aggregates of mHTT can be found in the nucleus and cytoplasm of affected neurons and leads to cellular toxicity. Autophagy and the ubiquitin-protea some system. Excitoxicity & Mitochondrial Dysfunction: mHTT increase the release of glutamate which cans overstimulation of neurons, mHTT can negatively affect mitochondrial function and their dysfunction can lead to energy deficits and increased oxidative stress, contributing to neuronal damage. Striatal & Widespread Brain Atrophy: the selective atrophy (shrinkage) of the striatum, including the caudate nucleus and putamen which contributes to cognitive and psychiatric symptoms. Neurotransmitter Dysregulation: HD leads to dysregulation of various neurotransmitter systems, including dopamine and serotonin. These changes contribute to the psychiatric and mood disturbances seen in HD patients.The pathogenesis of HD is a multifaceted process involving a cascade of events triggered by the mutant huntingtin protein. Current research efforts are focused on understanding these mechanisms in greater detail and developing potential therapies that target these underlying processes. While there is no cure for HD at present, treatments are available to manage its symptoms and improve the quality of life for individuals with the condition.

Keywords*: Huntington's disease,mHTT,Excitoxicity & Mitochondrial Dysfunction.*

CUBOSOMES AS POTENTIAL NANOCARRIER FOR DRUG DELIVERY

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Abstract

Lyotropic liquid crystalline cores are characterized as soft nanoparticles and referred as cubosomes. They are prepared to activate the natural self-assembly capability of lipids (e.g., monoolein or phytantriol) in water. Cubosomes are crystalline isotropic lipidic nanoparticles stabilized by Poloxamers such as F127, F108. It is made up of a network of two separate aqueous channels formed by a three-dimensional, non-intersecting lipid bilayer imposed over an indefinite periodic minimum surface of cubic symmetry. Cubosomes constitute unique features such as their special cubic structure which permits to incorporate highly lipophilic, hydrophilic, and amphiphilic drugs. Also, the lipids excipients used in the preparation of cubosomes such as monoolein, phytantriol are biodegradable and biocompatible so these cubic nanoparticles are referred as safe carrier for drug delivery. Cubic lipid nanoparticles have a highly stable cubic shape that allows for a slower rate of dissociation, improved drug retention, and site-specific drug delivery. The architecture of cubic particles provides suitability in the drug delivery as compared to other lipids-based

drug delivery systems such as solid lipid nanoparticles (SLN), liposomes due to their drug expulsion to the surface of nanoparticles. Cubosomes with this loaded features/architectural composition led to an array of desired performance. Solvent evaporation, ultrasonication,hydrotrope, spray drying, melt dispersion emulsifying methods are used to prepare these carrier systems.

Keywords: Cubosomes, Drug delivery, Nanoparticle; pH sensitive, Polaxamers.

RECENT UPDATES ON METAL-POLYMERS NANOCOMPOSITES IN 3D BIOPRINTING FOR TISSUE ENGINEERING APPLICATIONS

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Abstract

Rapid tooling using additive manufacturing, or 3D printing, is an emerging manufacturing technology that has the potential to revolutionize the production of complex parts using only a computer and a design program. Lightweight structures with excellent dimensional precision and lower cost for customizable geometries are possible with these printed parts. In recent years, inherent constraints of polymers, metals, and ceramics have pushed researchers toward superior alternative composite materials to boost mechanical and other critical features; current 3D printing research follows this route from neat to composite materials. The characteristics, performance, and future uses of composite materials produced using additive manufacturing methods are discussed in this review. In addition, to discuss the state of the art in additive manufacturing, this article also fabricated many technologies, including robotics, machine learning, organ-on-a-chip, and 4D bioprinting

Keywords*: 3D bioprinting, Fabrication, Tissue Engineering, Nanocomposite, Metal Polymer.*

PHARMACOLOGICAL ACTIVITIES OF 1,3,4-OXADIAZOLE DERIVATIVE: A REVIEW

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Abstract

Researchers must uncover novel compounds that microorganisms will be vulnerable to because of the global spread of antibiotic resistance. The 1,3,4-oxadiazole ring is included in numerous novel compounds that have demonstrated a range of antimicrobial activity, including antibacterial, antitubercular, antifungal, antiprotozoal, and antiviral effects. The potential of novel compounds as medications is particularly promising because their activity is being shown in multiple publications to be greater than that of known antibiotics and

other antibiotics. As fighting against diseases that affect human beings and animal living things as well as plants, biologically active substances were necessary. Heterocyclic molecules with favourable biological activity include 1,3,4-oxadiazoles. Two nitrogen atoms and one oxygen atom make up the oxadiazole molecule, which forms a five-membered heterocyclic ring. These antibacterial, antiviral, blood pressure-lowering, antifungal, anticancer, antioxidant, anti-inflammatory, and analgesic properties of several oxadiazole derivatives have been reported. The development of physiologically active 1,3,4-oxadiazole cores and the effective method are both possible through heterocyclic chemistry, which is an interesting field. A five-membered heterocyclic ring called 1,3,4-oxadiazole has a crucial role to play in the creation of novel pharmaceutical species for the treatment of many ailments.

Keywords*: 1,3,4-Oxadiazole, Antimicrobial, Antibacterial, Antifungal, Antiviral, Anticancer.*

TARGET IDENTIFICATION IN DRUG REPURPOSING: NAVIGATING COMPLEX BIOLOGICAL NETWORK

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Abstract

Drug repurposing is a new concept of drug discovery, it aims to find new uses for preexisting drugs and has in recent years gained huge momentum. We wish to explore the complex realm of target identification in drug repurposing, with a particular focus on harnessing the power of biological networks. By examining the remarkable case study of metformin, alongside the success story of Viagra, this article sheds light on the transformative potential of network-based approaches. Biological networks are the great basis of our data structures and are the key to our exploration. These simple networks have revolutionized our understanding of molecular associations and their interactions within biological systems. Repurposing campaigns focus on the target identification system via networks and its mechanism of action. Without a proper understanding of the drug target information development of any new repurposing protocols is a great challenge. We wish to discuss metformin as a compelling case study, presenting both the promises and challenges associated with repurposing a well-established medication. This diabetes drug's multifaceted mechanism of action, impacting various biological networks, makes it an ideal candidate for investigating network-based strategies. We unravel the complex interplay between metformin and biological networks, emphasizing its far-reaching implications for drug repurposing and therapeutic innovation. Through a comprehensive examination of metformin's mechanism of action, we highlight its potential as a versatile tool in the quest for novel treatments with a greater focus on breast cancer.

Keywords*: Drug repurposing, Biological networks, Metformin, Diabetes, Breast cancer.*

PRODRUG OF GEFITINIB

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Abstract

Lung cancer is an uncontrolled and abnormal mass of growing cells with the highest mortality rate in the world. Progressive lung cancer shows a robust resistance to cancer therapy; today no acceptable therapeutic results are achieved with drugs. Gefitinib is an epidermal growth factor receptor tyrosine kinase inhibitor and blocks the proliferation of downstream signals that prevent cancer cells from proliferating by inhibiting tyrosine phosphorylation of the epidermal growth factor receptor. It also increases survival rates in patients with progressive lung cancer. Gefitinib belongs to the BCS class II drugs and due to its low bioavailability; its clinical use has been severely restricted. Gefitinib, an inhibitor of epidermal growth factor receptor tyrosine kinase (EGFR-TKI), causes prompt responses and improvement of symptoms in patients with non-small cell lung cancer (NSCLC) harbouring activating mutations of EGFR. Gefitinib is the first tyrosine kinase/inhibitor (TKI) specifically active on the epidermal growth factor receptor (EGFR). Prodrugs are drug molecules that are chemically or enzymatically transformed in vivo to produce the active parent drug with the desired pharmacologic properties. Prodrugs are widely used to improve absorption, distribution, metabolism, and excretion (ADME) processes. Prodrug is an inactive form of drug which needs conversion in the body to one or more of its metabolites. The metabolites form is the one which is active and can produce the desired reaction. The medication gefitinib is used to treat non-small cell lung cancer.

Keywords*: Gefitinib, Prodrug, Cancer, Epidermal growth factor receptor, Lung cancer.*

RECENT ADVANCE IN COUMARIN DERIVATIVES AS ANTI-TUBERCULOSIS AGENTS

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Abstract

Tuberculosis (TB) is an acute or chronic infectious disease caused by several species of Mycobacterium, collectively called tubercle bacilli or Mycobacterium tuberculosis complex. Around 10 million people get sick with tuberculosis (TB) each year. TB is the second leading cause of death today after HIV/AIDS. A serious problem in the context of MDR-TB is the extensively drug-resistant TB, which is an important reason for the restricted chemotherapy in TB. Therefore, there is a need to explore new antitubercular (anti-TB) agents. Coumarin is an oxygen containing heterocyclic compound and can be widely found in many natural products, and many of them display diverse biological activities. coumarins

are secondary metabolites and from a chemical point of view, they are molecules with several attractive features, such as a small molecular weight, simple structure, high bioavailability, good solubility in most organic solvents, and low toxicity. The wide spectrum of activities of coumarin molecules has intrigued the scientists to explore the natural coumarins and their synthetic derivatives for their potential as anti-TB drugs.

***Keyword**: Coumarin, Mycobacterium tuberculosis, Tubercle bacilli, Antitubercular.*

IN VITRO AND IN VIVO ANTI-DIABETIC EVALUATION OF PINUS WALLICHIANA BARK EXTRACT

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Abstract

The increasing prevalence of diabetes has necessitated the search for novel and effective anti-diabetic agents from natural sources. In this context, the present study investigates the anti-diabetic properties of Pinus wallichiana bark extract. The extract was subjected to a comprehensive evaluation, encompassing in vitro and in vivo assessments to determine its potential therapeutic benefits. In the in vitro analysis, the Pinus wallichiana bark extract displayed a remarkable presence of phenolic compounds, which are known for their diverse health-promoting properties. Additionally, the extract exhibited potent antioxidant activity, indicating its potential to combat oxidative stress associated with diabetes. Moreover, the extract demonstrated substantial alpha-amylase inhibitory activity, highlighting its capacity to modulate postprandial glucose levels by inhibiting the enzyme responsible for carbohydrate digestion. To assess its in vivo anti-diabetic efficacy, the extract was evaluated in an animal model of diabetes. The results revealed a significant reduction in blood glucose levels following administration of the extract, indicating its potential to improve glycaemic control. Furthermore, it sowed reversal of loss of body weight caused by administration of streptozotocin. In conclusion, the findings from this study underscore the promising anti-diabetic potential of Pinus wallichiana bark extract. The combination of high phenolic content, potent antioxidant activity, substantial alpha-amylase inhibitory property, and notable in vivo anti-diabetic effects collectively support its candidacy as an effective and safe adjunct in diabetes management. Further investigations into the underlying molecular mechanisms and identification of specific bioactive compounds are warranted to fully elucidate its therapeutic value and potential for future drug development.

***Keywords**: Pinus wallichina, Diabetes, Antioxidant, Anti-diabetic.*

PHARMACOLOGICAL EVALUATION OF *BARLERIA PRIONITIS LINN*. FOR ASTHMATIC DISORDER

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Abstract

Barleria prionitis commonly known as kala bansa a perennial herb which belongs to family Acanthaceae is native to plains of India. It is traditionally used for treatment of asthmatic problems in the form of ash mixed with honey. The plant leaves consist of iridoid glycosides like barlerinoside, acetyl barlerin and Shanzhiside methyl ester derivatives. The present study aimed to evaluate the pharmacological efficacy of Barleria prionitis Linn for Asthmatic disorder. In this study extracts and fractions are prepared with solvents based on polarity in-vitro anti-oxidant and anti-inflammatory assays i.e., DPPH, hydrogen peroxide, NO and protein denaturation assays and in-silico molecular docking of plant compounds with asthmatic targets/receptors like â2, M3, TNF-á, NFêâ, iNOS, IL6 and H1 receptors were performed by the help of software's Autodock, autodock vina and Discovery studio. The extract and fractions showed significant in-vitro anti-oxidative activities on DPPH and Hydrogen Peroxide assay, also showed promising anti-inflammatory activity by NO and Protein denaturation assay. The IC50 value of n-butanol fraction were 6.90, 1.99, 3.98 and 4.09 µg/ml with respective to standard ascorbic acid and diclofenac sodium having IC50 value 2.28, 1.79, 3.58, 2.94 µg/ml respectively. In-silico molecular docking showed significant binding affinity with the asthmatic targets and receptors. Acetyl barlerin, barlerinoside, â-sitosterol, scutellarin, verbascoside showed higher binding affinity with iNOS and NFêâ receptors. The resulted study concluded that the Barleria prionitis leaves extract and fraction showed significant antioxidant and anti-inflammatory activity which may contribute for its antiasthmatic action.

***Keywords**: Barleria, asthma, anti-inflammatory, anti-oxidant, in-silico*

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PREPARATION AND PHARMACOLOGICAL EVALUATION OF HERBAL GEL PREPARED FROM THE HUSK OF JUGLANS REGIA L. FOR RINGWORM INFECTIONS

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Abstract

Juglans regia L., a plant found in Himalayans, is used in traditional medicine for the treatment of diabetes, arthritis, skin problems. Plant extract of Juglans regia L. has been traditionally reported but there was no scientific evidence for its antifungal property. The study aims to prepare and assess the antifungal properties of a herbal gel derived from Juglans regia by inducing topical infection on Wistar rats. The study involved preparing plant

extracts using cold maceration and Soxhlet extraction techniques. The extracts were subjected to phytochemical screening, quantifying gallic acid, quercetin, and â-carotene. In-vitro anti-oxidant assay was performed by using DPPH radical scavenging method and in-vitro antifungal assay was carried out by using different methods like Poisoned food technique, Agar-well diffusion method, micro-broth dilution assay. The in-vivo antifungal assay was conducted on a Wistar rat model using a laboratory-prepared herbal gel. The qualitative phytochemical analysis of hydro-alcoholic stem bark extracts of three plant species revealed the presence of various biochemical compounds such as flavonoid, alkaloids, tannins, phenols, saponin. Quantitative phytochemical analysis of plant extracts showed the presence of flavonoids and phenols for Soxhlet extract. Plant extracts of Juglans regia showed significant antioxidant activity against DPPH, In-vitro anti-fungal activity. In-vivo assay was carried out by using Wistar rat model but there was failure in inducing topical infection. We got to know that Soxhlet extract is showing better activity than maceration extract. Also, the results claim that the plant have potent antifungal activity against multiple fungal strain including Microsporum canis which is responsible for causing ringworm.

***Keywords**: Juglans regia L., Antioxidant, Antifungal, Microsporum canis.*

SELF-NANOEMULSIFYING DRUG DELIVERY SYSTEM (SNEDDS) MEDIATED IMPROVED ORAL BIOAVAILABILITY OF THYMOQUINONE: OPTIMIZATION, CHARACTERIZATION, PHARMACOKINETIC AND HEPATOXICITY STUDIES

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Abstract

Thymoquinone (TQ) is an antioxidant, anti-inflammatory, and hepatoprotective compound obtained from the black seed oil of *Nigella sativa*. However, high hydrophobicity, instability at higher pH levels, photosensitivity, and low oral bioavailability hinder its delivery to the target tissues. A self-nanoemulsifying drug delivery system (SNEDDS) was fabricated using the micro emulsification technique to address these issues. Its physicochemical properties, thermodynamic stability studies, drug release kinetics, in vivo pharmacokinetics, and hepatoprotective activity were evaluated. The droplet size was in the nano-range (<?90 nm). Zeta potential was measured to be?-11.35 mV, signifying the high stability of the oil droplets. In vivo pharmacokinetic evaluation showed a fourfold increase in the bioavailability of TQ-SNEDDS over pure TQ. Furthermore, in a PCM-induced animal model, TQ-SNEDDS demonstrated significant (p?<?0.05) hepatoprotective activity compared to pure TQ and silymarin. Reduction in liver biomarker enzymes and histopathological examinations of liver sections further supported the results. In this study, SNEDDS was demonstrated to be an improved oral delivery method for TQ, since it potentiates hepatotoxicity and enhances bioavailability.

***Keywords** SNEDDS, Thermodynamic stability, Bioavailability, Hepato-toxicity, In-vitro release kinetics.*

DEVELOPMENT AND EVALUATION OF ROTA-HALER CAPSULES LOADED WITH SOLID LIPID NANO-PARTICLES OF ANTI-ASTHMATIC DRUG TERBUTALINE SULPHATE

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Abstract

The objective of the present study was to enhance the pulmonary bioavailability of the anti-asthmatic drug Terbutaline Sulphate by incorporating the drug into solid lipid nanoparticles (SLN) and then formulating it as inhaler capsules. This required the optimization of process parameters such as the type of solid lipid, drug-to-lipid ratios, and type and concentration of surfactants used in the formulation. SLN were prepared by the combination of two methods: hot homogenization and sonication. The prepared nanoparticles were evaluated for their particle size, zeta potential, entrapment efficacy, surface morphology, and in vitro drug release. The prepared SLN was further formulated as inhaler capsules, and evaluation tests were also conducted for the capsules. Capsules were evaluated for weight variation, content uniformity, and in vitro deposition of drug using a twin-stage impinger. The prepared nanoparticles were spherical in shape and within the size range (50–240 nm), as confirmed by transmission electron microscopy (TEM). SLN showed 75.7% release in a controlled manner for eight hours under the tested conditions. The selected formulation had 71% entrapment efficacy with better flow properties. The present study suggests that SLN of an anti-asthmatic drug provides a stable product with improved drug loading for enhanced bioavailability, targeted action, and sustained release of drugs in the lungs with fewer adverse effects.

Keywords: *Solid lipid nanoparticles, Pulmonary bioavailability, Terbutaline Sulphate, inhaler capsules, hot homogenization.*

ANTI-INFLAMMATORY POTENTIAL OF NOVEL HYBRID THIAZOLIDIN-4-ONE ANALOGS

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Abstract

Inflammation is one of the major concerns in today's health care system and is characterized by a host response to kill microorganisms or speed up the wound healing process. But it may have the potential to damage the host organ or depict life-threatening hypersensitive responses. Various marketed drugs are available for the management of inflammation

caused by rheumatoid arthritis, pain, and aches, especially NSAIDS or selective COX inhibitors. But the major concern is that these drugs are also causing major side effects like NSAIDS (gastric ulcers) or selective COX-2 inhibitors (cardiovascular side effects). In order to reduce these side effects, a variety of innovative strategies have been designed to enhance anti-inflammatory activity and attenuate the side effects. The heterocyclic system plays an impressive role in medicinal chemistry due to its widespread biological activity. Thiazolidine-4-one is one of the promising heterocyclic motifs, and it displayed a significant anti-inflammatory effect. In this review, we have collated published reports on this versatile core to provide insight so that its full therapeutic potential can be utilized for the treatment of pain and inflammation.

Keywords: *Thiazolidin-4-one, COX inhibitor, anti-inflammatory potential.*

NEPHROPROTECTIVE EFFECT OF FENOFIBRATE & ATORVASTATIN IN GENTAMICIN INDUCED EXPERIMENTAL NEPHROTOXICITY

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Abstract

Nephrotoxicity develop when toxins accumulate in the kidneys and it is a dangerous kidney problem. Usually toxins and unneeded fluids are usually excreted through urine but the eventually lead to nephrotoxicity when the start reaching excessive levels and cause other symptoms of kidney trouble. The most important side effect is Nephrotoxicity associated with the consumption of aminoglycoside antibiotics such as gentamicin. Gentamicin is widely used aminoglycoside antibiotic for the treatment of life-threatening gramnegative bacterial infections. The most common symptoms of nephrotoxicity include decreased, increased creatinine, uric acid, glomerular filtration , alkaline phosphatase, blood urea nitrogen, and electrolyte changes. Gentamicin nephrotoxicity is done by activation of ROS, NF-Kb, endotheline-1, upregulation of trans-forming growth factor beta, increased iNOS and NO production.Fibratesare a class of They are used for a range ofdisorders, mainly, and are. Fibrates are used in accessory therapy in many forms of usually in combination with. In case of PPARá, it decreased during nephrotoxicity and activated through PPARá agonist which are fibrates. MAPK is an important mediator that transduce extracellular stimuli to intracellular responses and involved in the intracellular network of interaction proteins. p38-MAPK is a ubiquitous, highly conserved protein kinase that plays an important role in the inflammatory response and in the apoptosis process. p38-MAPK is activated by cytokines and cellular stress, and its activation results in the increased production of inflammatory cytokine genes, including interleukin-1â and tumor necrosis factor-a. Atorvastatin is a member of the statin class of HMG-CoA reductase inhibitors, statin have revolutionized the treatment of hypercholesterolemia. It was reported that in non diabetic patient with chronic kidney disease, Atorvastatin improves tubular status. HMG-CoA decreased during the nephrotoxicity and is regulated by statins. Its clinical usefulness is

limited by the development of nephrotoxicity, which is without morphological changes in glomerular structures and characterized by tubular necrosis. Loss of renal functions, including severe reductions in glomerular fltration, creatinine clearance and corresponding increases in serum creatinine, blood urea nitrogen and neutrophil gelatinase-associated lipocalin are direct results of nephrotoxicity. Administration of Fenofibrate, Atorvastatin and their combination reduced renal oxidative stress, BUN, Serum Creatinine level etc.

Keywords*: Nephrotoxicity, Statins, Fibrates, Antibiotics.*

EVALUATION OF PHYTONUTRIENT, UTILIZATION OF MEDICINAL PLANT: *MELIA AZEDARACH*

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Abstract

Darek, obtained from *Melia azedarach*, belonging to family *Meliaceae* native to Southeast Asia and northern Australia. In India it is found in Kerala, Tamil nadu, Odisha, Andhra Pradesh. *Melia azedarach* stem, leaves, flower, fruit, seed, root, bark all contains essential chemical constituents and each part has. It comprises of numerous of chemical constituents like phenolic compounds from leaf extract is present in highest amount and exhibit greatest anti-oxidant activity, flavonoids, steroids, terpenoids, alkaloids,saponins, anthraquinones, tannins and so on. *Melia azedarach* has been globally used and contain various therapeutic uses like anti-oxidant, anti-inflammation, anti-malarial, anti-viral, anti-bacterial, diuretic, anthelmintic, leprosy, expectorant, purgative, emollient, analgesic, immunomodulatory activity etc. *Melia azedarach* verdant is considered safer due to its scarce side effects in comparison to allopathic medicines.

Keywords: *Steroids, Melia azedarach, Emollient, Immunomodulatory activity.*

FICUS CARICA LINN.: UTILIZE, VERDANT, PHYTOCHEMICAL

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Abstract

Anjeer, biological source *Ficus carica linn.* belongs to family *Moraceae*. It is mainly found in warm climate in southwest Asia and eastern Mediterranean region from Turkey in east to Spain and Portugal in west. In India it is mostly confined to western part of Maharashtra, Gujarat, Uttar Pradesh (Lucknow and Saharanpur), Karnataka (Bellary, Chitradurga and Srirangapatna) and Tamil Nadu. *Ficus carica linn.* contain essential phenolic acids, amino acids like leucine, tryptophan, phenylalanine, lysine, and histidine, vitamins like vitamin A,

Vitamin C, thymine, riboflavin, and niacin, minerals like sodium, potassium, and calcium and carbohydrates which helps in making our body strong and result in increasing the immunity. *Ficus carica linn.* has been globally used in malady like anti-inflammation, anti-pyretic, antispasmodic, anti-viral, anti-platelet, anti-helmintic and so on. *Ficus carica linn.* has scarce side effects in comparison to allopathic medicines. From above information about *Ficus carica linn.* it confirms that it is an essential plant from ethnobotanical, materia medica and nutritious point of view.

***Keywords**: Phenolic acids, Ficus carica linn, Anti-viral, Minerals.*

GENETIC POLYMORPHISM OF GLUTATHIONE S-TRANSFERASE (GSTP1) IN NORMAL POPULATION

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Abstract

Glutathione S-transferase Pi (GSTP1) is an isozyme encoded by the GST pi gene that plays an important regulatory role in detoxification, anti-oxidative damage, and the occurrence of various diseases. The aim of the present study was to review the association between the expression of GSTP1 and the development and treatment of various cancers, and discuss GSTP1 methylation in several malignant tumors, such as prostate, breast and lung cancer, as well as hepatocellular carcinoma; to review the association between polymorphism of the GSTP1 gene and various diseases; and to review the effects of GSTP1 on electrophilic oxidative stress, cell signal transduction, and the regulation of carcinogenic factors. Collectively, GSTP1 plays a major role in the development of various diseases.The baseline characteristics of the risk factors are was 0.000137 in Smoking, 0.262981 in Overweight, 0.94736 in Alcohol, and 0.342728 in Diet, 0.446298 in Tobacco, and 0. 950843 in Physical Activities. The frequency distribution of Heterozygous allele Val105/Val105 was most frequent among all population (0.053) and African American (0.51)and least frequent among Tanzanians (0.14) (Adams *et al*., 2003 ; Millikan *et al.,* 2000). The risk factors associated GSTP1 was not significant due to small sample size.The present study examined the GSTP1 Ile/Val polymorphismand the maximum no. of heterozygous were found i.e.. (35.91%) and (35.21%) of the homozygous and (28.87%) of the Wild type. The information on frequencies of these *GSTP1* alleles was similar in one paper from South India also observed almost similar results and the differences in frequencies were not statistically significant when compared with the present study (Ballerini et al., 2003; Bernardini *et al.,* 2005).However in one study from Delhi population, statistically significant differences emerged. The reason for this variation, may be the number of individuals was very less in that study. The aim of this study is to detect the SNP variation in the normal population and to check the susceptibility towards cancer and other diseases and what are the risk factors associated with it.

***Keywords:** GST Glutathione S- Transferese, SNP- single nucleotide polymorphism, ILE-ISOLUCIENE, valline.*

E-PHARMACY'S EFFECTS ON SOCIETY AND THE PHARMACEUTICAL INDUSTRY IN A PANDEMIC ECONOMIC CRISIS

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Abstract

In the past, handwritten prescriptions were used to distribute medications, but this method has since become less popular due to the growth of e-commerce. As a result, medications are now distributed online using electronic prescriptions, or e-pharmacies, also referred to as online, internet, cyber, and tele pharmacies. Phameasy, Medlife, Netmeds Myra, CareOnGo, and Pharmasafe are a few of the leading online pharmacies. In India's whole e-pharmacy market, Medlife is in the lead with a 30% market share. The goal of the E-pharmacy is the growth of the country with obvious and palpable advantages for both the sector and the public. E-pharmacy is a desirable business strategy that improves the online healthcare industry and will be in high demand in the future. According to a new EY research, the e-pharmacy sector will be worth roughly more than 500 million US dollars over the next four years. Due to the fact that many patients have switched to purchasing medications online out of fear of contracting the novel covid-19 infection, the ongoing lockdown presents both opportunities and challenges for the global e-pharmacy. Similar to the pandemic situation, everything is shut down while the majority of brick-and-mortar pharmacies continue to operate in lockdown. Since there are many benefits to using an online pharmacy and more opportunities for e-commerce, the Indian government needs to consider better regulations that will benefit both society and the pharmaceutical business in the years to come.

Keywords: *Pharmaceuticals, Market, Healthcare.*

NEW CO-AMORPHOUS DRUG DELIVERY SYSTEMS

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Abstract

In recent years, the co-amorphous drug delivery method has become known as a promising way to deliver drugs that don't dissolve well in water. An active pharmaceutical ingredient (API) is present in the co-amorphous solid, which is a single-phase system and other low-molecular-weight molecules that could be other APIs or excipients with physiological relevance. These formulations have many benefits over pure crystalline or amorphous materials, such as better physical stability, dissolution profiles, and possibly better therapeutic effectiveness. This study looks at the preparation, physicochemical properties, physical stability, and in vitro and in vivo performance of co-amorphous drug delivery

systems. When creating a co-amorphous formulation, it is important to carefully evaluate both the simultaneous realization of physical stability and combination therapy.

Keywords: - *Co-amorphous, Dissolution, Physical stability, Drug delivery.*

REVOLUTIONIZING DRUG SAFETY: EXPLORING MODERN METHODS OF PHARMACOVIGILANCE"

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Abstract

Pharmacovigilance plays a crucial role as a safeguard, overseeing the monitoring and evaluation of Adverse Drug Reactions (ADRs). It stands as an essential cornerstone within effective drug regulatory systems, clinical procedures, and public health initiatives. The surge in reported ADRs has led to an increase in data management demands, requiring an elevated level of expertise to promptly identify potential drug-related risks and protect products from unjustified removal. In an era defined by extraordinary advancements in healthcare technology and data analysis, pharmacovigilance has undergone significant transformation, reshaping its core principles. This synopsis explores the current landscape of pharmacovigilance, focusing on ground breaking methodologies and cutting-edge technologies that take a leading role in recognizing, evaluating, and mitigating adverse effects associated with pharmaceutical products. Modern pharmacovigilance embraces a diverse range of tactics, spanning from the use of artificial intelligence and machine learning algorithms to analyse extensive healthcare datasets, to real-time monitoring of social media for patient-reported adverse events. These state-of-the-art approaches have brought about a revolution in our capacity to swiftly and accurately detect potential safety concerns, enabling proactive risk management and enhancing patient safety. Furthermore, this overview underscores the pivotal role of global collaboration in pharmacovigilance, underscoring the importance of cooperation among international regulatory bodies, pharmaceutical companies, healthcare professionals, and patients in guaranteeing medication safety across diverse populations. As pharmacovigilance continues to advance, it becomes imperative to address ethical considerations regarding data privacy, transparency, and patient involvement. This summary emphasizes the ethical facets of modern pharmacovigilance and their intersection with the continually expanding technological landscape. In conclusion, contemporary pharmacovigilance methodologies are not only transforming the monitoring of drug safety but are also paving the way for a safer and more patient-centered approach to healthcare. This overview provides a glimpse into the exciting developments in this field and their profound impact on public health.

***Keywords** : Pharmacovigilance Adverse, Drug Reactions (ADRs), Drug Regulatory Systems, Clinical Procedures, Public Health Initiatives, Data Management.*

DESIGN AND FORMULATION OF GLIMEPIRIDE LOADED BUCCAL PATCHES

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Abstract

Glimepiride is a second-generation sulfonyl urea agent. Glimepiride is a medication that, when taken with a proper diet, helps reduce high blood sugar levels by making the pancreas release more insulin. Glimepiride is a potent drug used against diabetes mellitus II with the half life of 3-5 hrs. Glimepinde has 100% oral absorption, due to high first pass metabolism its bioavailability is less. Buccal patches were formulated using polymer HPMC(K4M, K15M) and NaCMC in various proportions and combination PEG 400 was used as a plasticizer. The buccal patches were prepared by solvent casting method. In this method. The drug and excipients were co-dispersed in an organic solvent and mixed properly to get the clear solution and poured into petri plate which contains the mercury. After solvent evaporation, a thin layer of films was performed. Then the films were dried and cut into small patches of desired size and shape. The design patches were evaluated for Thickness, folding endurance, weight variation, swelling index Surface pH. Tensile strength In-vitro diffusion studies were conducted for 6 hrs in phosphate buffer using dialysis membrane. No significant changes were observed on physical characteristics, drug content and on drug release of patches. So, it was concluded that the prepared patches were stable under these stress condition.

Keywords *: Glimepiride, Buccal Patches, HPMC, Solvent Casting Method.*

ROLE OF PHYTOCHEMICALS IN PEST MANAGEMENT: AN ALTERNATIVE TO CHEMICAL PESTICIDES

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Abstract

Plants are useful resources in integrated pest management (IPM) programmes because they have evolved a wide variety of chemical compounds that contain insecticidal, repellent, antifeedant and growth-regulating qualities. Plants produce a huge variety of bioactive substances like alkaloids, flavonoids, terpenoids, phenolics and other secondary metabolites. The control of pests that harm crops has long been an important part of agricultural practices, with traditional chemical pesticides dominating the field. However, the uncontrolled use of synthetic pesticides has negative effects on the environment and human health, necessitating the development of alternative, environment friendly pest control methods. Additionally, the possibility of plant-based extracts, essential oils and biopesticides as substitutes for synthetic chemicals is investigated, with an emphasis on

their minimal negative effects on the environment and minimal harm to creatures that aren't the intended targets. By utilizing nature`s defence mechanism we can lessen our reliance on synthetic pesticides, their negative impacts on the environment as well as human health and pave the road for a more ecologically stable agricultural ecosystem. This article gives a general overview of the phytochemicals that are frequently present in plants and discusses how they might be used to manage pests and find environmentally acceptable solutions to problems with agricultural pests. Ultimately, this review promotes the use of phytochemicals derived from plants as safe and sustainable substitutes for effective pest management, encouraging a more comprehensive and balanced approach to pest control while ensuring agricultural sustainability and protecting the ecosystem.

Keywords: *Phytochemicals, Pest Management, Agriculture, Biopesticides.*

ANIMALS MODELS FOR BEHAVIOURAL AND COGNITIVE ANALYSIS IN RATS

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Abstract

Animals models are the in vitro pharmacological model used in the preclinical studies of new drugs. In this modern era animal models plays a vital role in providing knowledge about the pathophysiology of various diseases and disorders. Animal models bring a revolution in the field of research and development. These model provides the knowledge about how disease affect the humans and animals, how drugs leads to the prevention and effective treatment of diseases. Basic principle involved in the animal models is comparative medicine, that the animal share various behavioural, physiological, pathological characteristics with human being. Behavioral studies in animal are used to examine various disease state, effect of drug on body their toxicity, cognitive behaviour, sensory motor functions, social interactions etc. It also help in understanding that how the brain function during disease state. Rodents are most commonly used animal for behavioural and cognitive studies. Behavioural research in rodents come under the category of behavioural neuroscience. Behavioural neuroscience is the study of neuronal mechanism which are related to behaviour. Cognition is intellectual process of acquiring knowledge, remembering it and using this knowledge in doing tasks and problem solving . It includes learning, perception, intelligence, memory, attention, language, reasoning and decision making. The main objective of research in the field of cognition is to understand the mechanism involved in processing and storing of information, as identifying the mechanism of normal cognition is first step to learn how to treat cognition related problems. Various model like Morris water maze test, radial arm water maze, gait function test, 8-arm radial maze test, elevated plus maze test, T-maze test , step-down inhibitory avoidance test, passive avoidance test, active avoidance test , novel object recognition test, Y-maze test, open field hallucination test and light/dark box test etc. are the most commonly used models to study the behaviour and memory in rodents.

Keywords*: Cognition, Behaviour, Models, Animals.*

PROTECTIVE INFLUENCE OF ALOE VERA AGAINST BIOCHEMICAL ALTERATION INDUCED BY RADIATION AND CADMIUM CHLORIDE ON THE VALUE OF ALKALINE PHOSPHATASE ACTIVITY ON MOUSE JEJUNUM

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Abstract

Excessive exposure of Gamma radiation causes pathological and biological alterations in the body tissues resulting in metabolic derangement which may leads to cellular damage or even death. Metals like Cadmium Chloride are commonly present in environment, however, excessive accumulation of cadmium in the environment may cause various problems if inhaled or enters in biological system through air, water or food. Hence there is a need to protect living as well as nonliving things which are the part of our environment from excessive radiations and heavy metals. There are various medicines/treatment available for the treatment of different diseases including metal toxicity as well. It is a good radio protector and can be used for the treatment of cancer during radiotherapy to minimize the side effects of exposure of radiations. Present study was designed to evaluate the therapeutic effect of *Aloe Vera* against the Radiation and Cadmium Chloride induced alkaline phosphatase alterations. Results of the present study highlights that *Aloe Vera* shows protection against biological changes in alkaline phosphate enzyme induced by radiations and cadmium alone or in combination in small intestine of Swiss albino mice. Therefore, findings of the present study concluded that *Aloe Vera* might be good radio protector and effective to overcome the effects of heavy metals like Cadmium.

Keywords: *Aloe Vera, Radiation, Cadmium Chloride, intestines, alkaline phosphatase.*

FORMULATION AND EVALUATION OF MEDICATED CHEWING GUM OF PROCHLORPERAZINE MALEATE FOR THE MANAGEMENT OF EMESIS

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Abstract

The aim & objective of the research was to develop the medicated chewing gum of Prochlorperazine maleate for the prevention of nausea & vomiting. Prochlorperazine maleate belongs to BCS II, has high first-pass metabolism &low oral bioavailability (11-15%). By delivering Prochlorperazine maleate in the form of chewing gum, it directly enters into systemic circulation thus bypassing First Pass Metabolism. Hence, medicated chewing gum bypasses the first-pass metabolism effect, achieving faster drug action with

improved oral bioavailability. Medicated chewing gum is a solid, single-dose preparation that consists mainly of tasteless masticatory gums with pharmacologically active ingredients. Evaluation tests for medicated chewing gum are physical appearance, partition coefficient, melting point, FTIR of pure drug and polymer, UV spectroscopy, SEM, DSC, and Drug Release Kinetic. Chewing gum is a user-friendly and convenient method of taking medications, potentially improving patient compliance, especially for those who have difficulty in swallowing Chewing gum is supposed to be chewed for roughly 30 minutes. The active ingredients are released by chewing and the action of saliva, which diffuses the active ingredient from the gum matrix.

Keywords*: Medicated Chewing Gum, Prochlorperazine maleate, Mastication Gums, Nausea and Vomiting.*

EARTHWORMS AS POTENTIAL BIOPHARMACEUTICAL SOURCE

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Abstract

Earthworms are one of the well-known beneficial creatures of animal kingdom. They are an integral component of complex soil ecosystem and play major role in nutrient recycling. Their importance in agriculture was highly respected in the past, hence they earned the designation of "Farmers Friend," "intestines of the earth," "soil engineers" etc. Earthworms are essential component of the food chain/energy cycle and are eaten up by a number of animals including invertebrates, fishes, amphibians, reptiles, birds and mammals. Since ancient times (<4000 years, 2600 B.C.), earthworms have been used as medicines for a number of human diseases in various parts of the world including China, Japan, Korea, India. Cambodia, Myanmar (Burma), Vietnam, Iran and Middle East. For external applications, they can be used in healing wounds, chronic boils, piles, sore throat etc. and for internal intake they can be prescribed for chronic cough, diphtheria, jaundice, rheumatic pains, tuberculosis, bronchitis, facial paralysis and impotency. In ancient Burma and Laos, smallpox victims were given bath with earthworms-soaked water for quick healing. In Japan four kinds of drugs, antibiose, aphrodisiacs, antipyretics and antidotes are prepared from earthworms. In Ayurvedic and Unani systems of medicine, the paste of dried worms has been recommended for treatment of wounds, chronic boils, piles, chronic cough, sore throat, teeth diseases, hernia, impotency, small pox, smooth delivery, gall bladder stone, hair growth, diphtheria, jaundice, fevers, rheumatic pains, tuberculosis, bronchitis, facial paralysis, scorpion and snake bite etc. The present chapter will provide an insight on pharmaceutical and therapeutic properties of earthworms and their possible uses in the formulation of drug for the welfare of mankind.

Keywords*: Applications of earthworms, Drugs, Eco-system engineers, Pharmaceuticals.*

FORMULATION AND EVALUATION OF CLOTRIMAZOLE LOADED MICROSPONGE TOPICAL GEL

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Abstract

Our present research aims to design and develop clotrimazole loaded Microsponge Topical gel, Clotrimazole microsponge were formulated and evaluated using polymer HPMC and Ethyl cellulose. The Microsponge technology has many advantageous properties that make it a versatile drug delivery vehicle. It is based on microscopic, polymer-based microspheres that can suspend or trap a wide range of substances and can be incorporated into a variety of products such as gels, creams, liquids, and powders. Clotrimazole is an antifungal medication commonly used to treat fungal infections of the skin, nails, and mucous membranes. Clotrimazole microsponge are designed to control the drug release and improve the penetration of clotrimazole into the affected tissues, making it more effective in treating fungal infections that are deep-seated or difficult to reach. The controlled release feature of clotrimazole microsponge can reduce the frequency of application, making it more convenient for patients to adhere to their treatment regimen. In the present study Quasi-emulsion solvent diffusion method (two-step process) is used to prepare the microsponges. Various evaluation parameters such as Percentage yield, loading efficiency, surface morphology, in vitro diffusion study, spreadibility, stability study FTIR, SEM, UV, particle size and percentage drug entrapment were also studied in our present research.

Keywords*: Microsponges, Clotrimazole, Anti-fungal, Microscopic.*

LAB-ON-A-CHIP TECHNOLOGY FOR CANCER ANALYSIS

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Abstract

A microfluidic chip is not a typical computer chip. It is a technology designed to manipulate fluids at a mini scale. This innovative biochip merges various scientific fields such as physiology, pathology, cell biology, biophysics, engineering mechanics, mechanical design, and materials science. Over the last thirty years, the use of microfluidic chips has displayed enormous potential, particularly in the realm of cancer treatment. A lab-on-a-chip is a miniaturized device that offers the solution of conducting multiple-sample biological and biochemical analyses in a single platform. Research on lab-on-a-chip focuses on several applications, including human diagnostics, DNA analysis, and, to a lesser extent, chemical synthesis. Thus, lab-on-a-chip emerges as a promising diagnostic tool as the miniaturization

of biochemical operations reduces costs, parallelizes operations, and increases diagnostic speed, sensitivity, and accuracy. Culturing cancer cells and tissues obtained from patients on microfluidic chips allows for visible, controlled, and high-throughput procedures, significantly enhancing the progression of personalized medicine. Furthermore, the versatility of microfluidic chips is continuously expanding, making them increasingly adaptable for various applications. Microfluidic chips offer the capability to conduct diverse cell and tissue cultures, encompassing 2D cell cultures, 3D cell cultures, and organoid cultures. In this article, we have introduced an insight into application of these chips in detection and analysis of cancer.

Keywords*: Cancer, Microfluidic chip, Application, Lab-on-a-chip.*

MICORNA AS PUTATIVE AND COMPUTATIONAL APPROACH TO "NIPPAH VIRUS "

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Abstract

Nipah virus (NiV) re-emergence in India has so far resulted in 2 deaths, and many patients have been quarantined. A careful examination of earlier epidemics that took place in Malaysia, Bangladesh, and India reveals instances with a high percentage of fatalities from acute encephalitis. To understand the etiology of encephalitis, the genome of the NiV virus was analyzed for the prediction of miRNAs and the genes they target in humans. There is currently no licensed antiviral medication available, despite numerous efforts. Only supportive care, such as rest, hydration, and symptom management, is used as a kind of treatment. Monoclonal antibody therapy, Remdesivir, Ribavirin showed a marked effect in Non- human primates only. Some studies included Computational and miRNA for putative analysing of important pathways integrating target genes, such as axon guidance, T cell activation, and nicotinic acetylcholine receptor signalling. Many studies retrieved Nine pre-miRNAs from the initial genome screening using VMir, and ViralMir to check for any possible pseudo-pre-miRNAs. Similar studies used Mature-Bayes program, which targets 669 genes in the human genome as miRDB, 18 functional mature miRNA's extracted from pre-miRNAs. the gene targets for TLR3, TJP1, NOTCH2, FHL1, and GRIA3 were involved in encephalitis, mental retardation, host defense, and neurogenesis. The anticipated miRNA mimics can be manufactured to test their hybridization with proposed target genes and can serve as targets for antiviral therapy. Target genes and pathway analysis revealed the underlying illness genes. Most significantly, it can be predicted that several NiV proteins and genes would be the target of potentially effective therapy regimens. As a last point, it should be noted that computational tools would be useful in creating defenses against this lethal disease, and important human genes that can be etiologically benefited from NiV miRNA inhibition.

Keywords: Nippah Virus, miRNA, Genes, Prognosis

OVERVIEW ON NOVEL DRUG DELIVERY SYSTEM

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Abstract

Novel Drug Delivery System (NDDS) refers to approaches, formulations, technologies and systems for transporting a pharmaceutical compound in the body as needed to safely achieve its desired therapeutic effects. The unique qualities of these drug delivery systems include a large surface area, nano porosity, high drug encapsulation and fast disintegration and dissolution properties. Now a days, recent advances in the understanding of pharmacokinetic and pharmacodynamic behavior of drug have offer a more rational approach to the development of optimal drug delivery system. Now it is applicable that, future success in drug delivery research will largely be result of multidisplinary efforts. If any therapeutic agent that can be the more efficacious and safer using an improved drug delivery system represent both lucrative marketing opportunities for pharmaceutical company and advancement in the treatment of disease of mankind. NDDS improves absorption, utilization and thereby enhancing bioavailability and decreased local and systematic side effects, reduced gastro intestinal irritation. A smaller drug dose that used in conventional system is administrated, thus avoiding accumulation of the drug beyond the minimum effective concentration.

***Keywords**: Novel Drug Delivery System, Bioavailability, Disease, Therapeutic agent.*

THE STUDY OF NEURALINK: BRAIN MACHINE INTERFACE (BMI)

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Abstract

Neuralink corporation is a neurotechnology which was founded by the ELON MUSK on 21st July, 2016 and publically reported in March 2017. This company is enhancing by the Brain Machine Interface (BMI). This company is located at Fremont, California. Headquarter is at San Francisco. The aim of this company was to understand and treat brain disorders. Neuralink is a brain chip, specifically called as BMI. These chips contain long and thin wires with electrodes. The threads will detect neural signals and signals are transmitted by the link. It is used to communicate with machine and even control them. It helps to study and cure various medical problems. Neuralink chipset is called as N1 chipset and it will be introduced in skull which is 8mm in width. It has numerous wires lodging anodes. The size of chip is 23 millimeters (0.9 inches) in diameter. It is 20 times thinner than a human hair. The chip Neuralink is developing and is about a size of a coin. ELON MUSK make an

experiment on 9 years old male monkey, named a Pager on April 19, 2021.Surgical robot implant a chip inside the Brain. Chip embedded in the two sides of its Brain. Neuralink receives U.S. Food and drug administration (FDA) clearance for its first-in-human clinical trials. This chip founds its use in spinal cord injuries, to treat neurological disorders, Parkinson and Epilepsy disorder. Introduction of this chip into brain, leads to enhance cognitive abilities, faster learning and improves problems solving capabilities. Various side effects are also there which includes loss of sense of self, mood changes and can cause damage to the brain tissue like brain injury and inflammation in brain.

Keywords*: N1, Neuralink, BMI, FDA, Pager, Neural signals.*

ENHANCEMENT OF ORAL DRUG BIOAVAILABILITY OF CARVEDILOL TABLETS

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Abstract

A major role in enhancement of oral bioavailability of poorly water soluble drug of antihypertensive is important and a very hard task in the development of such drug of enhanced oral bioavailability. Carvedilol, a potential beta-blocker hydrophobic drug that exhibit limited therapeutic effect through oral conventional drug delivery systems. The objective was to develop a solid dispersion formulation to enhance oral bioavailability of poorly water soluble Carvedilol drug. As per BCS the drugs are classifying on their aqueous solubility and intestinal permeability, class II drug. In soliddispersion technique fusion process is technically less difficult method of preparing the dispersion. Various solid dispersions with different ratios of Gelucire 50/13 and Gelucire 40/14. Carvedilol were prepared by fusion solvent method. To the resultant solid dispersion microcrystalline cellulose and amorphous fumed silica were added to obtain a free flowing powder. The dissolution of carvedilol dispersion was evaluated using USP type II dissolution apparatus. Solid dispersion of Gelucire 50/13 showed a greater drug release as compared to other gelucirelike 44/14. Optimized carvedilol solid dispersion were formulated in to the tablets by direct compression method. Results were compared with pure drug and physical mixture the dissolution was enhanced in tablets. The present study conclusively indicated that the use of solid dispersion method enhanced the solubility of poorly water soluble drug. Keywords: Antihypertensive; Carvedilol; Solid Dispersion; Fusion method. Methodology: For preparation of solid dispersion various solid dispersions with different ratios of Gelucire 44/14 and/ or Gelucire 50/13 and Carvedilol tablets were prepared by the direct compression method. Possible Outcome: Enhancement of oral bioavailability of drug increases the antihypertensive effect of drug in tablet by solid dispersion technique.

ROLE OF GUT HORMONES IN DIABETES MELLITUS

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Abstract

Diabetes mellitus is a lifestyle -disease involving a group of metabolic disorders characterized by hyperglycaemia. The Etiology involves direct or indirect deficiency of insulin hormone, either because of impaired insulin secretion, impaired insulin action, or both. Diabetes mellitus is a major contributor to mortality worldwide. It is dreaded for the various microvascular and macro vascular complications it brings. The micro vascular complications include neuropathy, nephropathy and retinopathy while the macro vascular complications include stroke, peripheral vascular disease and cardiovascular disease. The prevalence of Type - 2 diabetes mellitus is steadily rising globally, and it has become a serious health concern. The gut hormones are a group of hormones secreted by enteroendocrine cells in the stomach, pancreas and small intestine that control digestion of food. Gastrointestinal (GIT) hormones are proteinaceous in nature and are extensively linked to glucose tolerance and glycemic control in human body. Gut hormones are regulated by the autonomous nervous system. They transmit information about the metabolic state of the stomach (food intake, famine, and nutrient composition) to the brain. The function s of gut hormone secretion, and tissue - specific hormone sensitivity are subsequently controlled by regulation of the complex brain pathways. The gut -brain axis is an essential regulator of energy metabolism and hyperglycaemia. Gut hormones have emerged as essential regulators of energy homeostasis. Deregulation of gut hormone physiology is increasingly implicated in obesity pathogenesis and the compensatory biological responses driving weight regain following energy restriction. Furthermore, gut hormones are among key mediators of the weight loss following Rouxen-Y gastric bypass and sleeve gastrostomy, the bariatric procedures which remain the most effective treatment for severe obesity. Gut hormones which are involved in the diabetes mellitus include Incretin (GIP, GLP -1) Cholecystokinin (CCK), Gastrin , peptide YY , and Insulin -like peptide 5 (INS L -5) .

Keywords: *Diabetes mellitus, Gut hormones, GIT, Hormones , Insulin, Incretin.*

DEVELOPMENT AND VALIDATION OF UV-SPECTROSCOPY ANALYTICAL METHOD FOR ESTIMATION OF CHLOROGENIC ACID IN SOLID-LIPID NANOPARTICLES

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Abstract

Chlorogenic acid is a phenolic compound extensively found in fruits and vegetables. Structurally, it is the esters of trans-cinnamic acids and quinic acid. The antioxidant potential of chlorogenic acid is due to the presence of a conjugated double bond on the catechol moiety of the phenyl ring. Green coffee is one of the rich sources of chlorogenic acid. Several analytical methods have been used for the quantitative determination of chlorogenic acid in bulk drugs and pharmaceutical formulations, including high-performance liquid chromatography, thin-layer chromatography, ultra-high-performance liquid chromatography, gas chromatography, Ultaviolet-visible spectroscopy, and liquid chromatography-mass spectrometry. Though each has advantages, ultraviolet-visible spectroscopy is commonly employed to determine chlorogenic acid in most encapsulation systems because it is rapid and reliable. The study aimed to validate the analytical method based on Ultraviolet-visible spectroscopy for the quantitative determination of chlorogenic acid in chlorogenic acid-loaded solid lipid nanoparticles. The method was validated following International Conference on Harmonization (ICH) guidelines.

Keywords: *Encapsulation, Chlorogenic acid, Analytical validation, Nanoparticles.*

CHALCONES IN MEDICINE: UNVEILING THEIR PHARMACOLOGICAL PROPERTIES

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Abstract

Chalcones are flavonoid compounds resulting from aldehyde and ketone reactions. This study explores the pharmacological potential of modified chalcones produced through two distinct processes: the reaction of benzoin(ketone) and cinnamaldehyde (aldehyde) with sodium hydroxide in ethanol, and a similar process involving camphor(ketone) and cinnamaldehyde. Chalcones can be synthesized via the acetate and shikimate pathways. Their therapeutic properties include anti-inflammatory, anti-microbial, anti-fungal, anti-cancer and anti-diabetic effects. Molecular modifications enhance their anti-proliferative activity by inhibiting tyrosine protein kinase-associated receptor cell lines. Nanotechnology, such as chalcone-loaded liposomes and chalcone capped gold

nanoparticles, has shown promise in cancer management. In summary, chalcones, a subset of flavonoids exhibit diverse pharmacological attributes, making them valuable candidates for various therapeutic applications, especially when coupled with nanotechnology-based delivery systems.

***Keywords**: Chalcones, Phenolic compounds, Tyrosine protein, Cancer cell lines.*

USE OF ARTIFICIAL INTELLIGENCE IN DRUG DISCOVERY AND DEVELOPMENT

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Abstract

Artificial intelligence (AI) is a rapidly developing field with the potential to revolutionize many industries, including drug discovery and development. Artificial intelligence (AI) is having a major impact on the drug discovery and development process. AI-powered tools and technologies can be used to accelerate and streamline every stage of the drug development pipeline, from target identification and drug design to clinical trials and post- marketing surveillance. Here are some of the key ways that AI is being used in drug discovery and development: Target identification: AI can be used to analyze large datasets of genomic, proteomic, and other biological data to identify novel drug targets. This can help to identify new targets for diseases that are currently untreatable or poorly treated. AI can be used to design new drug molecules that are more potent, selective, and less toxic than existing drugs. AI can also be used to design drugs that can target specific disease-causing pathways or proteins. AI can be used to virtually screen large libraries of chemical compounds to identify those that are most likely to bind to a particular drug target. This can help to reduce the time and cost of drug discovery AI can be used to predict the efficacy and toxicity of drug candidates in pre-clinical animal models. This can help to identify the most promising drug candidates for further development. AI can be used to design and conduct clinical trials more efficiently and effectively. For example, AI can be used to identify patients who are more likely to respond to a particular drug candidate, and to develop personalized treatment plans. AI can be used to monitor the safety and efficacy of drugs after they have been approved for market. This can help to identify and address any adverse events or unexpected effects. AI is still a relatively new technology in the field of drug discovery and development, but it is already having a significant impact. As AI technology continues to develop, we can expect to see even more innovative and transformative applications.

***Keywords:** AI, Pharmaceutical, Drug Discovery, Drug.*

UNLOCKING NEW AVENUES: DRUG REPURPOSING IN CANCER TREATMENT

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Abstract

Despite extensive efforts to advance cancer therapies, cancer remains a leading global cause of death, underscoring its significance as a major health challenge. This underscores the pressing need for the development of innovative treatments or novel anti-cancer drugs to address this issue. However, the process of creating new drugs is a notably costly and intricate endeavor, encompassing drug design, synthesis, and rigorous testing in animal models to ensure both safety and efficacy. In response to these challenges, researchers have turned their attention to an alternative approach known as drug repurposing, which involves repackaging existing licensed molecules for uses beyond their initial indications. Drug repurposing, also referred to as drug repositioning or drug profiling, offers a pragmatic path forward. Presently, numerous clinical trials are underway to harness the therapeutic potential of existing drugs for new applications in the fight against cancer. This approach not only holds promise for more expediently addressing the disease but also offers a cost-effective avenue for enhancing cancer treatment options.

Keywords: *Cancer, Drug repurposing, Drug design, Clinical trials.*

A BRIEF OUTLINE OF CONTROLLED DRUG DELIVERY SYSTEM

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Abstract

A controlled drug delivery system is a sophisticated pharmaceutical technology designed to control over drug release, ensuring optimal therapeutic outcomes while minimizing side effects. These systems consist of drug formulations and delivery devices, often employing advanced materials and technologies. They can be classified into various categories, including oral, transdermal, implantable, and injectable systems. Controlled drug delivery systems are enhance patient compliance by reducing the frequency of dosing, leading to improved treatment outcomes. Applications of controlled drug delivery systems are diverse, spanning chronic disease cancer treatment, and contraception, insulin pumps for diabetes management, transdermal patches for pain control. In conclusion , controlled drug delivery systems are a pivotal advancement in the field of pharmaceuticals. Their ability to regulate drug release offers significant benefits in terms of patient comfort, efficacy, and safety, making them indispensable tools in modern medicine. Continued research and innovation in this area promise to further revolutionize drug delivery and patient care.

Keywords*: Controlled release , Drug delivery , Efficacy implants.*

CURRENT INSIGHTS ON THE KNOWLEDGE, ATTITUDE, PRACTICE AND BARRIER AMONG HEALTHCARE PROVIDERS TOWARDS PHARMACOVIGILANCE AND ADVERSE DRUG REPORTING IN INDIA: A REVIEW

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Abstract

Pharmacovigilance (PV) is the collection of activities aimed at identifying, evaluating, comprehending, and avoiding adverse drug reactions (ADRs). To produce the safety information for marketed medications, spontaneous reporting of potential ADRs to PV centres is crucial. National and international organizations have really pushed health practitioners to prioritize reporting ADRs in order to stop ADR-related issues due to their awareness of the significance of doing so. Between 0.2 to 41.3% of ADRs that result in emergency hospitalization happen globally, and 28.9% of them can be avoided. A meta-analysis conducted in 2012 revealed that 45% of ADRs in inpatients and 52% of ADR-related emergency hospitalizations were avoidable. Additionally, post-marketing safety studies have identified potential risk factors linked to the use of new medications in the general population, and the role of health professionals in reporting suspected ADRs is crucial in order to increase signal detection. In order to track ADRs and send drug safety data to the WHO-ADR monitoring centre in Uppsala, Sweden, the Central Drugs Standard Control Organization (CDSCO) created the national Pharmacovigilance Programme of India (PvPI) in India in 2004. The Drug Controller General of India (DCGI) and Indian Council of Medical Research (ICMR) have set up numerous peripheral PV centres at numerous hospitals located in significant Indian cities to coordinate ADR monitoring throughout the country. It is also clear that in India, under-reporting of suspected ADRs by medical personnel is a major issue. For instance, the ADR reporting contribution from India was less than 1%, highlighting the PV program's current shortcomings. The improvement and promotion of PV activities in India are the goals of numerous regional and national projects. In this Review, Literature spanning from 2000 – 2023 was systematically examined to figure out the Knowledge, attitude, Practice and Barrier among Healthcare Providers (Physician, Nurses, Dentist and Pharmacist).

Keywords: *Adverse Drug Reactions (ADR), Pharmacovigilance (PV), Post Marketing Safety, Post Marketing Surveillance.*

EXPOSING THE SILENT KILLER: ANALYZING HYPERTENSION IMPACT BEYOND BLOOD PRESSURE

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Abstract

One of the most common cardiovascular illnesses in the world is hypertension. However, it can be challenging to properly regulate blood pressure in the population with resistant hypertension. Additionally, antihypertensive medications may currently have negative effects. Therefore, it is necessary to identify and utilize new therapeutic targets and therapies in order to control hypertension and its comorbidities. Traditional pharmacological targets have been studied in the past, including the aldosterone receptor, aldosterone synthase, and the ACE2 / angiotensin, 1-7 Mas receptor axis. Recent studies have also looked into the control of blood pressure using vaccines and medications that target the gastrointestinal microbiome, which represents pharmacological classes. Here, we review the most recent information on both traditional and novel pharmacological targets and talk about how new medications might be used to treat hypertension. For the purpose of acquiring information on hypertension, a thorough assessment of the current literature was conducted. Data collection involved the use of databases like Pub Med, Scopus, and Web of Sciences. Numerous research revealed that monotherapy does not treat hypertension. Numerous businesses concentrated on Fixed-dose combinations for hypertension. Phase III clinical trials are being conducted on medications including candesartan, Calexcitin, and amlodipine. Phase I/II clinical research have so far examined some new medication classes, such as AR antagonists, APA inhibitors, and vaccines. Drug inhibitors have also been studied in animal experiments. Screening and validation of drug targets can proof to be better approach to nullify the adverse effects in the usage of antihypertensives.

Keywords: *Hypertension, New targets, AR antagonists, Vaccines.*

DEVELOPMENT AND EVALUATION OF CLARITHROMYCIN-LOADED TRANSFEROSOMES GEL

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Abstract

Formulation Clarithromycin is a macrolide antibiotic used for the treatment of a wide variety of bacterial infections such as acute otitis, pharyngitis, tonsillitis, respiratory tract infections, uncomplicated skin infections, and helicobacter pylori infections. It belongs to BCS class II drug i.e., low soluble or high permeable drug. Due to its poor solubility, it is poorly absorbed. Therefore, to overcome these problems it can be encapsulated as transferosomes. Transferosomes are vesicular carrier systems specially designed to have at

least one inner aqueous compartment enclosed by a lipid bilayer, together with an edge activator. These are elastic and deform and squeeze themselves to penetrate the skin. These can be prepared by the Thin Film Hydration method. They can be formulated using organic solvent (Methanol) and edge activator (Tween 80) in various proportions. Soya Phosphatidylcholine is used as a phospholipid. Various evaluation tests like Entrapment Efficiency, Zeta potential, Vesicle size, and Transmission Electron Microscopy, (TEM) can be conducted.

***Keywords**: Transferosomes, Clarithromycin, Antibiotic.*

PREPARATION AND PHARMACOLOGICAL EVALUATION OF HERBAL FORMULATION FROM HIMALAYAN PLANTS FOR THE TREATMENT OF ALCOHOL ABSTINENCE SYNDROME

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Abstract

Alcohol abuse is a major problem worldwide and it affects people's health and economy. There is a relapse in alcohol intake due to alcohol withdrawal. Alcohol withdrawal anxiety-like behaviour is a symptom that appears 6–24 h after the last alcohol ingestion. The present study was designed to explore the protective effect of a standardized polyherbal preparation in ethanol withdrawal anxiety in Wistar rats. Polyherbal preparation was prepared by mixing the dried extracts of three plants Cymbopogon citratus, Cinnamomum tamala and Urtica dioca in the proportion 1:1:1 respectively. Polyherbal preparation was subjected to phytochemical profiling through HPTLC. The effect of Polyherbal preparation on alcohol withdrawal anxiety, depression, seizure was tested using a two-bottle choice drinking paradigm model giving animals' free choice between alcohol and water for 15 days. Alcohol was withdrawn on the 16th day and Polyherbal preparation (10 and 30 mg/kg, oral), Nutriley alquit powder (20 mg/kg) treatment was given on the withdrawal days. Behavioural parameters were tested using EPM, FST, TST. Phytochemical profiling showed that Polyherbal preparation contains major phytoconstituents like quercetin, rutin, gallic acid. In-vivo studies showed that polyherbal preparation possesses an antianxiety, antidepressive effects in alcohol withdrawal. The study concludes that polyherbal preparation may have therapeutic potential for treating ethanol-type dependence.

Keywords: *Polyherbal preparation, Alcohol withdrawal, Anxiety, Depression, Seizure.*

PROPOLIS: A WONDERFUL APICULTURE PRODUCT TO COMBAT VIRAL INFECTIONS (SARS-COV2)

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Abstract

Propolis is a product of honeybees having complex composite chemical composition; bees manufacture it from gummy and balsamic material collected from sprouts, flower-buds, trees and other vegetal-tissue resinous exudates. Primarily bees use propolis to seal their hive in order to protect themselves from insects and microorganisms and to sterilize the queen-bee posture site, and to mummify insect invaders. Like other honeybee products (honey, royal jelly, pollen), due to the presence of various phytochemicals in propolis, it has been used against the treatment of different health ailments, since 300 years B.C. propolis has been used as a remedy in various parts of the world. Propolis is a wonderful bee product used in the formulation of different drugs from past decades. Various product based products are available in market having excellent commercial viability in entire world viz. "candies, chocolate bars, shampoos, skin lotions, antiseptic mixtures, and toothpastes". Propolis is a well-known immune modulator by boosting the immune system and protects from various pathogenic attacks. This immune modulatory property of propolis is due to its inherent antibiotic activity, which helps to block the genomic replication of viruses, bacteria and other organisms. Considering these beneficial effects of propolis, it might be inferred that it could help to human beings from COVID-19 infection. Present review article was designed to summarize and develop correlation between infectious diseases and therapeutic role of propolis with special emphasizes on SARS-CoV2.

Keywords: *Propolis, SARS-CoV2, Honeybee, Therapeutic, Antibacterial.*

BIOLOGICAL POTENTIAL OF COLOCASIA ESCULENTA

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Abstract

Colocasia esculenta belongs to the family Araceae and commonly known as 'taro' and is widely used in traditionally system of medicines. The plant is used to heal many diseases including typhoid, pneumonia, otitis, urinary tract infection and diarrhoea infections. Taro

foods are very useful to person's allergic to cereals and can be consumed by infants/children who are sensitive to milk. Taro acts as a binder and its contains starch which is better disintegrant used in many pharmaceutical formulations. Taro is highly digestable and used in the preparation of foods as it is a rich source of gums. Taro contains a variety of anti-nutritional and toxic components. Different varieties of taro are Bun-long, Dasheen, Hawaii Red (Lehua), Hawaii White, and Niu'e varieties. The plant showed many other therapeutic activities like antimicrobial, antihepatotoxic, anthelmintic, antioxidant, anti-cancer, anti-lipid peroxidative, antibacterial, antifungal, antidiabetic and anti-melanogenic. Colocasia esculenta is utilized for the treatment of some common disease such as analgesic, anti-inflammatory, anti-cancer, anti-diarrheal, astringent, nervine tonic, and hypolipidemic activity. Chemically, the plant contains various biologically active phytoconstituents such as flavonoids, sterols, glycosides, and other micronutrients. Therefore, it is necessary to exploit it to its maximum potential in the medicinal and pharmaceutical field.

***Keywords**: Dug, Plant, Pharmacology, Lehua.*

AN INVESTIGATION INTO SOLUBILITY AND DISSOLUTION IMPROVEMENT OF A TYROSINE KINASE INHIBITOR AS ASD

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Abstract

Poorly water-soluble drugs which covers around most of the commercial deliverables, NCE molecules and which are in pipeline belongs to BCS class II and IV. The model drug also belongs to BCS class II with low solubility and high permeability. The present study involves the screening of methods, materials with feasibility of the process for improving the solubility and dissolution drug release. Different polymers and surfactant were screened for the evaluation of 2nd and 3rd generation of ASD. Different level studies of polymer and surfactant were evaluated. The formulation was developed, optimized and evaluated for the different quality attributes. Present studies shows positive molecule interaction which results into an improved formulation. This study shows that low solubility and dissolution rate can be addressed using ASD Technique, good solubility and dissolution rate shows positive pathway for clinical evaluation.

***Keywords**: Solubility enhancement, Amorphous solid dispersion (ASD), BCS Class II, Dissolution drug release.*

THANK YOU