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CONFERENCE PROCEEDINGS

NATIONAL CONFERENCE ON

NANOMEDICINE AND AI

TRANSFORMING KNOWLEDGE INTO NEXT-GENERATION DISCOVERY AND DEVELOPMENT

ABSTRACT BOOK

NANOMEDICINE & ARTIFICIAL INTELLIGENCE

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Nanomedicine and AI

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"NANOMEDICINE AND AI: TRANSFORMING KNOWLEDGE INTO NEXT-GENERATION DISCOVERY AND DEVELOPMENT"

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PHARMACIST'S OATH

I swear by the code of ethics of Pharmacy Council of India, in relation to the community and shall act as an integral part of health care team.

I shall uphold the laws and standards governing my profession.

I shall strive to perfect and enlarge my knowledge to contribute to the advancement of pharmacy and public health.

I shall follow the system which I consider best for Pharmaceutical care and counseling of patients.

I shall endeavor to discover and manufacture drugs of quality to alleviate sufferings of humanity.

I shall hold in confidence the knowledge gained about the patients in connection with my professional practice and never divulge unless compelled to do so by the law.

I shall associate with organizations having their objectives for betterment of the profession of Pharmacy and make contribution to carry out the work of those organizations. While I continue to keep this oath unviolated, may it be granted to me to enjoy life and the practice of pharmacy respected by all, at all times !

Should I trespass and violate this oath, may the reverse be my lot !

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About Conference

The National Conference on "Nanomedicine and AI: Transforming Knowledge into Next-Generation Discovery and Development", organized by Kamla Nehru College of Pharmacy, Butibori aims to bring together academicians, researchers, industry professionals, and students to explore recent advancements in nanotechnology and artificial intelligence within pharmaceutical sciences. Nanomedicine has enabled targeted drug delivery and advanced diagnostics, while AI has transformed drug discovery, formulation development, and clinical research. This conference focuses on the integration of Nano–AI technologies for translational research and industrial applications. Through keynote lectures, technical sessions, poster presentations, and panel discussions, the conference seeks to promote knowledge exchange, research collaboration, and innovation for next-generation healthcare solutions.

CONVENER

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Presidential Message

It is my privilege to extend warm greetings on the occasion of the National Conference on **"Nanomedicine and Artificial Intelligence: Transforming Knowledge into Next-Generation Discovery and Development,"** being organized by **Kamla Nehru College of Pharmacy** on **13th and 14th February 2026**. Nanomedicine and Artificial Intelligence are rapidly redefining the future of healthcare and pharmaceutical research. This conference offers a valuable platform for academicians, researchers, industry experts, and students to exchange ideas, share innovations, and promote interdisciplinary collaboration that can drive meaningful scientific progress.

I sincerely congratulate the organizing committee for their dedicated efforts and wish the conference every success. May this academic endeavor inspire impactful research, innovation, and advancements toward improved healthcare outcomes.

The management and staff of Kamla Nehru College of Pharmacy continuously strive to harmonize technology with tradition while instilling essential life skills in students for a balanced and responsible life. The institution is known for value-based activities that influence not only professional careers but also shape character and ethics. The college plays a pivotal role in nurturing young minds and preparing them to become responsible citizens of tomorrow.

Dr. Suhasini G. Wanjarri

President

Amar Sewa Mandal Nagpur

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Adv. Abhijit G. Wanjarri
Secretary Amar Sewa Mandal Nagpur
MLC, Govt. of Maharashtra

Secretary's Message

It is my privilege to warmly welcome all delegates, researchers, academicians, industry experts, and students to the National Conference on "Nanomedicine and Artificial Intelligence: Transforming Knowledge into Next-Generation Discovery and Development," being organized on 13th and 14th February 2026 by Kamla Nehru College of Pharmacy, Butibori, Nagpur.

The convergence of nanomedicine and artificial intelligence is rapidly transforming drug discovery, diagnostics, and therapeutic development. This conference serves as a valuable platform for sharing innovative ideas, recent research, and emerging technologies that will shape the future of healthcare and pharmaceutical sciences.

Kamla Nehru College of Pharmacy remains committed to excellence in education, research, and professional ethics, with a strong focus on bridging academic knowledge and practical application. I sincerely appreciate the dedicated efforts of the organizing committee, faculty, reviewers, and student volunteers, and I thank all participants for their valuable contributions.

I am confident that this conference will foster meaningful discussions, collaborations, and scientific advancements. I wish the conference great success and an enriching experience for all.

With best wishes,

Adv. Abhijit G. Wanjarri

Secretary Amar Sewa Mandal Nagpur

MLC, Govt. of Maharashtra

ISBN : 978-81-997864-9-3

Dr. Smeetaa A. Wanjarri
Treasurer
Amar Sewa Mandal Nagpur

Treasurer's Message

It gives me great pleasure to welcome all delegates, academicians, researchers, industry professionals, and students to the National Conference on "Nanomedicine and Artificial Intelligence: Transforming Knowledge into Next Generation Discovery and Development", being held on 13th and 14th February 2026 at Kamla Nehru College of Pharmacy, Butibori, Nagpur. Nanomedicine and artificial intelligence are rapidly transforming pharmaceutical research, healthcare innovation, and drug development. This conference provides a valuable platform for knowledge sharing, interdisciplinary interaction, and the promotion of innovative research among professionals and young scholars.

Kamla Nehru College of Pharmacy is committed to academic excellence, research advancement, and ethical professional education. Located in the industrial hub of Butibori, Nagpur, the institution consistently encourages skill development, innovation, and research-driven learning through meaningful academic initiatives.

I sincerely appreciate the efforts of the organizing committee, faculty members, and students, and thank all contributors and participants for their valuable involvement. I am confident that this conference and the abstracts presented herein will inspire future research and collaborations.

With best wishes for the grand success of the conference.

Dr. Smeetaa A. Wanjarri

Treasurer

Amar Sewa Mandal Nagpur

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Dr. Milind J. Umekar
President, Association of Pharmaceutical Teachers of India (APTI)

APTI President's Message

It gives me immense pleasure to know that Kamla Nehru College of Pharmacy, Butibori, Nagpur is organizing a National Conference on "Nanomedicine and Artificial Intelligence: Transforming Knowledge into Next-Generation Discovery and Development" on 13th and 14th February 2026. Nanomedicine and Artificial Intelligence are redefining the future of pharmaceutical sciences by enabling precision, innovation, and efficiency in drug discovery, development, and healthcare delivery. Integrating these advanced technologies holds great promise in addressing complex medical challenges and improving patient outcomes. In this context, the theme of the conference is highly relevant and timely. Such academic platforms play a crucial role in bringing together researchers, academicians, industry experts, and students to exchange ideas, share cutting-edge research, and foster interdisciplinary collaborations. I am confident that this conference will inspire meaningful discussions, promote innovative thinking, and contribute significantly to the advancement of pharmaceutical education and research in India.

I congratulate the management, organizing committee, faculty members, and students of Kamla Nehru College of Pharmacy for their commendable efforts in organizing this national conference. I extend my best wishes for the grand success of the event and a fruitful academic experience for all the participants.

With warm regards and best wishes,

Dr. Milind J. Umekar

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Dr. Rakesh R. Somani
President
Association of Pharmaceutical Teachers of India
(Maharashtra State Branch)

President, APTI Maharashtra

Advancement in pharmaceutical sciences is driven by innovation, collaboration, and the effective integration of emerging technologies. It gives me great pleasure to be associated with the National Conference on "Nanomedicine and Artificial Intelligence: Transforming Knowledge into Next Generation Discovery and Development," organized on 13th and 14th February 2026 by Kamla Nehru College of Pharmacy, Butibori, Nagpur. The convergence of nanomedicine and artificial intelligence is redefining drug discovery, healthcare innovation, and research methodologies. This conference provides a valuable platform for academicians, researchers, industry professionals, and students to exchange knowledge and explore future directions in pharmaceutical sciences. Kamla Nehru College of Pharmacy continues to demonstrate its commitment to academic excellence and research-driven education. The Association of Pharmaceutical Teachers of India, Maharashtra State Branch, appreciates and supports such initiatives that promote innovation, interdisciplinary learning, and professional growth.

I extend my best wishes for the grand success of the conference and trust that the deliberations documented in this abstract book and souvenir will inspire meaningful research and collaboration.

With best wishes

Dr. Rakesh R. Somani

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Dr. Jagdish Baheti
Principal & Conference Convener
Kamla Nehru College of Pharmacy
Butibori, Nagpur, Maharashtra

Principal's Message

As the Principal of **Kamla Nehru College of Pharmacy, Butibori, Nagpur**, it gives me immense pleasure to welcome all delegates, academicians, researchers, industry experts, and students to the National Conference on *"Nanomedicine and Artificial Intelligence: Transforming Knowledge into Next Generation Discovery and Development"* scheduled on **13th and 14th February 2026**.

In today's rapidly advancing scientific era, the convergence of nanomedicine and artificial intelligence is revolutionizing pharmaceutical research, precision healthcare, and innovative drug discovery. This conference serves as an excellent platform for intellectual exchange, interdisciplinary collaboration, and the dissemination of contemporary research.

Our institution remains committed to academic excellence, research innovation, and ethical values. I sincerely appreciate the dedicated efforts of the organizing committee, faculty, and students in making this event possible.

I extend my best wishes for the grand success of the conference and a rewarding academic experience to all participants.

With warm regards.

Dr. Jagdish Baheti

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Dr. Nitin Padole
Associate Professor & Conference Coordinator
Kamla Nehru College of Pharmacy
Butibori, Nagpur, Maharashtra

Dr. Pankaj Dhapake
Associate Professor & Conference Coordinator
Kamla Nehru College of Pharmacy
Butibori, Nagpur, Maharashtra

Conference Coordinator's Message

With great pleasure, we extend a warm welcome to all delegates, academicians, researchers, industry professionals, and students to the National Conference on "Nanomedicine and Artificial Intelligence: Transforming Knowledge into Next Generation Discovery and Development," scheduled on 13th and 14th February 2026 at Kamla Nehru College of Pharmacy, Butibori, Nagpur, Maharashtra The objective of this national conference is to create a focused academic platform for the exchange of innovative ideas, recent research findings, and emerging trends in nanomedicine and artificial intelligence, which are rapidly transforming pharmaceutical research, drug development, and healthcare delivery. The conference has been carefully structured to encourage interdisciplinary interaction, scholarly discussion, and meaningful collaboration among participants.

As the Conference Coordinator, We are proud of the collective efforts of our organizing committee, faculty members, reviewers, and student volunteers, whose dedication and teamwork have been instrumental in planning and executing this academic event. Their commitment reflects the academic culture and organizational strength of Kamla Nehru College of Pharmacy, which continuously promotes quality education, research excellence, and professional development. We sincerely thank all authors, speakers, and participants for their valuable contributions. We are confident that the research abstracts compiled in this book and the interactions during the conference will inspire new ideas, collaborations, and future advancements in pharmaceutical sciences.

We wish all participants a productive and enriching conference experience.

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Speakers Profile

Dr. V. K. Mourya

Former Principal at Government College of Pharmacy, Aurangabad (MS) India &

Pharma Consultant in Formulation Development

He is a highly respected academic leader and eminent researcher who most recently served as the Principal of the Government College of Pharmacy, Chhatrapati Sambhajinagar (formerly Aurangabad) until June 2024. With over four decades of distinguished experience in pharmaceutical education, research, and administration, he currently holds the position of Professor Emeritus at Dr. Babasaheb Ambedkar Marathwada University (BAMU). His career includes impactful leadership roles, notably as Principal of the Government College of Pharmacy, Amravati. Internationally recognized for his scholarly contributions, he was listed among the top 2% of scientists worldwide by Stanford University in 2020.

A prolific author and renowned pharma consultant, his expertise spans formulation development, instrumental analysis, nanotechnology, and molecular modeling. He has authored over 240 research publications and books, with seminal contributions on chitosan derivatives. His authoritative works, including *Chitosan* and *Chemically Engineered Chitosan*, are widely acclaimed in polymer science and advanced drug delivery, establishing him as a leading figure in academia and industry alike.

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Dr. Ketan M. Ranch

Professor, L. M. College of Pharmacy,

Ahmedabad (Gujarat)

He is a highly accomplished Associate Professor in the Department of Pharmaceutics at L.M. College of Pharmacy (LMCP), Ahmedabad, with over 17 years of excellence in teaching, research, and academic leadership. He earned his Ph.D. in Pharmaceutics and Pharmaceutical Technology from Gujarat University and holds a professional certification in Management and Leadership from the Chartered Management Institute (CMI), UK. His research focuses on cutting-edge drug delivery technologies, particularly ocular therapeutics, nanotechnology-based systems including SLNs and NLCs, and targeted cancer therapy. Widely recognized for his industry engagement, he serves as a trusted consultant in Design of Experiments (DoE) for formulation development and optimization. His outstanding contributions were honored with the 5th GTU Tech Guru (Best Teacher) Award in 2023.

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Prof. G. Narahari Sastry

Professor & Dean (SRC),

Indian Institute of Technology, Hyderabad (Telangana)

Dr. G. Narahari Sastry is a distinguished scientist and academician currently serving as Professor in the Department of Biotechnology and Dean of Sponsored Research and Consultancy at IIT Hyderabad. Previously, he served as the Director of CSIR-NEIST (Jorhat) and headed the Molecular Modelling Division at CSIR-IICT. With a research career spanning over three decades, Dr. Sastry has made pioneering contributions to Computational Chemistry, Computer-Aided Drug Design (CADD), and Bioinformatics. He has authored over 340 research publications and is the mastermind behind the Molecular Property Diagnostic Suite (MPDS). A recipient of the prestigious Shanti Swarup Bhatnagar Prize and the J.C. Bose National Fellowship, his work sits at the vital intersection of fundamental chemical principles and therapeutic innovation.

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Dr. Amber Vyas

Professor, Pdt. Ravishankar Shukla University,

Raipur (C.G.)

Dr. Amber Vyas is an accomplished academician and researcher in Pharmaceutics, currently serving as Associate Professor at the University Institute of Pharmacy, Pt. Ravishankar Shukla University, Raipur (Chhattisgarh). He holds an M.Pharm, Ph.D., and Post-Doctoral qualification and is a UGC Raman International Fellow, with international research experience at the University of Minnesota, USA. Recognized among the top 2% scientists worldwide in Pharmacy and Pharmacology (2023–2024), Dr. Vyas has published 94 scholarly works, including books and book chapters with reputed publishers. He has delivered 36 invited talks globally and actively contributes to academic leadership as President, APTI Chhattisgarh, and an approved Ph.D. guide.

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Dr. Harshwardhan Karkar

Principal Architect, Persistent Systems Limited

Nagpur (Maharashtra).

He is a seasoned technology leader and Principal Architect at Persistent University – Persistent Systems Limited, with over 25 years of extensive experience in the multi-technology IT industry. He leads AI-driven initiatives within the Learning and Development division and is actively involved in advancing Artificial Intelligence and Generative AI adoption across the organization. He delivers specialized training programs on Agentic AI, Azure OpenAI, GitHub Copilot, Cursor AI, and other modern AI tools for architects, team leads, developers, QA professionals, and project managers. Throughout his distinguished career, he has worked across international geographies including the United States, United Kingdom, Middle East, Oman, South Africa, and New Zealand, delivering enterprise-grade IT solutions for global clients. His expertise spans enterprise application development using Java and .NET, Enterprise Application Integration using tools such as webMethods and TIBCO, Big Data and Analytics solutions, DevOps and DevSecOps practices, and data engineering technologies including Spark, Databricks, Data Factory, Kafka, and streaming systems. He holds a degree in Electronics Engineering and has completed a Senior Management Program from IIM Nagpur, reflecting his strong blend of technical excellence and strategic leadership.

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ABSTRACTS

Nanomedicine and AI

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Abstract Id- P- 01

A New Era in Nanomedicine: Pteroyl-γ-l-glutamate Modified Polymeric Nanomicelles Loaded with Paclitaxel for Breast Cancer Targeted Delivery

Roshni Kunte, Prafulla Sabale, Vidya Sabale
Dept. of Pharmaceutical Sciences, R. T. M. Nagpur University, Nagpur, Maharashtra, India-440033
Dept. of Pharmaceutics, Dadasaheb Balpande College of Pharmacy, Nagpur, Maharashtra, India-440037

Abstract
Nanomedicine applies nanotechnology to create new and improved solutions in healthcare. The present study aims to engineer paclitaxel (PTX)-loaded nanomicelles with chemically synthesized folic acid (FA) conjugated pteroyl-γ-l-glutamate (Pluronic F68) with an aim to enhance targeted delivery via surface modification with folic acid for treatment of breast cancer. This research study focuses on the synthesis and characterization of a folic acid–Pluronic F68 conjugated nanocarrier, as well as the development, optimization, and evaluation of a polymeric conjugated drug-loaded nanocarriers using a Quality by Design (QbD) approach. Materials and Methods: Synthesis of FA-Pluronic F68 was done at the carboxylic group of FA, which was activated by 1,1′-carbonyldiimidazole (CDI). This reacts with a terminal hydroxyl group of PF68, forming a covalent ester linkage between FA and pteroyl-γ-l-glutamate PF68. PTX-loaded micelles were formulated using the thin film hydration technique and optimization by Box Behnken design. Surface modified PF68 was assessed by UV, FT-IR and X-ray studies, and evaluated using in-vitro cellular models to assess enhanced drug release and reduced toxicity. Results: The spectra (UV) of FA-PF68 conjugate were found on 275 nm with a single peak these results proved conjugate formation. The synthesized FA-PF68 shows several-fold higher solubility than native Pluronic F68 nanomicelles. The formulation in the nanometric range (142.2 ± 2.7 nm) has a stable zeta potential (-15.1 ± 1.07 mV), indicating good colloidal dispersion (0.514), and possesses spherical, smooth texture of nano-micelles. Enhanced ex-vivo drug permeation of (94.3330 ± 3.901) % and sustained release till 48 hours was reported. The comprehensive findings indicated that the cell viability of human breast adenocarcinoma cells was significantly reduced when exposed to FA-PF68-PTX micelles (40 µg/mL) in comparison to both the PTX solution and PF68-PTX micelles across all tested concentrations. The higher entrapment efficiency (94.75 ± 1.89 %). Conclusion: the developed FA-PF68 conjugate micelles were stable, successfully characterized, enhanced drug loading and targeted delivery via P-glycoprotein inhibition, and showed anticancer efficacy against MDA-MB-231 breast cancer cells.

Keywords: Folic acid-Pluronic F68 Conjugate; Nano-micelles; Targeted Drug Delivery; Paclitaxel; Anticancer Agent

Abstract Id- P- 02

Formulation and Evaluation of Ferulic Acid Mixed Micelles Containing a Mucoadhesive Nasal Gel

Author(s): Shweta A. Das, Dr. Rita N. Wadetwar
Affiliation: Department of Pharmaceutical Sciences, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur.

Abstract
To formulate and evaluate a ferulic acid–loaded mixed micelles–based mucoadhesive nasal gel. This study aimed to enhance the solubility and stability of ferulic acid using mixed micellar encapsulation, prolong nasal residence time through incorporation into a mucoadhesive gel, and evaluate the formulation for physicochemical properties, drug release behavior, and brain targeting efficiency. Ferulic acid–loaded mixed micelles were prepared using Poloxamer and Soluplus dissolved in methanol, followed by thin-film formation using a rotary evaporator at 60 °C and 60 rpm for 30 min. The film was dried for 24 h, hydrated with phosphate buffer (pH 6.4), and shaken. The micelles were incorporated into a mucoadhesive nasal gel prepared using HPMC K4M, Poloxamer 407, and Poloxamer 188, with the gel stored at 4 °C overnight. The optimized FA-MM gel exhibited a particle size of 275.5 nm, zeta potential of −0.15 mV,67.23% entrapment efficiency, and 87.33% drug content. In-vitro and ex-vivo drug release at 24 h was 80.52% and 52.65%, respectively, with stability for 3 months. The formulation showed thermoresponsive gelation, enhanced nasal residence time, and no tissue damage in histopathological evaluation of goat nasal mucosa. The developed system demonstrated improved intranasal drug delivery, sustained release, and enhanced nose-to-brain targeting.

Keywords: Ferulic acid; mixed micelles; mucoadhesive nasal gel; intranasal delivery; nose to-brain targeting.

Abstract Id- P- 03

Development and Validation of Analytical Method for Estimation of Drug in Its Bulk and Tablet Dosage Form Using QBD approach.

Siddhi K Vyas*, Ketan N Bardiya, Dipti B Ruikar
P. R. Pote Patil College of Pharmacy,Amravati, Maharashtra 444604

Abstract
Analytical method development plays a crucial role in ensuring the quality, safety,and efficacy of pharmaceutical products. With the increasing demand for reliable and robust analytical techniques, the Quality by Design (QbD) approach has emerged as a systematic and science-based strategy for method development and validation. The present work focuses on the development and validation of a simple, rapid, accurate, and cost-effective analytical method for the estimation of a drug in its bulk and tablet dosage form using a QbD approach by UV spectrophotometry and Reverse Phase High Performance Liquid Chromatography (RP-HPLC). The QbD framework was applied by defining the Quality Target Product Profile(QTPP), identifying Critical Quality Attributes (CQAs), and evaluating Critical Process.
Parameters (CPPs) that influence method performance. Risk assessment and experimentaloptimization were employed to establish a robust analytical design space. UV spectrophotometric analysis involved optimization of wavelength selection and solvent system, while RP-HPLC method development included selection of column, mobile phase composition, flow rate, and detection wavelength to achieve effective separation and quantification. The developed methods were validated in accordance with ICH Q2(R1) guidelines for specificity, linearity, accuracy, precision, limit of detection (LOD), limit of quantitation (LOQ), robustness, and system suitability. The validated methods demonstrated good linearity, high precision, acceptable accuracy, and robustness against small deliberate variations in analytical conditions. Overall, the application of QbD in analytical method development enhances method reliability, efficiency, and transferability while minimizing the risk of out-of-specification results.

Key Words: Quality by Design (QbD), RP-HPLC, UV Spectrophotometry,Analytical Method, Validation, Bulk and Tablet Analysis, ICH Guidelines

Abstract Id- P- 04

Formulation and evaluation of colon targeting mesalamine tablet using powder coating technique.

Author: Akanksha A Talokar, Prasad R Deshmukh.
Affiliation: P. R. Pote Patil College of Pharmacy, Amravati, Maharashtra 444603.

Abstract
Powder coating is a novel solvent free coating technology that has gained increasing attention in pharmaceutical field as an alternative to conventional liquid–based coating techniques. In this process, dry powder particles consisting of polymers plasticizers and functional excipients are applied onto solid dosage form and subsequently fused under controlled thermal or plasticizer conditions to form a continuous film. The advantages of powder coating is solvent free process, patient safety, uniform coating, control release, stability, taste masking and the disadvantage of powder coating is limited substrate, equipment requirement, coating defects, scaleup language. The objectives is to load mesalamine in chitosan macroparticles and formulate and evaluate powder coating enteric coated tablet using mesalamine loaded chitosan beads for colon targeting. Mesalamine loaded chitosan beads by using inotropic gelation method. FTIR confirmed the successful entrapment of mesalamine in chitosan beads having 39% drug loading with 58.5% Entrapment efficacy. Core tablets were prepared by direct compression method having mesalamine loaded chitosan beads with MCC, mannitol, sodium starch glycolate, povidone and evaluated for appearance, thickness (5.22mm), hardness (5.5kg/cm2), friability (0.7%), weight variation (250.2mg) and disintegration time (17mins). The powder coating to core tablets of mesalamine and mesalamine loaded beads were carried out using Eudragit L100, HPMC, PEG 6000, and talc by compression coating. Powder coated tablets were successful evaluated for enteric tablet by acid uptake and disintegration in 6.8 pH phosphate buffer, In-vitro drug released study showing controlled released of mesalamine about 76.67% in 6 hr at 6.8 pH phosphate buffer. In conclusion, dry powder coating technique successfully evaluated for colon targeting mesalamine delivery.

Keyword- Powder coating, chitosan beads, mesalamine, colon targeting.

Abstract Id- P- 05

Determination of Organic Residue (Related substance) of Tablet Dosage Form

Author: Mrunmayee Mukund Kulkarni
Affiliation: P. R. Pote Patil College of Pharmacy, Amravati

Abstract
Chromatographic evaluation of azithromycin test solutions by RP-HPLC is vital for ensuring pharmaceutical purity and compliance. In this study, secondary peaks were assessed relative to the principal azithromycin peak. Impurity B, eluting at a relative retention time ~1.3, was limited to 2.0% while the cumulative area of other impurities was restricted to 3.0%. Peaks below 0.1% and those outside the defined analytical window were disregarded. This present study provides a robust framework for impurity profiling, ensuring product quality, patient safety and regulatory compliance in azithromycin formulation. The solvent mixture was prepared using 0.173% w/v ammonium dihydrogen phosphate solution adjusted to pH 10.0 with ammonia, mixed with acetonitrile and methanol. The test solution was prepared by extracting tablet powder equivalent to 0.2 g of azithromycin in the solvent mixture and diluting to volume, followed by filtration. Reference solutions of azithromycin RS alone and in combination with azithromycin impurity A RS were prepared in the same solvent system at appropriate concentrations. The method demonstrated clear separation of azithromycin from its impurity with good peak shape and resolution. The assay results were found to be within acceptable limits, and impurity levels complied with regulatory requirements, indicating that the method is suitable for routine quality control analysis. From the experimental data, the total related substances in the Azithromycin tablet sample were 0.084% (w/w), which is well within the Indian Pharmacopeial limit of not more than 3.0%. Impurity B was the highest impurity at 0.02%, but it was also within its specified individual limit of 2.0%. In the test chromatogram, the peak corresponding to Impurity B (RRT ≈ 1.3) was not more than twice the area of the principal peak of the reference solution, and the total area of all other impurity peaks was not more than three times the principal peak area. System suitability and resolution criteria were met, confirming the method performance.

Abstract Id- P- 06

Synthesize and Characterisation of Chitosan Derivatives And Evaluate as a Curcumin Loaded In Situ Formulation

Kundan M. Sawale, Sangam S. Nimkar, Prasad R. Deshmukh, Dipti B. Ruikar.

P. R. Pote Patil College of Pharmacy, Amravati, Maharashtra,444603
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Abstract
In situ formulations represent an advanced drug delivery approach in which the formulation undergoes sol–gel transition after administration at the site of action. This transformation is triggered by physiological conditions such as pH, temperature, ionic strength, and UV radiation. In situ gel-forming tablets constitute a novel strategy in oral drug delivery, demonstrating significant potential to enhance drug solubility while providing sustained and controlled release profiles. The objectives were to synthesize and characterize chitosan derivatives and to evaluate them as curcumin-loaded in situ formulations. The synthesis of N-palmitoyl chitosan was carried out using palmitoyl chloride, and characterization was performed by FTIR, DSC, and X-ray diffraction crystallography, which revealed successful attachment of the palmitoyl group to chitosan. Curcumin was loaded into chitosan and N-palmitoyl chitosan and evaluated for drug loading and swelling index. Curcumin-loaded N-palmitoyl chitosan showed significantly higher swelling compared to chitosan. Tablets were formulated using plain curcumin, curcumin-loaded N-palmitoyl chitosan, and chitosan. The prepared tablets were evaluated for physicochemical parameters including hardness, thickness, and disintegration time, all of which complied with pharmacopeial standards. In vitro dissolution studies were carried out using phosphate buffer (pH 6.8). The cumulative drug release from plain curcumin tablets was found to be 96.28% within 6 hours and 30 minutes, whereas curcumin-loaded chitosan tablets exhibited 72.48% drug release over the same duration.sThe modification significantly enhanced In-Situ gel-forming ability and modulated drug release.

Keyword- Chitosan, Curcumin, Palmitoyl Chitosan, Chitosan Derivatives, Sustained Release, Prolonged Release.

Abstract Id- P- 07

Solidified Deep Eutectic Solvent – Based Approach for Enhancement of Solubility of Poorly Water Soluble Drug

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Abstract
Poor solubility in water continues to be a significant barrier for the effective oral absorption of many pharmaceuticals. The purpose of this work was to develop a solid-state deep eutectic solvent (S-DES)-based formulation that could help dissolve olmesartan medoxomil, an antihypertensive medication with low water-solubility. The deep eutectic solvents were made by mixing choline chloride (the hydrogen bond acceptor) with either urea, glycerol, or sorbitol in molar ratios and then solidifying each of the deep eutectic solvents by incorporation into the matrix material Neusilin US2 through a spray-drying process. The properties of the final S-DES formulations were then characterized in terms of viscosity, pH, solubility, solid-state properties (using FTIR, NMR, PXRD, DSC, and SEM), and surface area (using BET). The optimized S-DES formulation exhibited a remarkable (218.96-fold) increase in solubility compared to the pure drug due to its strong hydrogen bonding and the formation of an amorphous structure. The S-DES formulation demonstrated a significant increase in the amount of drug that was released during in vitro dissolution studies and improved oral bioavailability, according to pharmacokinetics. After 90 days, the formulation showed excellent physical and chemical stability. Consequently, the S-DES approach is a promising, environmentally friendly, and effective means of enhancing the biopharmaceutical properties of poorly soluble, drug-like substances.

Keywords: Deep eutectic solvent, Olmesartan medoxomil, Solubility enhancement, Solidified DES, Oral bioavailability

Abstract Id- P- 08

Pteroyl-γ-l-glutamate/Pluronic® F68 modified polymeric micelles loaded with docetaxel for targeted delivery and reduced toxicity

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Abstract
Targeting the cancerous cells is essential to improve the drug's efficacy and avoid toxicity to normal cells, which can be achieved by surface functionalizing the nanocarriers like polymeric micelles, using block copolymer with conjugation moiety. This could increase the drug-loaded nanocarriers targeting ability and avoid drug efflux by inhibiting P-gp. Cancer progression associated with a pro-tumorigenic tumor microenvironment with folate receptor (FR) can be treated by folic acid (FA) or pteroyl-γ-l-glutamate, a combination of pteroic acid and l-glutamic acid. The pteroyl-γ-l-glutamate modified carriers have FR targeting ability, whereas Pluronic® F68 has P-glycoprotein (P-gp) inhibition property. Therefore, our study aimed to develop FA-linked Pluronic® F68 (FA-PF68) micelles for docetaxel trihydrate (DTX) delivery. The linkage of pteroyl-γ-l-glutamate and PF68 were preliminarily determined by UV-spectroscopy and was confirmed by DSC and FTIR. The encapsulation of DTX in micelles by thin-film hydration results in forming FA-PF68-DTX micelles. This surface functionalization demonstrated increased particle size upto 152.2 nm. Moreover, it shows better physical stability due to non-significant changes in ζ-potential. The spherical shape of FA-PF68-DTX micelles was observed in SEM with higher entrapment efficiency (94.75 ± 1.89 %). The sustained release of DTX of about 80.25 ± 1.53 % and 47.56 ± 0.89 % was observed during the first 24 h from FA-PF68-DTX and PF68-DTX micelles, respectively. The FA-PF68-DTX micelles show greater efficiency against MDA-MB-231 cells with lower viability. The histopathological study revealed the non-toxicity of FA-F68 conjugate on the liver, kidney and lung cells. It proved the potential of synthesized pteroyl-γ-l-glutamate/poly (ethylene glycol-propylene glycol-ethylene glycol) modified FA-PF68-DTX micelles for targeting the overexpressed FR on the tumor cells.

Key words- folate receptor, Pluronic® F68 , micelles, pteroyl-γ-l-glutamate

Abstract Id- P- 09

Taste Masking In Bitter Drug Formulation,Evaluation And Stability Studies

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Abstract
Taste masking is a crucial aspect in the development of oral liquid formulations, particularly herbal syrups containing bitter drugs, as unpleasant taste can significantly affect patient compliance. The present study was aimed at the formulation and evaluation of a taste-masked herbal syrup containing a bitter active ingredient. Various taste-masking approaches such as the use of sweeteners, flavors, viscosity enhancers, and polymer-based techniques were investigated to reduce bitterness without affecting therapeutic efficacy. The herbal syrup was prepared using suitable excipients and evaluated for organoleptic properties, pH, viscosity, drug content uniformity, and stability. Sensory evaluation was carried out using a human taste panel to assess bitterness masking efficiency. The optimized formulation showed significant reduction in bitterness with acceptable physicochemical properties and good stability over the study period. The results demonstrate that effective taste masking can be achieved in herbal syrup formulations through appropriate selection and optimization of excipients, thereby improving patient acceptability and compliance. This study provides a practical approach for the development of palatable herbal liquid dosage forms containing bitter drugs.

Keywords: Taste Masking, Herbal syrup,Polymer based technique.

Abstract Id- P- 10

Fabrication and Evaluation of 3D-Printed HA-CH-Curcumin Biofilms as a Multifunctional Platform for Enhanced Wound Healing

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Abstract
Introduction: Effective wound healing is hindered by infection, slow tissue regeneration, and a lack of advanced, personalized dressings. While 3D printing offers a solution, the development of suitable polysaccharide-based bioinks remains a critical challenge.To fabricate and evaluate a novel, 3D-printed using wound dressing using a synthesized hyaluronic acid-chitosan (HA-CH) conjugate bioink loaded with curcumin. In vitro, in vivo evaluation of toxicity profiling of the newly formed materials. The HA-CH conjugate was synthesized via EDC/NHS chemistry and characterized. A HA-CH-curcumin hydrogel was formulated as a bioink and its printability was optimized using a Quality-by-Design (QbD) approach with a Box-Behnken design. The 3D-printed biofilms were assessed for rheology, morphology, and drug release. In vitro evaluations included antibacterial tests against S. aureus and E. coli, and cytocompatibility/proliferation assays using L929 fibroblasts. In vivo efficacy was tested in an excision wound model.Optimization yielded a bioink with tailored rheology (viscosity: 2366.6 mPa·s; G': 232 Pa) for printing uniform for extrusion based 3D bioprinting. The patches provided sustained curcumin release over 72 hours (Higuchi model). They demonstrated significant antibacterial activity and excellent cytocompatibility (92.2% cell viability), promoting fibroblast migration. In vivo study was done using excision wound model the biofilms accelerated wound closure, reduced bacterial load, and enhanced collagen deposition versus a marketed control. The 3D-printed HA-CH-curcumin biofilm successfully synergizes the components' properties, offering a personalized, multifunctional dressing with strong antibacterial and pro-healing efficacy, demonstrating high translational potential for advanced wound care.

Keyword: tissue regeneration, pro-healing, rheology, fibroblast, biofilms, etc.

Abstract Id- P- 11

Kaempferol and Glycyrrhetinic Acid-Loaded Nanostructured Lipid Carriers Coated with Eudragit S100 for Colon-Targeted Therapy of Colorectal Cancer

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Abstract
Introduction- Colorectal cancer (CRC) remains one of the leading causes of cancer-related mortality worldwide, with limited success from conventional chemotherapeutic regimens due to poor solubility, systemic toxicity, and multidrug resistance. Objective- The present study aimed to develop and evaluate dual phytoactive nanostructured lipid carriers (NLC's) of Kaempferol and Glycyrrhetinic acid for colon-targeted delivery NLC's were prepared by solvent evaporation using glyceryl monostearate and oleic acid as the solid and liquid lipids, respectively, and stabilized with Poloxamer 407. The optimized NLC's were subsequently coated with bovine serum albumin (BSA) and Eudragit S100 to achieve pH-responsive colon specificity. FTIR and DSC analyses confirmed drug–excipient compatibility and successful encapsulation of the phytoactives within the lipid matrix. In vitro drug release displayed a sustained, pH-dependent profile governed by the Hixson–Crowell model, while the stability study demonstrated minimal changes in physicochemical properties over three months. The cytotoxicity study on Colo-205 human colon cancer cells revealed a significantly lower IC_{50} value for the combination-loaded NLC's (57.5 µg/mL) compared to individual drugs, confirmin synergistic anticancer activity. The optimized formulation (EC2) exhibited a particle size of 535.5 nm, zeta potential of −38.3 mV, and entrapment efficiencies exceeding 90%.These findings highlight the potential of Eudragit S100-coated BSA-NLC's as an efficient platform for dual phytoactive delivery, enabling enhanced bioavailability, controlled release, and targeted therapy for colorectal cancer.

Keywords- Kaempferol, Glycyrrhetinic acid, Nanostructured lipid carriers, Colon targeting, Eudragit S100, Colorectal cancer, Phytoactive synergy

Abstract Id- P- 12

BRUCINE NIOSOMAL GEL: A NOVEL VESICULAR CARRIER SYSTEM FOR TARGETED ARTHRITIS TREATMENT.

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Abstract
This study aimed to develop and evaluate a Brucine-loaded niosomal gel as an innovative topical delivery system for arthritis treatment. Arthritis, characterized by painful joint inflammation, significantly impairs quality of life, prompting ongoing efforts to improve therapeutic options. Brucine, an alkaloid with anti-inflammatory and analgesic properties, suffers from poor solubility, low bioavailability, and systemic toxicity when administered orally. Niosomes, vesicles made from non-ionic surfactants, enhance drug stability, skin permeability, and enable sustained release. Brucine niosomes were prepared via the Thin Film Hydration method and optimized using Box-Behnken design by adjusting cholesterol, Span 60, and sonication time. The optimized formulation contained 75 mg cholesterol, 125 mg Span 60, and 20-minutes sonication, achieving a particle size of 220 nm. The niosomal gel was formulated with Carbopol 934 and exhibited favourable topical properties, including pH between 6.3 and 6.5, viscosity of 6742 cp, good spread-ability, and extrudability. In-vitro and ex-vivo diffusion studies using Franz diffusion cells demonstrated a sustained release of Brucine from the niosomal gel over 8 hours compared to control gels. Stability assessments under accelerated conditions for one month confirmed the physical and chemical integrity of the formulation. The findings indicate that the Brucine-loaded niosomal gel improves drug solubility, offers prolonged release, and enhances local retention, potentially reducing systemic side effects and the need for frequent dosing. This targeted, non-invasive delivery system presents a promising therapeutic strategy for arthritis management.

Keywords: Brucine, niosomal gel, targeted drug delivery, arthritis treatment

Abstract Id- P- 13

Development of Tamoxifen-Loaded Cyclodextrin–Metal Organic Framework Nano Carrier for Enhanced Drug Delivery.

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Abstract
The effectiveness of many therapeutic agents is limited by poor aqueous solubility, low bioavailability, and inadequate drug delivery efficiency. To overcome these challenges, nano drug delivery systems have gained significant attention. In the present work, a CyclodextrinMetal Organic Framework (CD-MOF) based nano carrier was designed as a novel platform for advanced drug delivery. Tamoxifen is widely used in the treatment of breast cancer; however, its therapeutic effectiveness is limited by poor aqueous solubility and variable bioavailability. The present study focuses on the design and characterization of a tamoxifen-loaded Cyclodextrin–Metal Organic Framework (CD-MOF) based nano carrier to overcome these limitations. Cyclodextrins enhance the solubility of hydrophobic drugs through inclusion complex formation, while metal organic frameworks provide high surface area, tunable porosity, and structural stability. The integration of cyclodextrin with MOF results in a biocompatible and porous nano carrier suitable for efficient tamoxifen encapsulation. The tamoxifen-loaded CD-MOF nanoparticles were synthesized using a controlled method and characterized for particle size, morphology, structural integrity, and drug–carrier compatibility. The developed nano carrier exhibited favorable physicochemical properties, indicating its potential for improved tamoxifen delivery in breast cancer therapy.

Keywords: Tamoxifen, Cyclodextrin, Metal Organic Framework, CD-MOF, Nano Drug Delivery System, Solubility Enhancement.

Abstract Id- P- 14

Green Nanotechnology Synthesis of Silver Nanoparticles Using Adhatoda vasica and Symplocos racemosa

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Abstract
This study explores a green nanotechnology approach for the synthesis and characterization of silver nanoparticles (AgNPs) using aqueous leaf extracts of Adhatoda vasica and Symplocos racemosa as reducing and stabilizing agents. The plant-mediated method offers an eco-friendly, cost-effective, and sustainable alternative to conventional chemical synthesis by eliminating toxic reagents and harsh processing conditions. The formation of AgNPs was confirmed through visual color change and further characterized using UV–Visible spectroscopy, Fourier transform infrared spectroscopy (FTIR), X-ray diffraction (XRD), and scanning/transmission electron microscopy (SEM/TEM) to determine their optical properties, functional groups, crystalline nature, morphology, and particle size distribution. The synthesized nanoparticles were predominantly spherical, well-dispersed, and exhibited nanoscale dimensions with good stability. The phytochemicals present in the extracts played a crucial role in the reduction and capping processes. Furthermore, the biosynthesized AgNPs demonstrated significant biological activities, highlighting their potential applications in biomedical, antimicrobial, and environmental fields. Overall, this work emphasizes the effectiveness of plant-based green nanotechnology as a sustainable strategy for the production of functional silver nanoparticles.

Keywords: Green nanotechnology, Silver nanoparticles (AgNPs), Plant-mediated synthesis, Adhatoda vasica, Symplocos racemosa, Biosynthesis, Characterization, Phytochemicals.

Abstract Id- P- 15

Wheat Starch Films: A Biodegradable Approach for Novel Drug Delivery Systems

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Abstract
Natural polymers, such as starch, have attracted the interest of many research groups due to the increasing demand for biodegradable and biocompatible materials in new drug delivery systems (NDDS). Enzymatic or non-enzymatic degradation of such biodegradable polymers in vivo results in biocompatible and non-toxic byproducts. These polymers have been reported to improve drug pharmacokinetics and reduce side effects. Wheat is the common name for Triticum aestivum, a type of grass plant that is part of the Poaceae family. The objective of this research is to isolate and prepare wheat starch in film form for potential use in NDDS, which are environment friendly and economical, featuring a controlled-release drug delivery mechanism. Wheat starch is then isolated from the grain by wet milling and subsequently defatted to remove proteins, lipids, and other impurities. Further, by adding plasticisers (glycerol and sorbitol) to increase flexibility and cross-linking agents (citric acid and glutaraldehyde) to increase mechanical strength, the separated bounce is dried and reused as a film-forming resin with water as a solvent. Physical properties such as moisture content, ash value, pH, bulk density, and tapped density. Also, find out the tensile strength, swelling index, and thickness of the starch film. The results show that the wheat bounce films are a great way to find NDDS as they possess a high film-forming capacity and are biocompatible.

Keywords: Triticum aestivum, Extraction, Film Formulation, Solvent casting, Bounce.

Abstract Id- P- 16

Development and Characterization of Apixaban loaded nanoparticulate intranasal drug delivery system for brain stroke therapy

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Abstract
To develop and characterize a nanoparticulate intranasal drug delivery system for brain targeting using a Design of Experiments (DoE) assisted approach.This study aimed to deliver apixaban directly to the brain through the intranasal route, bypassing the blood–brain barrier, while enhancing nasal residence time and bioavailability using a thermosensitive, mucoadhesive in-situ gel containing polymeric nanoparticle Apixaban-loaded polymeric nanoparticles were prepared by solvent evaporation and spray-drying using PLGA and PVA. Optimized nanoparticles were incorporated into a thermosensitive in-situ nasal gel formulated with Carbopol 974P NF and HPMC K4M via the cold method. The formulations were evaluated for physicochemical properties, entrapment efficiency, particle characteristics, thermal and crystallinity behavior, gel performance, drug release, ex vivo permeation, in vivo pharmacokinetics with brain distribution, bioanalytical validation, and stabilitAn in vivo pharmacokinetic study compared brain delivery of apixaban from nanoparticle-loaded in-situ nasal gel with apixaban-loaded gel alone. The protocol was approved by the Institutional Animal Ethical Committee (IAEC). Rats were divided into two groups (n = 9) and administered formulations intranasally. The nanoparticle-based gel demonstrated improved brain targeting and drug availability compared to the plain gel.The developed formulation enabled effective nose-to-brain delivery with suitable physicochemical characteristics, strong mucoadhesion, stability, and controlled drug release (85% in 8 h), indicating enhanced bioavailability and potential for improved stroke therapy. Further studies should assess pharmacodynamics, toxicity, long-term stability, and clinical translation

Keywords: Nanoparticle, Apixaban, Brain stroke, Spray drying, Nose to brain delivery.

Abstract Id- P- 17

Ionic Liquid-Based Transdermal Patch of Repaglinide for Sustained Drug Delivery

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Abstract
To formulate, optimized and evaluate a repaglinide ionic liquid–based transdermal patch for sustained sustained delivery and improved hypoglycemic activity. To develop and characterize a repaglinide–choline oleate ionic liquid–based transdermal patch, optimize it using Box–Behnken Design, and evaluate its in vitro release, ex vivo permeation, pharmacokinetics, hypoglycemic efficacy, and skin safety. Choline oleate ionic liquid was synthesized via neutralization and incorporated into transdermal patches prepared by solvent casting with glycerine as a plasticizer and a polyvinyl alcohol backing membrane. The patches were dried and stored for further evaluation. Pharmacokinetic studies in rats showed that the optimized ionic liquid patch produced sustained plasma drug levels, prolonged exposure, and improved bioavailability compared to oral suspension and conventional patches. Conclusion: The ionic liquid–based transdermal patch enhanced solubility, skin permeation, and sustained release of repaglinide, resulting in improved bioavailability and hypoglycemic efficacy, indicating its potential for systemic transdermal delivery.

Keywords: Ionic liquid, Repaglinide, Transdermal patch, Sustained release, Solubility

Abstract Id- P- 18

Design and Development of Solid Lipid Nanoparticles for Co-delivery of Anticancer Drug and Phytoconstituent

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Abstract
Cancer therapy is often limited by poor drug bioavailability, systemic toxicity, and the development of multidrug resistance. Co-delivery of anticancer drugs with bioactive phytoconstituents using nanocarrier systems offers a promising strategy to enhance therapeutic efficacy while minimizing adverse effects. The present study focuses on the design and development of solid lipid nanoparticles (SLNs) for the co-delivery of a synthetic anticancer drug and a selected phytoconstituent to achieve synergistic anticancer activity.
SLNs were prepared using a suitable lipid matrix and surfactant system by high-shear homogenization followed by ultrasonication. The optimized formulation was characterized for particle size, polydispersity index, zeta potential, drug loading, entrapment efficiency, and morphological features using dynamic light scattering and electron microscopy. Solid-state characterization was performed using DSC and XRD to confirm drug encapsulation and lipid crystallinity. In vitro drug release studies demonstrated a sustained and controlled release profile of both the anticancer drug and phytoconstituent.
The co-loaded SLNs exhibited improved stability, enhanced cellular uptake, and potential for reduced dose-related toxicity compared to conventional formulations. The combination approach aims to exploit the chemotherapeutic efficacy of the anticancer drug along with the antioxidant and chemosensitizing properties of the phytoconstituent. Overall, the developed SLN-based co-delivery system represents a promising platform for effective and safer cancer therapy.

Keywords:- Solid lipid nanoparticles (SLNs), High-Shear Homogenization, Polydispersity index, Zeta potential, Drug loading, Entrapment efficiency.

Abstract Id- P- 19

Computer Aided Drug Design in Drug Discovery

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Abstract
Computer Aided Drug Design (CADD) is a modern approach that uses computer technology to help scientists discover and develop new medicines more quickly and efficiently. Traditional drug discovery is a long, costly, and complex process that may take many years and large financial investments. CADD helps reduce this time and cost by using computational tools such as molecular modeling, virtual screening, and simulation techniques to identify potential drug candidates and study their interaction with biological targets. CADD mainly includes two approaches: structurebased drug design and ligand-based drug design. Structure-based design uses the threedimensional structure of a target protein to create suitable drug molecules, while ligand-based design studies known active compounds to predict new drugs with similar properties. Various techniques like homology modeling, molecular dynamics, genetic algorithms, and scoring functions are used to understand molecular interactions and improve drug efficiency. The drug discovery process begins with identifying disease targets, followed by lead discovery, optimization, and clinical trials to ensure safety and effectiveness. Computer-based methods help in screening thousands of compounds quickly and selecting the most promising candidates for further development. These tools also help predict drug behavior, toxicity, and binding strength before laboratory testing. Overall, CADD has become an important part of modern pharmaceutical research because it improves accuracy, saves resources, and increases the chances of successful drug development. With continuous advancements in technology, CADD is expected to play an even bigger role in future drug discovery and healthcare innovations.

Keyword- Artificial Intelligence, drug discovery, structure-based drug design, ligand based drug design.

Abstract Id- P- 20

Formulation, Optimization and Evaluation of Mucoadhesive Nanoparticles for Enhanced Cardiovascular Therapy

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Abstract
Cardiovascular diseases remain a leading cause of morbidity worldwide, necessitating improved therapeutic delivery strategies. The combination of Olmesartan Medoxomil and Azelnidipine, recently approved for hypertension management, exhibits poor aqueous solubility (BCS Class II) and limited bioavailability in conventional immediate-release dosage forms, particularly under fasting conditions. These limitations highlight the need for an advanced drug delivery system to enhance therapeutic performance. In the present study, mucoadhesive polymeric nanoparticles were formulated using Polyethylene oxide WSR-303 as polymer and Poloxamer-407 as surfactant by an emulsification solvent-evaporation method, followed by optimization through experimental design. Critical formulation variables—including polymer concentration, surfactant concentration, homogenization speed, and stirring time—were systematically varied to evaluate their effect on particle size, entrapment efficiency, and drug release behavior. The optimized nanoformulation demonstrated nanoscale particle size (~128 nm), high entrapment efficiency for Olmesartan Medoxomil (~96%) and Azelnidipine (~93%), suitable zeta potential indicating colloidal stability, significant mucoadhesion, and sustained in-vitro drug release governed predominantly by non-Fickian diffusion. Stability studies further confirmed minimal changes in physicochemical properties during storage. Overall, the developed mucoadhesive nanoparticulate system offers a promising strategy to enhance solubility, prolong drug release, improve gastrointestinal residence, and potentially increase therapeutic efficacy of the Olmesartan Medoxomil–Azelnidipine combination in cardiovascular disease management.

Keywords: Mucoadhesive nanoparticles; Cardiovascular drug delivery; Emulsification solvent evaporation; Polyethylene oxide WSR-303; Poloxamer-407; Entrapment efficiency

Abstract Id- P- 21

Formulation, Optimization, and Evaluation of Methanolic Extract of Chenopodium album Loaded Invasomal Nanocarriers for Enhanced Transdermal Delivery

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Abstract
The aim of the study is to formulate Chenopodium album loaded invasomes. Vesicular drug delivery systems are the carriers for drug targeting that improvises therapeutic efficacy. These carrier systems deliver the drug at a pre-determined rate. Several drug carrier systems such as invasomes, liposomes, niosomes, proniosomes, ethosomes etc. increases the penetrability of the drug at the affected site. Invasomes are composed of phospholipids, ethanol and terpenes that serves as a key for increasing the penetrability of the herbal extract. The phytochemical screening of methanolic extract of Chenopodium album said to have mainly the presence of flavonoids, saponins and alkaloids. The HPLC chromatogram shows to have the presence of kaemferol and quercetin in 0.193 and 0.003%w/w respectively. The methanolic extract of Chenopodium album was formulated into invasomes by mechanical dispersion method. The characterization of invasomes showed the particle size, polydispersity index(PDI), zeta potential and Entrapment Efficiency. The particle size analysis showed that as the concentration of ethanol increases that results in the decrease in particle size. F2 formulation showed the optimized formulation of 245.8 nm in particle size, 0.331 PDI and (-)7.57 mV zeta potential. The %EE of Chenopodium album ranged from 50-72%. The SEM photograph revealed surface morphology and also showed spherical and oval shape. The Chenopodium album loaded invasomes were prepared and characterize successfully and it can be also concluded that invasomes can serve as a depot formulation for dermally active compounds.

Keywords: nanotechnology, Quercertin, Kaemferol, Invasomes.

Abstract Id- P- 22

Nanogels as emerging platforms for novel drug delivery systems

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ABSTRACT
High drug-loading capacity, biocompatibility, and biodegradability make nanogel-based materials highly attractive for the development of advanced drug delivery systems. Nanogels are nanoscale hydrogel particles composed of cross-linked hydrophilic polymer networks capable of retaining large amounts of water while maintaining structural integrity. Their unique three-dimensional polymeric architecture enables efficient encapsulation of a wide range of therapeutic agents, including small-molecule drugs, proteins, peptides, and nucleic acids. This review provides a concise overview of recent advances in nanogel-based drug delivery systems, with particular emphasis on drug loading mechanisms, swelling behaviour, and controlled release properties. The swelling and deswelling characteristics of nanogels play a critical rolein drug diffusion and release kinetics and can be finely tuned by adjusting cross-linking density, polymer composition, and environmental conditions. Many nanogels exhibit stimuli-responsive behaviour, allowing drug release to be triggered by external or internal factors such as pH, temperature, ionic strength, redox conditions, or enzymatic activity. These features make nanogels especially promising for site-specific and targeted drug delivery applications. Nanogels can be synthesized from natural polymers, synthetic polymers, or hybrid systems, offering versatility in terms of size, shape, surface functionalization, and degradation pathways. Surface modification strategies, including ligand conjugation and charge manipulation, further enhance cellular uptake and targeting efficiency. With ongoing advancements in fabrication techniques and a deeper understanding of structure–property relationships, nanogels are emerging as a powerful platform at the interface of hydrogel engineering and nanotechnology. Continued research and clinical evaluation are expected to further establish nanogels as effective and reliable carriers in next-generation drug delivery systems.

Keyword: Nanogel, cross-linked hydrophilic polymer, targeting efficiency, ligand Conjugation

Abstract Id- P- 23

Ethosome-based delivery of betanin and curcumin for improved anti-inflammatory efficacy

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Abstract
Natural phytoconstituents like curcumin and betanin have powerful anti- inflammatory and antioxidant qualities. Their medicinal effectiveness is significantly limited by poor bioavailability and decreased skin permeability. The current study created an ethosome-based gel system to deliver betanin and curcumin. The goal was to improve transdermal penetration and provide long-lasting anti-inflammatory benefits. The cold method was used to make ethosomes, and they were then modified for their particle size, zeta potential, and ability to entrap molecules. The best mixture had an average particle size of 202.8 nm, a zeta potential of -56.4 mV, and a high ability to catch 80% of the betanin and 85% of the curcumin. Characterization using SEM and FTIR showed that the ethosomes were successfully enclosed and that their structure was stable. The ethosomal gel had the right pH level of 6.5, a pseudoplastic viscosity, and great spreadability, so it could be used on the skin. In vitro diffusion tests showed a steady release pattern that lasted for 8 hours. Tests on skin sensitivity showed that it was biocompatible. The in vivo anti-inflammatory efficacy was assessed in rats by utilizing carrageenan model of inflammation, results showed that ethosomal gel significantly attenuated inflammation in animals. Based on these results, the ethosome preparation seems like a good way to improve the effectiveness of anti- inflammatory drugs.

Keyword: Ethosomal gel;Curcumin;Betanin;Transdermal drug delivery;Anti-inflammatory activity

Abstract Id- P- 24

Formulation and Evaluation of wound healing dressing film using Tridax procumbens Linn. Extract.

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Abstract
Wound repair is a multifaceted biological phenomenon that progresses through sequential stages, including blood clot formation, inflammatory response, cellular proliferation, and tissue maturation. The design of wound dressings that are both biologically compatible and therapeutically active is essential for promoting rapid tissue regeneration while minimizing microbial contamination. Recently, plant-derived materials have emerged as valuable sources of natural bioactive compounds for advanced wound care applications. Tridax procumbens (Asteraceae), a medicinal herb widely utilized in traditional Ayurvedic practices, exhibits notable pharmacological activities such as antimicrobial, anti-inflammatory, antioxidant, and tissue regenerative effects, which are attributed to the presence of phytochemicals including flavonoids, tannins, alkaloids, saponins, and phenolic constituents. This research focused on the formulation and characterization of a biodegradable wound dressing film containing a chloroform extract of Tridax procumbens leaves. The plant extract was obtained using the cold maceration technique and incorporated into a sodium alginate polymer matrix with glycerol as a plasticizing agent. The films were prepared by the solvent casting method and evaluated for appearance, thickness, moisture uptake, swelling behaviour, moisture vapour transmission rate (MVTR), tensile strength, and flexibility. The optimized film demonstrated suitable thickness, efficient moisture absorption (approximately 25.29%), a swelling capacity of nearly 31%, and a balanced MVTR value of around 380.5 g/m²/day, supporting effective exudate management, oxygen permeability, and mechanical stability. These findings indicate the potential of Tridax procumbens extract-loaded sodium alginate films as an economical, sustainable, and naturally derived wound dressing. Further in vivo and clinical studies are recommended to confirm therapeutic performance and long-term safety profiles.

Keywords: Wound healing, Tridax procumbens, Sodium alginate, Herbal dressing film.

Abstract Id- P- 25

Formulation and evaluation of antiacne cream using aegel marmelos extract

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Abstract
Aegle marmelos (bael), a medicinal plant of the Rutaceae family, is well known for its extensive range of bioactive phytochemicals. Various parts of the plant contain numerous compounds such as phenols, flavonoids, alkaloids, glycosides, terpenoids, saponins, steroids, and tannins, which contribute to its therapeutic potential. Acne is a common chronic inflammatory skin disorder affecting the pilosebaceous units and is largely associated with microbial activity, particularly Staphylococcus epidermidis and Propionibacterium acnes. The present study aimed to develop and evaluate a herbal anti-acne cream using an ethanolic leaf extract of Aegle marmelos as a natural alternative to synthetic formulations that often cause adverse effects. Creams are widely used topical preparations due to their smooth texture, ease of application, and ability to protect, moisturize, and improve skin appearance. Qualitative phytochemical screening of the ethanolic leaf extract confirmed the presence of carbohydrates, alkaloids, flavonoids, tannins, terpenoids, saponins, quinones, glycosides, and coumarins. Physicochemical parameters, including loss on drying, total ash, acid-insoluble ash, water-soluble ash, and thin-layer chromatography, were evaluated to ensure the quality and purity of the extract. The herbal cream was formulated using stearic acid, niacinamide, cetyl alcohol, Aegle marmelos extract, liquid paraffin, triethanolamine, and propyl paraben. The final formulation was assessed for organoleptic properties and physicochemical characteristics such as color, odor, consistency, pH, spreadability, viscosity, washability, grittiness, skin irritation, and stability. All evaluation parameters showed satisfactory results, indicating that the formulated cream is safe, stable, and suitable for use as a herbal antiacne preparation.

Keywords: Aegel Marmelos extract; Herbal anti-acne cream; Topical formulation; Physicochemical evaluation

Abstract Id- P- 26

Design and Evaluation of Ezetimibe Fast-Dissolving Tablets Using Co-Processed Superdisintegrants

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Abstract
Ezetimibe, a selective cholesterol absorption inhibitor, exhibits low aqueous solubility, which can limit its dissolution rate and oral bioavailability. The present study aimed to formulate and evaluate Fast Dissolving Tablets (FDTs) of Ezetimibe using direct compression technique with the incorporation of superdisintegrants to enhance dissolution and onset of action. Tablets were prepared using different concentrations of superdisintegrants, including Crospovidone, Croscarmellose Sodium, and Sodium Starch Glycolate, individually and in co-processed combinations. Pre-compression parameters such as Angle of repose, Bulk density, Tapped density, Carr's index, and Hausner's ratio indicated good flow properties of the powder blends. The prepared tablets were evaluated for post-compression parameters including Hardness, Friability, Weight variation, Thickness, Drug content uniformity, Wetting time, Disintegration time, and In Vitro Dissolution studies. All formulations complied with pharmacopeial limits. Formulations containing co-processed superdisintegrants demonstrated significantly reduced disintegration time and enhanced drug release compared to formulations with single superdisintegrants. In vitro dissolution studies revealed rapid and complete drug release, with optimized formulation showing more than 90% drug release within 15 minutes. The study concludes that Ezetimibe fast dissolving tablets prepared using co-processed superdisintegrants by direct compression are a promising approach to improve dissolution characteristics and patient compliance.

Keywords: Ezetimibe, Superdisintegrants, Fast Dissolving Tablets (FDTs)

Abstract Id- P- 27

Anti-aging cosmeceuticals: A comprehensive review on current trends, future aspects and regulatory perspectives

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Abstract
Aging is a complex biological process characterized by gradual physiological decline, leading to the manifestation of visible skin aging signs such as wrinkles, loss of elasticity, uneven pigmentation, and dryness. In response to these concerns, cosmeceuticals have emerged as a bridge between cosmetics and pharmaceuticals, offering active ingredients capable of enhancing skin health and delaying the effects of aging. This review explores the advancements in anti-aging cosmeceuticals, focusing on key bioactive compounds, their mechanisms of action, and their efficacy in skin rejuvenation. Ingredients such as retinoids, peptides, antioxidants, botanical extracts, and hyaluronic acid have demonstrated significant anti-aging benefits by promoting collagen synthesis, neutralizing free radicals, and improving skin hydration. Moreover, recent innovations, including nanotechnology and stem cell-based formulations, have enhanced the delivery and potency of these compounds. The safety and regulatory considerations surrounding cosmeceuticals are also discussed, as the market continues to expand with scientifically backed products. While numerous studies support the effectiveness of antiaging cosmeceuticals, further research is required to substantiate long-term benefits and optimize formulations. This review aims to provide a comprehensive understanding of the science behind antiaging cosmeceuticals, offering insights into their potential and future directions in dermatological advancements.

Key words: Aging, Anti-aging cosmeceuticals, Artificial intelligence, Bioactive compounds, Nanotechnology

Abstract Id- P- 28

Formulation and Evaluation of Herbal Anti-ageing Cream

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Abstract
Skin aging is a natural and progressive process influenced by intrinsic genetic factors and extrinsic environmental stressors such as ultraviolet radiation, pollution, and oxidative damage. The present study focuses on the formulation and evaluation of a polyherbal anti-aging cream using natural plant extracts with proven antioxidant and skin-protective properties. Herbal extracts of Azadirachta indica (Neem), Aloe vera, Ocimum sanctum (Tulsi), and Mangifera indica (Mango) were selected due to their anti-inflammatory, antioxidant, moisturizing, and collagen-stimulating effects. Two oil-in-water (O/W) emulsion-based formulations (F1 and F2) were prepared and evaluated for physicochemical parameters including organoleptic characteristics, pH, homogeneity, spreadability, washability, viscosity, irritancy, greasiness, and phase separation. The results indicated that both formulations were stable, non-greasy, easily washable, and skin-friendly with pH values suitable for topical application. Among the formulations, F1 demonstrated better stability, optimal viscosity, superior spreadability, and no signs of irritation or phase separation. The study concludes that the formulated polyherbal anti-aging cream is safe, effective, and suitable for topical use, offering a natural alternative to synthetic cosmetic products for skin rejuvenation and anti-aging benefits.

Keywords:- Herbal anti-aging cream, Polyherbal formulation, Neem, Aloe vera, Tulsi, Mango extract, Skin aging, Evaluation parameters

Abstract Id- P- 29

Development of Tripterygium wilfordii Loaded Nanoemulgel: An Herbal Formulation for Rheumatoid Arthritis

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Abstract
Rheumatoid arthritis (RA) is a chronic autoimmune disease characterized by inflammation, synovial hyperplasia, and joint destruction, with conventional treatments often causing systemic toxicity. This study aimed to develop and evaluate a nanoemulgel formulation of Tripterygium wilfordii root extract for topical RA treatment. The root extract was prepared by Soxhlet extraction and nanoemulsion were formulated using probe sonication with isopropyl myristate, tween 80, and span 80. Nine batches (T1-T9) were prepared and evaluated for particle size, zeta potential, entrapment efficiency, and morphology. The optimized nanoemulsion was incorporated into 1% carbopol 934 gel and assessed for pH, viscosity, spreadability, in-vitro drug release, and antiinflammatory activity. Batch T7 demonstrated optimal characteristics with particle size of 99.9 nm, entrapment efficiency of 94.26%, zeta potential of -32.21 mV, and spherical morphology. The nanoemulgel exhibited pH 6.26, viscosity of 2124 cps, and cumulative drug release of 93.77% with significant anti-inflammatory activity. Stability studies at 25°C±2°C/60%RH±5%RH for two months showed minimal physicochemical changes. The developed Tripterygium wilfordii nanoemulgel offers enhanced skin penetration, sustained release, and improved therapeutic efficacy with reduced systemic side effects, demonstrating promising potential as an effective herbal formulation for rheumatoid arthritis management.

Keywords: Rheumatoid arthritis, nanoemulgel, topical delivery, anti-inflammatory

Abstract Id- P- 30

Development and Evaluation of Mucoadhesive Chitosan Nanoparticles for the Targeted Administration of Anti-Inflammatory Drug-Loaded Capsules

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Abstract
Introduction: Anti-inflammatory drug is the conventional therapy for inflammatory bowel disease (IBD), although its short half-life and quick systemic absorption restrict its therapeutic efficacy. Because of its biocompatibility, biodegradability, and innate mucoadhesive qualities, which might extend retention duration at the inflammatory mucosal site, chitosan, a naturally occurring cationic polysaccharide, offers special benefits for colonic administration. Objective: This study's goal was to create and refine chitosan nanoparticles loaded with anti-inflammatory drug in order to increase drug entrapment, maintain drug release, and boost colonic targeting effectiveness through mucoadhesion. Methods: Ionic gelation was used to create anti-inflammatory drug loaded nanoparticles. The cationic phase was created by dissolving low molecular weight chitosan in diluted acetic acid (1% v/v). The anionic crosslinker, sodium tripolyphosphate (TPP), was dissolved in distilled water. To create spontaneous nanoparticle formation, the medication was dissolved in the polymer solution and the TPP solution was added dropwise while being continuously stirred magnetically at room temperature. After centrifuging the resultant suspension, the pellets were lyophilized for further analysis. Results: Stable, spherical nanoparticles were successfully produced using the ionic gelation method. The improved formulation confirmed surface stability and mucoadhesive potential with a mean particle size of [Insert Size, e.g., 180 ± 4.5 nm] and a positive zeta potential of [Insert Value, e.g., +28 mV]. By modifying the Chitosan:TPP ratio, entrapment efficiency was maximized to [Insert %, e.g., 75.2%]. Following an initial burst effect, in vitro release experiments in simulated colonic fluid showed a persistent release profile lasting more than 24 hours. Conclusion: Excellent physicochemical and mucoadhesive qualities were displayed by the anti-inflammatory drug loaded chitosan nanoparticles. This delivery method guarantees targeted drug accumulation in the colon, making it a possible substitute for the efficient treatment of IBD.

Keywords: Ionic Gelation, Mucoadhesion, anti-inflammatory drug, Chitosan, and Nanomedicine

Abstract Id- P- 31

NANOFIBERS SCAFFOLD FOR CRITICAL WOUND HEALING AND TISSUE REGENERATION

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Abstract
Critical wound healing requires biomaterials that promote tissue regeneration while minimizing cytotoxicity; however, the clinical application of rhein is limited by its poor solubility and stability. In this study, electrospun PLGA–collagen nanofiber scaffolds incorporating rhein-encapsulated silver nanoparticles (R-AgNPs) were developed for wound healing and tissue regeneration. Rhein encapsulation within AgNPs was confirmed by a surface plasmon resonance band at ~417 nm, FTIR evidence of hydrogen-bond interactions, and the disappearance of rhein's crystalline melting peak (243.28 °C) in DSC analysis.Encapsulation reduced direct exposure to free rhein and silver ions, indicating improved stability and lower cytotoxicity. R-AgNPs were uniformly dispersed within the PLGA–collagen matrix, forming smooth, continuous nanofibers with high entrapment efficiency (92%). Biochemical analysis showed enhanced collagen-related activity, with hydroxyproline levels increasing in the order: rhein < R-AgNPs < R-AgNP-loaded nanofibers. These findings suggest that the developed nanofiber scaffold holds promise as a therapeutic platform for critical wound healing and tissue regeneration

Keywords: Wound healing; Electrospun nanofibers; Rhein-encapsulated silver nanoparticles; PLGA–collagen scaffold;Tissue regeneration

Abstract Id- P- 32

DEVELOPMENT AND EVALUATION OF NINTEDANIB COCRYSTALS FOR ENHANCED BIOAVAILABILITY

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Abstract
This research scheme aims at the development of Nintedanib cocrystals for the enhancement of bioavailability. The objective of this research is to prepare and evaluate Nintedanib cocrystals to enhance pharmaceutical performance by improving solubility, dissolution, bioavailability, pharmacokinetic properties, and overall therapeutic effectiveness. Methodology: Nintedanib-piperine cocrystals were prepared by the spray drying method. Prepared cocrystals were evaluated for practical yield, drug content, and in-vitro dissolution, followed by solid-state characterization using FTIR, PXRD, DSC, and SEM, and further assessed by pharmacokinetic studies and RP-HPLC analysis in Sprague Dawley rats:Nintedanib-piperine cocrystals were prepared via spray drying at different molar ratios. Among batches C1, C2, and C3, batch C2 showed the highest practical yield (55.22%), drug content (91.31%), saturation solubility (50.08 µg/ml in water, 35.87 µg/ml in pH 6.8 buffer), and in-vitro drug release (98.49% at 180 min). FTIR, PXRD, DSC, and SEM analyses confirmed cocrystal formation. Pharmacokinetic studies demonstrated enhanced Cmax, AUC, t1/2, and MRT for C2 compared to API. Therefore, batch C2 is the optimized formulation, showing superior solubility, dissolution, and oral bioavailability. Conclusion: Nintedanib-piperine cocrystals were prepared using spray drying to improve the poor bioavailability of Nintedanib. The cocrystals exhibited enhanced solubility, in-vitro dissolution, and oral bioavailability.

Keywords: Nintedanib, Piperine, Cocrystals, Bioavailability.

Abstract Id- P- 33

From Phytochemistry to Nanophytomedicine: Phytochemical Characterization, Antifungal Activity and Nano-Ointment Formulation of Meetha Betel Leaf Essential Oil against Tinea unguium

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Abstract

Tinea unguium is a chronic dermatophytic infection of the nails that is difficult to treat due to poor drug penetration and frequent recurrence. Although synthetic antifungal agents are available, their prolonged use may lead to side effects and resistance. Herbal essential oils rich in bioactive phytochemicals represent a promising alternative; however, their therapeutic application is limited by volatility, instability, and low bioavailability. Nanophytomedicine offers an advanced approach to enhance the efficacy of herbal compounds through nano-based delivery systems.The objective of this study was to perfor phytochemical characterization and antifungal evaluation of Meetha betel leaf (*Piper betle*) essential oil and to develop a nano-ointment formulation as a nanophytomedicine strategy against *Tinea unguium*.Meetha betel leaf essential oil was extracted and subjected to phytochemical characterization to identify major bioactive constituents. Antifungal activity was evaluated against dermatophytes associated with *Tinea unguium*. The essential oil was formulated into an oil-in-water nanoemulsion using suitable surfactants, followed by nano size reduction through ultrasonication. The optimized nanoemulsion was incorporated into a topical ointment base and characterized for droplet size and stability.Phytochemical analysis confirmed the presence of phenolic and terpenoid compounds with antifungal potential. The essential oil showed notable antifungal activity against dermatophytes. Ultrasonication produced a stable nanoemulsion with droplet sizes in the range of 20–200 nm. The developed nano-ointment was uniform and suitable for topical application.The findings suggest that Meetha betel leaf essential oil-based nano-ointment represents a promising nanophytomedicine approach for improving topical antifungal therapy against *Tinea unguium* infections.

Keywords: Tinea unguium; Meetha betel leaf essential oil; Nano-ointment; Nanophytomedicine; Antifungal activity

Abstract Id- P- 34

Thermosensitive Chitosan Nano-Gel for Enhanced and Rapid Anti-Migraine Delivery of Rizatriptan

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Abstract

This study focuses on the development and evaluation of a nanoparticulate thermosensitive in situ nasal gel of Rizatriptan benzoate for the management of acute migraine. Rizatriptan, a 5-HT_1 receptor agonist, exhibits low oral bioavailability (~45%) due to first-pass metabolism and food interactions. To overcome these limitations, chitosan nanoparticles were prepared using the ionotropic gelation method. Eight formulations were designed using a 3^2 full factorial design to optimise chitosan and sodium tripolyphosphate (TPP) concentrations. The optimised nanoparticles showed a particle size of 150.86 nm, zeta potential of −6.97 mV, and encapsulation efficiency of 81.23%, indicating satisfactory stability and drug loading. The nanoparticles were incorporated into a thermosensitive in situ nasal gel using Poloxamer 407 by the cold method. The gel exhibited suitable gelation temperature (32–34 °C), nasal-compatible pH (5.5–6.5), appropriate viscosity, and drug content of approximately 85%. In-vitro drug release studies demonstrated more than 97% cumulative release over 8 hours, following Higuchi diffusion kinetics. Stability studies up to 30 days confirmed formulation stability. The developed nose-to-brain nanoparticulate in situ gel offers enhanced bioavailability, rapid onset of action, and prolonged nasal residence time via olfactory and trigeminal pathways, making it a promising approach for acute migraine therapy.

Keywords: Chitosan, Nanoparticles, In situ nasal gel, Migraine, Intranasal delivery

Abstract Id- P- 35

Nanofibers Mediated Eradication of Bacterial Biofilm To Reduce The Multidrug-Resistance

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Abstract
The clinical treatment of multidrug resistant bacterial strains (MDR) presents challenges due to the presence of both MDRA as well as biofilm-associated infections due to chronic infection within the hospital setting generally occurs as the result of MDR bacteria biofilm formation and they typically require surgical removal to effectively eradicate. This study investigated the utilization of electrospun nanofibers as an innovative strategy for the elimination of bacterial biofilms. Ciprofloxacin (an empirical antibiotic) was chemically conjugated to ε-polylysine through a condensation reaction, and incorporated into polycaprolactone (PCL) and polyvinylpyrolidone (PVP) nanofibers by using the electrospinning process to deliver antimicrobial. The experimental investigations utilized both a 32 full factorial design to optimize formulation and characterization parameters related to nanofiber morphology (fiber diameter, zeta potential), drug entrapment efficiency (89%) and solid-state properties (FTIR, DSC, XRD and SEM). Additionally, the optimized formulation was found to have uniform fiber morphology with an average fiber diameter of 289 nm, and exhibited antibacterial efficacy against Escherichia coli, Klebsiella pneumoniae, and Staphylococcus aureus when evaluating zone of inhibition and minimum inhibitory concentration. The use of ciprofloxacin-loaded nanofibers as a localized sustained delivery system of antimicrobials represents a promising approach for the prevention and treatment of biofilm-related infections.

Keywords: Antimicrobial resistance, Electrospun nanofibers, Bacterial biofilm, Ciprofloxacin conjugate

Abstract Id- P- 36

Development And Characterization of Cocrystals For Reducing Hygroscopicity

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Abstract
Ezetimibe, a BCS Class II lipid-lowering drug, suffers from poor aqueous solubility (≈0.012 mg mL^{-1}) and pronounced hygroscopicity, which compromise its formulation stability, shelf life, and therapeutic performance. This work focused on developing pharmaceutical cocrystals to reduce moisture uptake and enhance solubility without altering the drug's chemical structure or activity. Potential coformers were screened from GRAS and EAFUS databases using a multi-step computational strategy combining ΔpKa analysis, Hansen solubility parameters (δ ≈ 19–21 $MPa^{½}$ for optimal miscibility), COSMO-RS excess enthalpy predictions, and molecular docking. Piperazine (pKa ≈ 9.8, Log P ≈ –1.5, highly water-soluble) emerged as the most suitable coformer, providing strong hydrogen-bond donor/acceptor sites and a rigid six-membered ring capable of forming stable supramolecular synthons with ezetimibe. Cocrystals were prepared by probe sonication, rotary evaporation, spray drying, and liquid-assisted grinding, with probe sonication optimized through a 3^2 factorial design to maximize yield and minimize moisture uptake. The optimized ezetimibe–piperazine cocrystal exhibited a practical yield of 72.7 %, drug content of 90 %, and moisture uptake as low as 0.32 % at 75 % RH far below the >3 % observed for pure ezetimibe. Comprehensive characterization by FTIR, PXRD, DSC, SEM, ^1H NMR, and dynamic vapor sorption confirmed new crystalline phase formation, enhanced solid-state stability, and improved solubility and dissolution rate across pH 1.2–7.4 media. These results demonstrate that rational coformer selection and cocrystallization with piperazine provide a green, scalable strategy to overcome hygroscopicity and solubility limitations of ezetimibe, offering a robust approach for stabilizing moisture-sensitive active pharmaceutical ingredients.

Abstract Id- P- 37

Development and Optimization of A Lipid-Based Self-Nanoemulsifying Drug Delivery System (Snedds) For Enhancing The Lymphatic Absorption And Bioavailability of Silymarin.

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ABSTRACT

The classification as a BCS Class II/IV medication, which has poor aqueous solubility and considerable first-pass metabolism, limits the therapeutic use of silymarin, a powerful hepatoprotective flavonolignan, to less than 5% oral bioavailability. In order to overcome these obstacles, this team created a lipid-based Self-Nanoemulsifying Drug Delivery System (SNEDDS) that circumvents hepatic degradation by improving drug solubilisation and facilitating lymphatic transport. In order to determine the ideal nanoemulsification zone, pseudo-ternary phase diagrams were constructed after a thorough solubility screening of different oils, surfactants, and co-surfactants. A Box-Behnken design was used for statistical optimisation in order to assess the impact of formulation factors on important quality parameters. With a globule size of less than 100 nm, the optimised SNEDDS that were produced had a large surface area for quick dispersion. Compared to pure Silymarin powder, in vitro experiments showed a much greater and more consistent drug release profile. The SNEDDS successfully gets beyond the physiological obstacles of poor absorption and quick metabolic clearance by keeping the medication in a pre-solubilized condition within a nanostructured lipid matrix. As a result, our SNEDDS method offers a solid and promising way to enhance silymarin's systemic distribution and therapeutic effectiveness in the management of hepatic diseases.

Keywords: Silymarin, SNEDDS, Lymphatic Transport, Bioavailability Enhancement.

Abstract Id- P- 38

Formulation and Preparation of Medicated Lollipops

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Abstract

Medicated lollipops are an emerging oral drug delivery system that combines the acceptability of confectionery with the therapeutic efficacy of pharmaceuticals or herbal agents, particularly benefiting paediatric and swallowing impaired patients by improving compliance and masking unpleasant drug tastes .These dosage forms are formulated as hard candy matrices containing sugar, corn syrup, water, active pharmaceutical ingredients (e.g., ondansetron, analgesics, antihistamines, local anaesthetics, vitamins), flavours, and colours, poured into moulds with sticks and processed at hard crack temperature to ensure appropriate hardness and dissolution characteristics. The lollipops can be designed for immediate or controlled release, offering advantages such as ease of administration, portability, dose flexibility, and enhanced palatability, though challenges include high sugar content, limited suitability of some drugs, and stability or dose uniformity concerns within the candy matrix. Evaluation parameters typically include appearance, mechanical properties, solubility, melting point, stability under different storage conditions, taste acceptance studies in children, microbial quality, and basic pharmacokinetic performance, alongside packaging and shelf life assessment to maintain safety and effectiveness during storage and use. This work outlines the formulation components, stepwise preparation procedure, and quality control testing for an ondansetron containing medicated lollipop, highlighting medicated lollipops as a promising, patient friendly platform for therapeutic delivery.

Key words: Therapeutic lollipops, Taste masking, Controlled release, Physical evaluation Taste and palatability studies

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Abstract Id- P- 39

Formulation and *In-Vitro* Evaluation of a Corticosteroid Nanoemulsion for Vitiligo

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Abstract
Vitiligo is an acquired depigmenting disorder characterized by the destruction of melanocytes, leading to the appearance of well-defined white patches on the skin. Clobetasol propionate, a potent topical corticosteroid, is widely used in vitiligo therapy; however, its effectiveness is often restricted by limited skin penetration and adverse effects associated with conventional dosage forms. The present study aimed to develop a clobetasol propionate–loaded nanoemulsion to enhance dermal delivery and improve therapeutic efficiency. Selection of oil, surfactant, and co-surfactant was performed through solubility screening, and a pseudo-ternary phase diagram was constructed to identify the stable nanoemulsion zone. The optimized formulation was prepared by probe sonication and incorporated into a Carbopol gel for topical application. The nanoemulsion was evaluated for particle size, polydispersity index, zeta potential, pH, viscosity, drug content, and entrapment efficiency. Transmission electron microscopy confirmed the formation of uniform spherical droplets. In-vitro release and ex-vivo permeation studies demonstrated significantly enhanced diffusion of clobetasol propionate from the nanoemulsion gel compared with conventional systems. Stability studies showed no phase separation or major variation in critical parameters.The developed nanoemulsion offered improved permeation, controlled drug release, and good formulation stability, indicating that clobetasol propionate nanoemulsion could be a promising and safer approach for effective topical management of vitiligo.

Keywords: Clobetasol propionate, Nanoemulsion, Vitiligo, Topical drug delivery, Skin permeation

Abstract Id- P- 40

Design and In-silico Evaluation of Ibuprofen–Amino Acid Dipeptide Conjugates as Potential Agents for Alzheimer's Disease

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Abstract
Alzheimer's disease (AD) is a multifactorial neurodegenerative disorder involving cholinergic dysfunction, amyloid-β aggregation, and neuroinflammation. Ibuprofen has been explored for its neuroprotective potential; however, its clinical application is limited by adverse effects. Conjugation with amino acid dipeptides may improve therapeutic performance and safety. The present study aimed to design and in-silico evaluate ibuprofen–amino acid dipeptide conjugates, namely Ibuprofen–Proline–Leucine-OMe and Ibuprofen–Proline–Isoleucine-OMe, as potential agents for Alzheimer's disease. Molecular docking studies were performed against key Alzheimer's-related targets including human acetylcholinesterase (AChE, PDB ID: 6O4W), β secretase (BACE-1, PDB ID: 2FDP), and cyclooxygenase (COX, PDB ID: 6COX). Binding affinity and molecular interactions were analyzed. In-silico ADMET and toxicity predictions were carried out to assess pharmacokinetic properties and safety profiles. Docking studies revealed favorable binding of both conjugates toward the selected targets. Against AChE (6O4W), Ibuprofen–Proline–Leucine-OMe and Ibuprofen–Proline–Isoleucine-OMe exhibited docking scores of −8.0 kcal/mol and −8.2 kcal/mol, respectively. BACE-1 docking showed comparable binding affinities (−7.9 and −7.8 kcal/mol), while COX docking demonstrated stronger interaction for the proline–isoleucine conjugate (−8.2 kcal/mol) compared to the proline–leucine conjugate (−6.8 kcal/mol). ADMET and toxicity prediction indicated acceptable drug-likeness and safety profiles. The in-silico findings suggest that ibuprofen–proline–leucine and ibuprofen–proline isoleucine dipeptide conjugates possess promising multitarget potential for Alzheimer's disease, with the proline–isoleucine conjugate showing comparatively enhanced binding. Further synthesis and experimental validation studies are currently in progress.

Keywords: Ibuprofen–dipeptide conjugates, Alzheimer's disease, Acetylcholinesterase inhibition, Molecular docking, ADMET and toxicity prediction.

Abstract Id- P- 41

Nanocarrier-Loaded Transdermal Patches: Enhancing Skin Permeation and Targeting

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Abstract

Transdermal drug delivery systems (TDDS) provide a non-invasive approach for systemic and localized therapy, offering benefits such as improved patient compliance and avoidance of first-pass metabolism. However, their wider application is restricted by the strong barrier property of the stratum corneum, which limits drug permeation. In recent years, nanocarrier-loaded transdermal patches have emerged as an effective strategy to overcome this limitation by enhancing skin penetration and enabling targeted drug delivery. A wide range of nanocarriers, including nanoparticles, nanoemulsions, liposomes, niosomes, solid lipid nanoparticles, and polymeric nanocarriers, have been explored for transdermal use due to their ability to improve drug solubility, stability, and controlled release behavior. Incorporation of nanocarriers into transdermal patch matrices ensures close contact with the skin surface, prolongs residence time, and facilitates drug transport through intercellular, transcellular, and follicular pathways. These systems enhance permeation efficiency by altering the lipid organization of the stratum corneum and maintaining a localized drug concentration gradient at the application site. Nanocarrier-loaded transdermal patches have shown significant potential for delivering drugs with poor oral bioavailability, short biological half-life, or extensive first-pass metabolism. They are particularly useful in the management of chronic diseases such as diabetes, cardiovascular disorders, and pain conditions. Overall, nanocarrier-based transdermal patches represent an advanced drug delivery platform combining nanotechnology with TDDS.

Keywords: Transdermal drug delivery system, Nanocarriers, Skin permeation enhancement, Targeted drug delivery.

Abstract Id- P- 42

Nanotechnology-Based Nasal Sprays for Vertigo and Balance Disorders

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Abstract

Vertigo and balance disorders are frequent vestibular conditions that affect physical stability, daily functioning, and overall quality of life. Conventional oral therapy, including drugs such as betahistine, cinnarizine, and meclizine, often provides incomplete relief due to delayed absorption, hepatic first-pass metabolism, limited penetration to the inner ear, and unwanted systemic effects. Intranasal nanospray drug delivery has gained attention as a non invasive and targeted alternative capable of transporting drugs directly from the nasal cavity to the brain and vestibular region. This review summarizes recent developments in nanotechnology-based nasal sprays designed for the management of vertigo and related balance disorders. Different nanocarrier systems such as nanoemulsions, niosomes, solid lipid nanoparticles, and polymeric nanoparticles have been investigated for intranasal antivertigo therapy. These carriers improve drug solubility, protect unstable molecules, enhance mucosal adhesion, and prolong residence time within the nasal cavity. Formulation variables including choice of surfactant, co-surfactant, mucoadhesive polymer, and spray device significantly influence therapeutic performance. Key evaluation parameters such as particle size distribution, zeta potential, spray characteristics, in-vitro release, ex-vivo permeation, and nasal safety studies are essential for successful development. Nanospray systems offer rapid onset of action, reduced dosing frequency, and better patient compliance compared to conventional dosage forms. Despite promising outcomes, challenges like mucociliary clearance, formulation stability, and regulatory considerations remain. Nanotechnology-based nasal sprays therefore represent a valuable future strategy for effective and patient-friendly treatment of vestibular disorders, warranting further clinical translation.

Keywords : Nanospray, Vertigo, Vestibular disorders, Nose-to-brain delivery ,Nanocarriers.

Abstract Id- P- 43

Development of a Nanosuspension Drug Delivery System to Improve the Therapeutic Effect of Linagliptin

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Abstract
Diabetes mellitus is a chronic metabolic disorder characterized by persistent hyperglycemia resulting from defects in insulin secretion, insulin action, or both. The global prevalence of diabetes continues to rise, making it a major public health concern associated with significant morbidity, mortality, and economic burden. Among the available therapeutic options, oral antidiabetic drugs remain the mainstay of treatment for type 2 diabetes mellitus; however, many of these agents suffer from limitations such as poor aqueous solubility, low permeability, extensive first-pass metabolism, and variable oral bioavailability. Linagliptin, a potent dipeptidyl peptidase-4 (DPP-4) inhibitor, is widely used for the management of type 2 diabetes mellitus but exhibits low oral bioavailability, which may compromise its therapeutic efficacy.The present study aims to formulate and evaluate a linagliptin-loaded nanosuspension to enhance its dissolution rate and oral bioavailability. Nanosuspensions are colloidal systems consisting of nanosized drug particles, offering advantages such as increased surface area, improved saturation solubility, enhanced mucoadhesion, and reduced dose variability. Linagliptin nanosuspensions were prepared using suitable nanoparticle fabrication techniques and optimized through systematic evaluation. The developed formulations were characterized for particle size, polydispersity index, zeta potential, drug entrapment efficiency, surface morphology, and in-vitro drug release behavior. Stability studies were also conducted to assess the physical robustness of the optimized formulation.The findings indicate that nanosuspension formulation significantly improves the dissolution characteristics and release profile of linagliptin compared with conventional formulations. This nanoscale drug delivery approach demonstrates considerable potential for enhancing the oral bioavailability and therapeutic efficacy of linagliptin, thereby offering a promising strategy for improved management of type 2 diabetes mellitus.

Keywords: Diabetes mellitus; Linagliptin; Nanosuspension; Oral bioavailability; Nanoparticle drug delivery system

Abstract Id- P- 44

DEVELOPMENT AND EVALUTION OF PHYTOSOME BASED SUB-LINGUAL FILM FOR CARDIOPROTECTIVE ACTIVITY

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Abstract
Thrombosis is a clinical condition where the development of a clot within the veins or arteries is the major concern as it blocks the natural flow of the blood, thus leading to the induction of cardiovascular diseases such as stroke, myocardial infarction, and deep vein thrombosis. Thrombosis is basically the outcome of endothelial dysfunction, hypercoagulability, inflammation, dyslipidemia, as well as other environmental factors. Current therapeutic academic thoughts against thrombosis have been found to be effective, yet they are endowed with various limitations such as the adverse influence of bleeding as a side effect. Thus, the need to explore natural therapeutic agents that are safe and therapeutically active remains significant. Guggulsterone is a bioactive steroid that is primarily obtained from the resin of the Commiphora mukul tree, which is effective in the development of anti-inflammatory, hypolipidemic, as well as antiplateletlet therapeutically active compounds. However, guggulsterone is found to possess low aqueous solubility as well as low bioavailability, thus making its therapeutic potential low. Phytosome is a bioavailability of phytoconstituents, absorption of phytoconstituents, as well as permeability. A phytosomal dosage form of guggulsterone may have better pharmacokinetics along with anti-thrombotic activity. In conclusion, phytosomes of guggulsterone may pose as new therapeutic agents of natural origin for the prevention and treatment of thrombosis, and research is invited in the future to show the efficacy of phytosomes of guggulsterone as an alternative anti-thrombosis therapy method currently in use.

Keywords:- Guggulsterone, Thrombosis, Anti-thrombotic activity.

Abstract Id- P- 45

Emphasising Pediatric Drug Delivery Through Nanomedicine

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Abstract

Aim: To review the state of the art in nanomedicine systems developed for pediatric drug delivery and disease management. Objectives: To highlight the need for age-appropriate nanomedicine-based drug delivery systems in pediatrics. To summarize various nanomedicine systems such as nanoparticles, liposomes, nanomicelles, lipid-based carriers, and nanocapsules. To evaluate their applications in pediatric diseases. Advancements in nanotechnology have led to the development of innovative nanomedicine systems tailored for pediatric drug delivery. Children require specialized formulations due to physiological growth, developmental changes, and adherence-related challenges. Nanomedicine systems such as nanoparticles, liposomes, nanomicelles, lipid-based carriers, and nanocapsules improve drug solubility, bioavailability, targeted delivery, and therapeutic outcomes. This review presents recent progress in pediatric nanomedicines and highlights their potential role in improving safety, efficacy, and patient compliance in pediatric disease management. Conclusion: Nanomedicine systems offer a promising approach to overcome limitations of conventional pediatric formulations by enhancing drug delivery and therapeutic performance. Their application across various pediatric diseases demonstrates significant potential for improving clinical outcomes. However, further research is required to address safety, regulatory, and translational challenges for widespread clinical use.

Keywords: Nanomedicines, Pediatric drug delivery, Polymeric nanocarriers, Nanotechnology, Nanopharmaceuticals

Abstract Id- P- 46

FORMULATION AND EVALUATION OF PULSATILE RELEASE TABLETS OF TERBUTALINE SULPHATE FOR CHRONOTHERAPEUTIC MANAGEMENT OF ASTHMA

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ABSTRACT

Introduction: Asthma is a chronic respiratory disorder exhibiting circadian variation, with severe symptoms commonly occurring during the early morning hours. Conventional dosage forms fail to provide optimal drug concentration during these peak symptom periods. Pulsatile drug delivery systems are designed to release drugs after a predetermined lag time, making them suitable for chronotherapeutic management of asthma. The present study aims to formulate and evaluate pulsatile release tablets of Terbutaline Sulphate to achieve time-controlled drug release aligned with the circadian rhythm of asthma. Methods: Immediate-release core tablets of Terbutaline Sulphate were prepared and subsequently compression-coated using suitable polymers to obtain a pulsatile release pattern. The formulated tablets were evaluated for physicochemical parameters, lag time, and in-vitro drug release studies. Stability studies were also planned as per ICH guidelines. Results: The formulated pulsatile tablets exhibited satisfactory physicochemical properties with a well-defined lag time followed by rapid drug release. The release profile indicated the potential of the system to deliver the drug during early morning hours, corresponding to peak asthmatic symptoms. Conclusion: Pulsatile release tablets of Terbutaline Sulphate demonstrated promising potential for chronotherapeutic management of asthma. This delivery system may improve therapeutic efficacy, reduce side effects, and enhance patient compliance.

KEYWORDS: Pulsatile drug delivery, Chronotherapy, Terbutaline Sulphate, Asthma, Circadian rhythm

Abstract Id- P- 47

DESIGN AND OPTIMIZATION OF pH BASED BINARY AND TERNARY SYSTEM OF HYDROCOLLOID ORODISPERSIBLE STRIP CONTAINING BCS II DRUG BY 3D PRINTING

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ABSTRACT
In present work, attempt has been made to improve Nitrendipine (NTP) dissolution profile in buccal conditions by designing pH based binary and ternary system of hydrocolloid orodispersible strip (ODS) via 3D printing. Preparation of drug loaded filaments (diameter of die 1.5 mm) of various batches of Binary systems (BS) by mixing the drug with different hydrocolloids, while ternary (TS) systems by adding citric acid to solubilize NTP in the mixturewere prepared and strip was design by 3D printer. FTIR study revealed retention of basic peaks while Drug dissolution studies, thermal analysis and X-ray diffraction are going on to characterize the physical state of NTP in ODS. DSC and X-ray diffraction will reveal the exact state of NTP in BS and TS. Furthermore, hydrocolloids, owing to their excellent film-forming, fast disintegration, and biocompatibility properties, and 3D printing as an advanced manufacturing method and emerged as a flexible platform which enables precise dose personalization, innovative multilayer structures, and novel release profiles.

Keywords: Orodispersible strip, Hydrocolloids, Binary & Ternary system, BCS Class II drugs, 3D printing

Abstract Id- P- 48

FORMULATION OPTIMIZATION OF CURCUMINOIDS FOR ENHANCED SOLUBILITY

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Abstract
Introduction: Curcuminoids are natural compounds found in turmeric, known for their antioxidant, anti-inflammatory, and therapeutic properties. However, they have major solubility issues because they dissolve poorly in water, which limits their absorption and effectiveness in the body. To improve their activity, various techniques like complexation and SMEDDS are used to enhance their solubility and bioavailability. Aim: To improve the solubility of the curcuminoids. Objective: To improve solubility, to check anti cancer activity of curcuminoid complex.Method: Chopped turmeric rhizomes were soakedwith calcium carbonate in a soil pot for 21 days to form curcuminoid complexes. After drying and powdering,Soxhlet extraction was performed with hexane, petroleum ether, and acetone, followed by ethanol purification. Visual tests, solubility and UV studies, pre-formulation work, SMEDDS preparation, solidification, and in-vitro cell-line studies were then carried out.UV analysis showed a main absorbance peak at 424 nm. Flame tests and TLC confirmed the curcuminoid complexes. They showed strong anticancer effects on MCF-7 cells, as cell viability decreased with higher doses and longer exposure. Cellular-uptake results also showed good internalization. Conclusion: This study shows that metal complexation and advanced formulations greatly improve curcuminoid performance. The developed complexes demonstrate strong pharmaceutical potential and form a solid base for future therapies targeting oxidative stress, cancer, infections, and neurodegenerative diseases.

Abstract Id- P- 49

Formulation and Optimization of Fluvoxamine Maleate-loaded PressureSensitive Adhesive-based Transdermal Patch by Using Central Composite Design with Ex-Vivo Skin Permeation Release Study

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Abstract
Depression is a chronic and disabling psychiatric disorder that requires long-term treatment, yet many antidepressants exhibit limited therapeutic effectiveness due to poor bioavailability and inadequate delivery to the brain. Fluvoxamine maleate (FM), a commonly prescribed SSRI, undergoes extensive first-pass metabolism and shows poor penetration across the blood–brain barrier,thereby reducing its clinical efficiency in depression management. To address these limitations, the present study focused on formulating an FM-loaded Pressure-Sensitive Adhesive-based Transdermal Patch with the addition of penetration enhancers toenhance brain delivery and achieve sustained antidepressant action. Transdermal patcheswere prepared by the solvent evaporation technique. Methodology: Transdermal drug delivery was explored as an alternative to oral administration to overcome first-pass metabolism and improve patient compliance.FM-loaded transdermal patches were prepared using a suitable PSA polymer (Duro-Tak) system and optimized employing a Central Composite Design (CCD). The influence of formulation variables on key responses such as drug content, folding endurance, tensile strength, and % cumulative drug release, and ex-vivoskin permeation study was systematically investigated. Results: The optimized transdermal patch exhibited uniform drug distribution, satisfactory tensile strength, flexibility, and adequate adhesive properties, ensuring effective skin contact. Ex-vivo skin permeation studies across excised animal skin were conducted to evaluate transdermal performance parameters. The optimized formulation showed a steady state transdermal flux, acceptable lag time, and a favourable permeability coefficient, indicating efficient permeation of FM through the skin. The enhanced permeation characteristics were attributed to the intimate skin contact provided by the PSA matrix and the optimized formulation composition. Drug release and permeation kinetics suggested a diffusion-controlled mechanism. Conclusion: The developed FM-loaded PSA transdermal patch demonstrated suitable mechanical strength, adhesive performance, sustained drug release, and favourable permeation parameters. The study concludes that PSA-based transdermal patches represent a promising and effective delivery system for Fluvoxamine maleate, with the potential to improve therapeutic efficacy and patient compliance.

Keywords: Depression, Fluvoxamine maleate, Pressure-sensitive adhesive, Ex-vivo skin permeation, Flux.

Abstract Id- P- 50

Optimization of Leflunomide loaded transferosome based transdermal drug delivery system for management of rheumatoid arthritis

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Abstract
Leflunomide is an effective alternative disease modifying anti-rheumatic drug acts by the inhibition of dihydroorotate dehydrogenase enzymes. However, its oral administration is constrained by poor solubility and associated gastrointestinal adverse effects, including abdominal discomfort and irritation. Leflunomide possesses favourable physicochemical properties for transdermal drug administration such as low molecular weight, moderate lipophilicity. To enhance the safety and therapeutic efficacy of LEF, it was incorporated into transferosomes as a carrier system. Transferosomes were prepared using conventional thin-film hydration technique and were subsequently optimized employing a central composite design (CCD). Soya lecithin and Tween 80 were used as independent variables and particle size (nm) and entrapment efficiency (EE%) were dependent responses. The formulations were prepared with a variable concentration of soya lecithin (90 – 110 %) and Tween 80 (10 – 30 %). Optimized transferosomes containing LEF demonstrated a particle size around 93.8 nm, an entrapment efficiency of 95.4 % with PDI value of 0.217. Transmission electron micrograph showed the uniform structure and spherical shape. To enhance ease of application on the skin surface, optimized LEF-TSF was incorporated into a Carbopol 940 hydrogel. Based on these results, it can be concluded that the leflunomide-loaded transferosomal transdermal hydrogel formulation has potential represents for the management of rheumatoid arthritis.

Keywords: Transferosome, Leflunomide, Rheumatoid arthritis, central composite design of Quality by design (QbD)

Abstract Id- P- 51

Development and Characterisation of Enteric-Coated Mini-Tablets of Lansoprazole via Nanosuspension Solidification: A QbD-Based Approach for Enhanced Stability and Bioavailability

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Abstract
Lansoprazole (LSP), a BCS Class II drug, suffers from poor aqueous solubility and instabilityin acidic environments, presenting formulation challenges. This study focuses on developingenteric-coated mini tablets of LSP by first optimizing a nanosuspension (NS) and then solidifying it via lyophilization. A full factorial design was employed to optimize stabilizer ratio and homogenization time to achieve minimal particle size and high drug loading. The optimized NS (~200 nm, PDI < 0.45) exhibited a 13-fold increase in solubility over pure drug. Lyophilization with mannitol preserved particle size and crystallinity. Mini-tablets were prepared via direct compression, enteric-coated with Eudragit L100-55, and evaluated forphysical properties, redispersibility, dissolution, stability, and pharmacokinetics in rats. Enteric-coated mini-tablets provided acid protection, rapid release at intestinal pH, and a 1.4-fold bioavailability improvement over pure drug. Stability studies confirmed retention of nanoscale attributes and dissolution efficiency. This study demonstrates a scalable pathway for converting a labile nanosuspension into a robust, patient-friendly solid dosage form suitable for pediatric and geriatric applications.

Keywords: Mini tablets, nanosuspension, lansoprazole, solubility, stability, high shear Homogenization

Abstract Id- P- 52

FORMULATION AND EVALUATION OF METAL-QUERCETIN NANO COMPLEX AND TO TEST ITS EFFICACY AGAINST CANCER

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Abstract
The present study investigated the multifaceted potential of quercetin, a natural flavonoid found in fruits and vegetables, in combination with silver nanoparticles (AgNPs) for pharmaceutical applications, particularly focusing on anticancer activity. Quercetin-loaded silver nanoparticles were successfully synthesized using a one-pot reduction method and characterized for their physicochemical properties. The prepared nanoparticles exhibited a characteristic UV-visible absorption peak at 424 nm, confirming nanoparticle formation. Particle size analysis revealed an average particle size of 122.71 nm (nanosuspension) and 152.4 nm (solid nanoparticles), while SEM analysis indicated spherical morphology with an average size of ~52.73 nm. The zeta potential values were found to be −26.7 mV (suspension) and −31.4 mV (solid form), indicating good colloidal stability. The nanoparticles showed a high entrapment efficiency of 85.4%, demonstrating effective loading of quercetin within the nanoparticle matrix. The anticancer potential of quercetin-loaded AgNPs was evaluated against the HeLa cervical cancer cell line using the MTT assay, showing significant cytotoxic activity with an IC50 value of 11.76 µg/mL. These findings suggest that quercetin silver nanoparticles possess favorable physicochemical characteristics, efficient drug loading, and promising anticancer efficacy. Overall, the study highlights the potential of quercetin-silver nanoparticles as a novel nanotherapeutic approach for cervical cancer treatment, warranting further in-vivo investigations and formulation optimization.

Keywords: Quercetin, Silver nanoparticles, Anticancer, HeLa cell line, Particle size, Zeta potential, Entrapment efficiency

Abstract Id- P- 53

NANOCRYSTAL-ENGINEERED TOPICAL GEL OF A PHYTOCONSTITUENT FOR ACCELERATED WOUND HEALING

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Abstract

Introduction: Wound healing is a complex, multi-phase biological process involving inflammation, proliferation, and tissue remodeling. Poor aqueous solubility and limited skin permeation of many phytoconstituents restrict their therapeutic efficacy in topical formulations. Hesperidin, a flavonoid with proven antioxidant and wound-healing properties, exhibits low solubility and inadequate local bioavailability when used conventionally. Nanocrystal technology offers a promising approach to overcome these limitations by enhancing surface area, solubility, and skin penetration. Objectives: To improve the solubility and skin permeation of hesperidin by formulating it as nanocrystals, to optimize and characterize hesperidin nanocrystals for suitable physicochemical properties, to develop a nanocrystal-based topical gel of hesperidin, to evaluate the wound-healing potential and safety of the formulated nanocrystal gel. Methodology: Hesperidin nanocrystals were prepared using a bottom-up precipitation method followed by ultrasonication. Optimization was carried out using a Box–Behnken design considering stabilizer concentration, stirring speed, and sonication time as independent variables, with particle size and entrapment efficiency as responses. Nanocrystals were characterized for particle size, zeta potential, FTIR, PXRD, DSC, SEM, solubility, and dissolution behavior. Optimized nanocrystals were incorporated into a Carbopol-based topical gel and evaluated for physicochemical properties, in-vitro drug release, ex-vivo permeation, skin irritation, excision wound healing, histopathology, and stability. The optimized nanocrystal formulation showed a particle size of 181.50 ± 5.61 nm and zeta potential of −20.2 ± 7.94 mV. Nanocrystals exhibited 88-fold enhancement in solubility and significantly improved dissolution compared to plain hesperidin. The nanocrystal gel demonstrated suitable pH (6.3), good spreadability, viscosity, extrudability, and 85.31% drug content, with no skin irritation. In-vitro and ex-vivo studies confirmed enhanced drug release and permeation. Excision wound healing studies in rats showed 97.5% wound contraction by day 14, significantly higher than plain gel and control. Stability studies indicated no significant changes after one month. Conclusion: Hesperidin nanocrystal-based topical gel significantly improves solubility, skin permeation, and wound-healing efficacy compared to conventional formulations. The study confirms that nanocrystal technology is an effective and promising strategy for enhancing the topical delivery and therapeutic performance of phytoconstituents in wound management.

Keywords: Hesperidin; Nanocrystals; Topical gel; Wound healing; Phytoconstituents

Abstract Id- P- 54

ENGINEERED BIOTIN-CONJUGATED LIPID–POLYMER HYBRID NANOPARTICLES OF DOXORUBICIN FOR TARGETED THERAPY OF TRIPLE-NEGATIVE BREAST CANCER

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Abstract

Aim: To develop and evaluate biotin-functionalized lipid–polymer hybrid nanoparticles for targeted delivery of doxorubicin in triple-negative breast cancer. Objectives: To formulate and optimize doxorubicin-loaded lipid-polymer hybrid nanoparticles,to functionalize nanoparticles with biotin for active TNBC targeting, to evaluate physicochemical properties, drug release, cytotoxicity, and pharmacokinetics. Methodology: Nanoparticles were prepared by the emulsification–solvent evaporation method using biotin-PEG-PLGA, phospholipon 90H, and PVA. Formulation variables were optimized using Box–Behnken Design. The optimized formulation was characterized for particle size, zeta potential, entrapment efficiency, morphology, and in vitro drug release. Cellular uptake and cytotoxicity were evaluated in MDA-MB-231 cells, and pharmacokinetic studies were conducted in rats. Results and Discussion: Optimized biotin functionalized nanoparticles exhibited nanoscale size (~178 nm), positive surface charge, and high drug entrapment. The system showed sustained, pH dependent drug release with enhanced cellular uptake and cytotoxicity in TNBC cells. Pharmacokinetic studies demonstrated improved bioavailability and prolonged systemic circulation compared to free drug. Conclusion: Biotin-functionalized lipid–polymer hybrid nanoparticles showed enhanced cellular uptake, sustained drug release, and improved bioavailability of doxorubicin in TNBC, indicating a promising targeted nanocarrier system with reduced systemic toxicity.

Keywords: Triple-negative breast cancer, Doxorubicin, Biotin targeting, Pharmacokinetics, Cytotoxicity

Abstract Id- P- 55

Development of Piroxicam-Loaded Transdermal Patch Using Natural Penetration Enhancer for Dysmenorrhea

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Abstract:
This research explores the creation and evaluation of a piroxicam matrix-based transdermal patch aimed at treating dysmenorrhea, a common condition that causes painful menstruation and impacts women's quality of life. Traditional treatments typically involve oral non-steroidal antiinflammatory drugs (NSAIDs) like piroxicam, which can lead to adverse side effects. The studyfocuses on developing a transdermal drug delivery system (TDDS) to allow piroxicam to enter systemic circulation directly, enhancing its bioavailability and effects by avoiding first-pass metabolism. Various formulations were prepared using a solvent casting technique, incorporating HPMC E5LV as the polymer, PEG 400 as the plasticiser, and Capsicum oleoresin to enhance skin penetration. The formulations underwent several evaluations, including assessments of physical appearance, thickness, weight uniformity, folding endurance, moisture content, moisture uptake, and drug content. The optimised formulation, F3, contained 600 mg of HPMC E5LV, 0.7 ml of Capsicum oleoresin, and 1 ml of PEG 400, exhibiting excellent folding endurance, favourablemoisture properties, and a high drug content of 99 ± 0.19%. In-vitro diffusion tests indicated that F3 achieved a cumulative drug release of 98.87% over 2 hours, while ex-vivo studies with goat skin confirmed 97.04% drug permeation within the same timeframe. The findings suggest that the piroxicam transdermal patch may serve as an effective, non-invasive alternative for the management of dysmenorrhea, providing sustained drug release.

Keywords: Dysmenorrhea, Transdermal drug delivery, Piroxicam, Transdermal patch, Penetration enhancer

Abstract Id- P- 56

Redefining Precision Therapy in Breast Cancer Management through Artificial Intelligence

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ABSTRACT
Introduction: Breast cancer is the most commonly diagnosed cancer among women globally, with an estimated 2.3 million new cases reported in 2022. Breast cancer is a major concern for healthcare systems across the globe, as it is the most common cancer found and leads to700,000 deaths in women. It is a complex and heterogeneous disease that can quickly develop into a metastatic, drug-resistant state. Artificial intelligence is transforming breast cancer management through machine learning applications and supports precision medicine by enhancing detection, diagnosis, prognosis, and prediction of treatment response and analysing data from medical imaging, histopathology, genomics, and multi-omics sources to improve patient recovery. Artificial intelligence (AI), particularly deep learning, is reshaping breast cancer diagnostics across radiology and pathology. This systematic literature review synthesizes recent advances in mammography, digital breast tomosynthesis (DBT), ultrasound, MRI, and whole-slide imaging, with an emphasis on convolutional neural networks (CNNs), Vision Transformers (ViTs), and generative adversarial networks (GANs). This systematic literature review explores emerging dimensions of AI in breast cancer management, focusing on its roles in early detection, diagnosis, prognostication, treatment planning, and outcome prediction. A systematic review of literature was conducted using databases such as PubMed, Google Scholar, and ScienceDirect to identify peer-reviewed articles. Studies addressing AI-based applications in mammography, histopathology, genomics, radiomics, and clinical decision support systems were analysed using Prisma follow chart and meta-analysis technique. Artificial intelligence-based systems demonstrated improved accuracy and sensitivity in breast cancer screening and diagnosis, particularly in image-based modalities such as mammography and digital pathology. Artificial intelligence has the potential to significantly improve patient outcomes, optimize healthcare resources, and transform breast cancer care from a reactive to a predictive and personalized paradigm. Also, AI makes it easier to detect breast cancer by having high accuracy, lowering the chances of medical errors, and enabling early discovery with advanced imaging.
Keywords: Artificial intelligence, Breast Cancer, Mammography, Machine Learning, Precision Medicine, Medical Imaging

Abstract Id- P- 57

Artificial Intelligence–Driven Prediction of Drug Failure Prior to Clinical Trials

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Abstract
Drug development is an expensive and high-risk process, with approximately 90% of drug candidates failing during clinical trials due to inadequate efficacy, safety concerns, or unfavorable pharmacokinetic properties. Early prediction of drug failure prior to clinical evaluation remains a critical challenge in pharmaceutical research. Artificial intelligence (AI) has emerged as a powerful approach to overcome this limitation by enabling data-driven risk assessment at early stages of drug discovery.AI-driven prediction models employ machine learning and deep learning algorithms to analyze large and complex datasets, including chemical structures, biological target interactions, preclinical toxicity profiles, pharmacokinetic parameters, omics data, and historical clinical trial outcomes. These models identify hidden patterns associated with clinical attrition, allowing prediction of drug failure before human testing. Such tools facilitate early evaluation of drug-likeness, safety liabilities, off-target effects, and therapeutic efficacy, leading to improved candidate selection.Integration of AI into early drug development can significantly reduce development timelines, minimize financial losses, and optimize resource allocation by eliminating high-risk compounds at an early stage. Furthermore, advances in explainable artificial intelligence improve model interpretability, supporting scientific validation and regulatory confidence. Despite challenges related to data quality, algorithm bias, and regulatory acceptance, AI-driven prediction of drug failure represents a transformative strategy for de-risking pharmaceutical development. This poster highlights key methodologies, applications, advantages, and future perspectives of artificial intelligence in predicting drug failure prior to clinical trials.

Keywords:-Artificial intelligence; Drug failure prediction; Machine learning; Clinical attrition; Drug discovery

Abstract Id- P- 58

Interactive AI Simulation For Real-Time Drug Discovery

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Abstract
Artificial intelligence (AI) has emerged as a transformative paradigm in pharmaceutical research, addressing the limitations of conventional drug discovery such as high costs, extended timelines, and low success rates. The integration of machine learning, deep learning, and computational chemistry has enabled data-driven prediction of molecular properties and optimization of drug candidates across multiple stages of the discovery pipeline. The objective of this study was to design and evaluate an interactive AI-based simulation framework for real-time drug discovery and to assess the effectiveness of AI-driven methodologies in molecular analysis, predictive modelling, ADMET prediction, similarity analysis, and molecular docking. A multidisciplinary computational framework integrating cheminformatics, machine learning, deep learning, and molecular modelling was employed. Chemical and biological datasets were sourced from curated databases, and molecular representations were generated using SMILES and graph-based descriptors. QSAR models, graph neural networks, and supervised learning algorithms were applied for predictive analysis, while molecular docking simulations were conducted to evaluate protein–ligand interactions and pharmacological profiles. The AI-driven platform successfully processed molecular data in real time and generated predictive insights consistent with established medicinal chemistry principles. Case studies involving antiviral compounds, lead optimization challenges, and demonstrate the ability of AI models to capture structure-activity relationships and support rational drug design. However, limitations related to data quality, model interpretability, and biological complexity were also identified. The study demonstrates that interactive AI simulation frameworks can significantly enhance drug discovery efficiency and pharmaceutical education by bridging the gap between theoretical knowledge and practical application. The findings highlight the transformative potential of AI in pharmaceutical research while emphasizing the need for rigorous methodological, ethical, and regulatory considerations.

Keywords: - Artificial Intelligence; Drug Discovery; Machine Learning; ADMET Prediction; Molecular Docking

Abstract Id- P- 59

Role of Artificial Intelligence in Drug Discovery: Accelerating Pharmaceutical Research and Development

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Abstract
Drug discovery is a complex, time-consuming, and costly process involving multiple stages such as target identification, lead discovery, optimization, and development. Conventional approaches often face high failure rates. Artificial intelligence (AI) has emerged as a powerful tool to accelerate pharmaceutical research by enabling rapid data analysis and better decision-making. The objective of this review is to highlight the role of artificial intelligence in accelerating drug discovery and pharmaceutical research by improving efficiency, accuracy, and decision-making across various stages of drug development. This study is based on a literature review of published research articles, review papers, and scientific reports related to AI in drug discovery. Data were collected from PubMed, Google Scholar, and ScienceDirect using keywords such as artificial intelligence, drug discovery, machine learning, QSAR, and pharmaceutical research. The information was systematically analyzed to understand AI applications in drug discovery. AI significantly enhances target identification, virtual screening, lead optimization, and prediction of pharmacokinetic and toxicity parameters (ADMET). Models such as QSAR, molecular docking, and predictive analytics improve compound selection, reduce development time, and minimize late-stage failures. AI also supports drug repurposing and personalized medicine approaches. AI has emerged as a powerful tool in modern drug discovery, making the process faster, accurate, and cost-effective. Despite challenges like data quality, model interpretability, and regulatory acceptance, ongoing advancements in AI are expected to further transform pharmaceutical research and improve the success rate of next-generation drug development.

Keywords: Artificial Intelligence, Drug Discovery, Machine Learning, QSAR, Pharmaceutical Research

Abstract Id- P- 60

MedExpiry AI: AI-Based Platform for Predictive Hospital MedicineExpiry Management

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Abstract
Medicine expiry remains a persistent challenge in hospital pharmacies, resulting in substantial financial loss and increased pharmaceutical wastage. Conventional inventory management systems rely on static expiry-date monitoring and lack predictive intelligence to assess whether medicines will be consumed within their remaining shelf life. Expired medicines further contribute to environmental pollution and biomedical waste management burden. The objective of this conceptual study is to design an AI-based digital platform capable of predicting near-expiry medicines in advance and enabling regulated inter-hospital redistribution before expiry. A conceptual, simulation-based framework was developed using key inventory parameters such as medicine batch information, expiry date, historical consumption rate, and storage conditions. An AI predictive model estimates the probability of expiry and classifies medicines into low, moderate, and high-risk categories. Medicines identified as high-risk are listed on a city-wise digital platform accessible only to registered hospitals, ensuring controlled participation and regulatory compliance. Simulated outcomes suggest that the proposed system can identify near-expiry medicines 3–6 months in advance, significantly reduce pharmaceutical wastage, and lower environmental burden associated with drug disposal. Selling hospitals benefit through partial cost recovery (approximately 40–50%), while purchasing hospitals gain access to quality medicines at reduced procurement costs, thereby improving overall inventory efficiency. The proposed AI-driven conceptual model offers a practical and scalable solution to minimize medicine expiry in hospital pharmacies. By integrating predictive intelligence with inter-hospital redistribution, the system supports cost optimization, environmental sustainability, and efficient medicine utilization while maintaining patient safety and regulatory standards.

Keywords: Artificial Intelligence, Medicine Expiry, Hospital Pharmacy, Inventory Management, Pharmaceutical Wastage

Abstract Id- P- 61

Artificial Intelligence in Drug Discovery

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Abstract

Designing effective nanocarriers for drug delivery requires careful control of multiple formulation parameters such as particle size, drug loading, surface charge, and biocompatibility. Conventional formulation approaches rely heavily on repeated laboratory trials, which are time-consuming and resource-intensive. Artificial Intelligence (AI) provides an experimental support tool to improve formulation design using existing data. To evaluate the effectiveness of AI-based models in optimizing nanocarrier formulations for improved drug loading, controlled release, and reduced toxicity**.** A machine learning–based generative model was trained using published and experimental nanocarrier formulation datasets. Input parameters included nanoparticle composition, particle size, surface charge, and encapsulation efficiency. The model generated optimized nanocarrier designs, which were screened in silico for stability, drug release behavior, and toxicity risk. Selected formulations were compared with conventionally designed nanocarriers. AI-optimized nanocarrier formulations demonstrated improved prediction accuracy for drug loading and particle size compared to traditional trial-and-error methods. The model identified formulations with higher encapsulation efficiency and lower predicted toxicity. Formulation development time was significantly reduced by limiting unnecessary experimental iterations, enabling faster selection of promising nanocarrier candidates. The results demonstrate that AI-based optimization can effectively support experimental nanocarrier design in nanomedicine. By reducing formulation time and improving key performance parameters, AI serves as a valuable tool for accelerating drug delivery system development and advancing next-generation nanomedicine research.

Keywords:
Nanomedicine, Artificial Intelligence, Nanocarrier Optimization, Drug Delivery, Machine Learning

Abstract Id- P- 62

Integrating Artificial Intelligence into drug development

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Abstract

The integration of Artificial Intelligence (AI) into drug development and pharmaceutical manufacturing is revolutionizing the healthcare industry. AI improves efficiency, accuracy, and cost-effectiveness across the entire drug lifecycle. In drug discovery, AI rapidly analyzes large datasets to identify potential drug targets and promising compounds, significantly reducing development time. AI also supports precision medicine by enabling personalized treatment approaches based on genetic and clinical data. During clinical trials, AI helps optimize study design, enhance patient selection, predict outcomes, and monitor safety, leading to faster and more reliable results. In pharmaceutical manufacturing, AI enables real-time process monitoring, predictive maintenance, and quality control, ensuring consistent product quality and regulatory compliance. By using advanced technologies such as machine learning, natural language processing, and robotics, AI enhances decision-making and automation. Overall, AI is driving innovation in the pharmaceutical industry, reducing costs, accelerating drug development, and improving patient outcomes.

Abstract Id- P- 63

Development of PBP5 Inhibitors Against *Enterococcus faecium using* Artificial Intelligence and Bioinformatics tools

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Abstract
Antimicrobial resistance (AMR) poses a serious global health challenge, with *Enterococcus faecium* classified as a high-priority ESKAPE pathogen due to widespread β-lactam resistance. This resistance is largely mediated by Penicillin-Binding Protein 5 (PBP5), a low-affinity transpeptidase that sustains cell wall synthesis under antibiotic pressure, making it a key therapeutic target. To identify and optimize potential PBP5 inhibitors of *Enterococcus faecium* using artificial intelligence and bioinformatics-based computational approaches. Sequence and structural analysis of Penicillin-Binding Protein 5 (PBP5) was carried out using bioinformatics tools, followed by active-site identification. The crystal structures of wild-type (PDB ID: 6C84) and mutant PBP5 (PDB ID: 6MKG) were retrieved and used for molecular docking with compounds from the database. Molecular dynamics simulation was performed for the wild-type PBP5 to evaluate structural stability. Potential inhibitors were shortlisted based on docking performance and ADMET profiling.Docking analysis showed that several compounds exhibited strong binding affinity toward the active site of both wild-type and mutant PBP5, with conserved interaction patterns. Broadly, the shortlisted compounds demonstrated favourable binding energies and stable interactions with key catalytic residues, indicating effective inhibition potential. Molecular dynamics simulation confirmed the structural stability of the wild-type PBP5–ligand complex under solvated conditions. Overall, the selected compounds displayed acceptable pharmacokinetic properties, supporting their potential as PBP5 inhibitors against *Enterococcus faecium***.**This study highlights the effectiveness of AI-enabled computational strategies for identifying novel PBP5 inhibitors. The two finalized lead structures demonstrate strong binding and hydrogen-bond interactions with both wild-type and resistant PBP5, supporting their potential for further experimental validation against multidrug-resistant *Enterococcus faecium*.

Keywords: *Enterococcus faecium*; PBP5; Antimicrobial resistance; Artificial intelligence; Bioinformatics.

Abstract Id- P- 64

Computational exploration and *In Silico* Drug Design of Novel pelf Inhibitors for Disrupting Biofilm Formation in *Pseudomonas aeruginosa*

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Abstract
Biofilm formation in *Pseudomonas aeruginosa* significantly contributes to antimicrobial resistance and persistent infections. Targeting PelF, a key protein involved in exopolysaccharide biosynthesis, offers a promising strategy. This study employs *in silico* approaches to rationally design novel PelF inhibitors with potential antibiofilm activity. To identify and rationally design novel inhibitors targeting the PelF protein of *Pseudomonas aeruginosa* using *in silico* techniques, with the objective of interfering with biofilm formation and providing potential leads for effective antibiofilm drug development. PelF (UniProt ID: Q9HZE9) was selected as the therapeutic target. Blind docking was performed using Pocket Finder in SilicoXplore, and the optimal binding site was chosen based on druggability and pocket scores. Approximately 98,000 compounds from the Seleckem database were curated, filtered by molecular weight (200–500 MW), and deduplicated to obtain 15,000 molecules. These compounds were docked using the Ligand Lock tool. Additionally, a *de novo* design approach was applied by screening 2000 compounds. Docking and *de novo* design approaches identifying SR-3029 as a lead candidate. Structural analogs of SR-3029 were generated and re-docked, yielding binding energies between -9 and -10 kcal/mol. Additionally, a *de novo* design approach was applied, screening 2,000 generated compounds with binding energies ranging from -7 to -8 kcal/mol. Lead compounds demonstrated stable target interactions, well-defined pharmacophoric features, and acceptable synthetic accessibility, highlighting their potential as promising antibiofilm drug candidates. This *in silico* study highlights PelF as a viable antibiofilm target and provides promising inhibitor candidates that warrant further experimental validation for development of novel therapies against *Pseudomonas aeruginosa*.

Keywords: Antimicrobial resistance, Biofilm, In Silico, PelF and Pseudomonas aeruginosa

Abstract Id- P- 65

Artificial Intelligence in Prediction of ADME and TOXICITY

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Abstract
Drug discovery is a complex and costly process, with high attrition rates often caused by poor pharmacokinetic properties or unexpected toxicity. Traditional experimental methods for assessing absorption, distribution, metabolism, excretion (ADME), and toxicity are time-consuming, resource-intensive, and ethically challenging. Artificial intelligence (AI) has emerged as a transformative tool to address these limitations by enabling rapid, high-throughput, and cost-effective prediction of ADME/Tox profiles. Machine learning and deep learning models, including graph neural networks, have demonstrated strong performance in predicting endpoints such as intestinal absorption, blood–brain barrier penetration, cytochrome P450 interactions, renal clearance, and organ-specific toxicities. These approaches leverage large-scale datasets and molecular descriptors to capture complex nonlinear relationships between chemical structure and biological activity. While AI-driven models offer significant advantages in early-stage screening and reducing reliance on animal testing, challenges remain in data quality, interpretability, and generalization to novel chemical scaffolds. Future directions include the integration of explainable AI, multi-omics data, and federated learning to enhance transparency, personalization, and collaborative innovation. Overall, AI-based ADME and toxicity prediction represents a cornerstone of modern drug discovery, with the potential to accelerate safe and effective therapeutic development while minimizing late-stage failures.

Keyword- Artificial intelligence, Absorption, Distribution, Metabolism, Excretion (ADME), toxicity.

Abstract Id- P- 66

Artificial Intelligence: The New Engine Driving Drug Discovery in Pharmaceutical Chemistry

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Abstract
Artificial Intelligence (AI) is becoming an important driving force in modern drug discovery, especially in the field of pharmaceutical chemistry. Developing a new drug by traditional methods is a long, costly, and complex process with a high risk of failure. AI helps overcome these limitations by using advanced computer models to analyze large amounts of chemical and biological data quickly and accurately.In pharmaceutical chemistry, AI is widely used for identifying drug targets, designing new molecules, and optimizing lead compounds. Techniques such as machine learning and deep learning help predict important properties like drug–target interactions, toxicity, solubility, and bioavailability at an early stage. This reduces the need for repeated laboratory experiments and saves both time and resources. AI-based virtual screening allows researchers to select the most promising drug candidates from thousands of compounds, increasing the chances of success.AI also supports structure–activity relationship studies and helps pharmaceutical chemists make better decisions during drug development. Moreover, AI plays a key role in personalized medicine by enabling the design of drugs tailored to individual patient needs. Although challenges such as data reliability and regulatory concerns still exist, continuous improvements in AI technology are strengthening its role in drug discovery. Overall, AI is transforming pharmaceutical chemistry by accelerating drug development and improving the quality, safety, and effectiveness of new medicines.

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

Abstract Id- P- 67

MACHINE LEARNING & ARTIFICIAL INTELLIGENCE IN PHARMACEUTICAL RESEARCH AND DEVELOPMENT

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Abstract
Artificial intelligence (AI) and machine learning (ML) have become the breakthrough technology most anticipated to have a transformative effect on pharmaceutical research and development (R&D). This is partially driven by revolutionary advances in computational technology and the parallel dissipation of previous constraints to the collection/processing of large volumes of data. Meanwhile, the cost of bringing new drugs to market and to patients has become prohibitively expensive. Recognizing these headwinds, AI/ML techniques are appealing to the pharmaceutical industry due to their automated nature, predictive capabilities, and the consequent expected increase in efficiency. ML approaches have been used in drug discovery over the past 15–20 years with increasing sophistication. The most recent aspect of drug development where positive disruption from AI/ML is starting to occur, is in clinical trial design, conduct, and analysis. The COVID-19 pandemic may further accelerate utilization of AI/ML in clinical trials due to an increased reliance on digital technology in clinical trial conduct. As we move towards a world where there is a growing integration of AI/ML into R&D, it is critical to get past he related buzz-words and noise. It is equally important to recognize that the scientific method is not obsolete when making inferences about data. Doing so will help in separating hope from hype and lead to informed decision-making on the optimal use of AI/ML in drug development. This manuscript aims to demystify key concepts, present use-cases and finally offer insights and a balanced view on the optimal use of AI/ML methods in R&D.

Keywords: Artificial intelligence; Machine learning; Drug development; Precision medicine; Probability of success

Abstract Id- P- 68

Telehealth Wearable Sensors Utilizing Emerging Materials and Nano architectonics

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ABSTRACT
Wearable sensors have advanced significantly in detecting physiological and biochemical markers for telehealth applications. By tracking vital signs such as body temperature, arterial oxygen saturation, and respiratory rate, these sensors offer substantial potential for early disease detection. Recent years have seen remarkable progress in the development of wearable sensors utilizing two- dimensional (2D) materials, characterized by their flexibility, outstanding mechanical stability, high sensitivity and accuracy, resulting in innovative solutions for remote and real-time health monitoring. This review provides an overview of wearable sensors and biosensors based on 2D materials for remote health monitoring systems. It categorizes five types of wearable sensors according to their sensing mechanisms: pressure, strain, electrochemical, optoelectronic and temperature sensors. These materials enable improved signal stability, rapid response, low power consumption and long-term durability, which are essential for continuous and reliable health monitoring. Their biocompatibility and flexibility also allow comfortable skin contact, making them suitable for long-term wearable applications in telehealth and personalized medicine. Additionally, the fundamental sensing principles and mechanisms of these wearable sensors, along with their applications are examined.

Keywords: - Wearable biosensors, two-dimensional (2D) materials, telehealth monitoring, flexible sensor technologies, real-time physiological sensing

Abstract Id- P- 69

Artificial Intelligence in Drug Discovery: Accelerating the Path from Target Identification to Clinical Development"

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Abstract
Drug discovery is a complex, time-consuming, and expensive process that traditionally requires years of research and high financial investment. Artificial Intelligence (AI) has emerged as a powerful tool to transform modern drug discovery by integrating computational techniques such as machine learning, deep learning, and big data analytics. AI enables rapid identification of potential drug targets, prediction of drug–target interactions, virtual screening of large compound libraries, and optimization of lead compounds. Furthermore, AI-based models assist in predicting pharmacokinetic and toxicity profiles (ADMET), thereby reducing late-stage failures during drug development. The application of AI also extends to clinical trial design, patient selection, and personalized medicine. Although challenges such as data quality, ethical concerns, and high initial costs exist, the advantages of AI in improving efficiency, accuracy, and success rates outweigh its limitations. This poster highlights the role, advantages, limitations, and future prospects of Artificial Intelligence in drug discovery, emphasizing its potential to accelerate pharmaceutical research and development.
Keywords : Clinical trial, artifical intelligence, drug, Pharmacokinetic.

Abstract Id- P- 70

The Role of AI in Herpesvirus Detection, Transmission, and Predictive Modelling: Emphasis on Herpes Zoster

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Abstract:
The herpesviruses are a significant source of disease around the world because of their ability to remain in a state of dormancy for a long time as well as their capacity to reactivate on occasion. Varicella-zoster virus (VZV), which causes herpes zoster (HZ), presents both clinically and economically significant issues especially to older persons and those who are compromised in their immune systems. Recently, the use of artificial intelligence (AI), which includes machine learning (ML) and deep learning (DL), has been developed into a transformative means of conducting research in infectious disease and in delivering healthcare. This review presents an organized overview on AI application in herpesvirus detection, analysis of virus transmission, and predictive modeling of herpes zoster. AI has improved diagnostic accuracy through image analysis and molecular data analysis, enhanced epidemiological surveillance of HZ, provided the means to predict risk for individual patients and the complications of HZ (e.g., postherpetic neuralgia), as well as estimated vaccine response and effectiveness. Presently, challenges continue to exist with respect to the quality of data collected, interpretation of data, and generalizability of AI results as well as ethical concerns. The review summarizes the most recent findings, compares traditional vs. AI approaches, and discusses the future of integrating AI into the prevention and management of HZ.

Keywords: Artificial intelligence; Machine learning; Herpesvirus; Varicella-zoster virus; Predictive modelling.

Abstract Id- P- 71

AI-Driven Discovery of Allosteric FtsZ Inhibitors to Combat Methicillin-Resistant Staphylococcus aureus

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Antimicrobial resistance (AMR) in ESKAPEE pathogens, particularly methicillinresistant Staphylococcus aureus (MRSA), poses a severe global health threat, driving the urgentneed for novel antibacterial agents with innovative mechanisms of action.To design novel antimicrobial agents targeting the Staphylococcus aureus FtsZ proteinusing AI-based pharmacophore screening and molecular optimization. To perform molecular docking to evaluate and compare the binding affinity of designed molecules against both the wild-type and mutant (R29A) FtsZ structures. An integrated computational workflow was applied, starting with compound library preparation. Virtual screening and preliminary ADMET assessment were performed using SilicoXplore and its Pharm Ki module. Ligand Lock was used for docking and hydrogen-bondanalysis against wild-type (PDB: 5XDT) and mutant (R29A, PDB: 5H5I) FtsZ. Results were analyzed with PyMOL, and ADMET profiles were validated with pkCSM and Swiss ADME.From an initial set of 20 AI-generated indene-based ligands, one core molecule wasselected and systematically optimized through structural substitutions. Docking studies revealed that the optimized analogues achieved significantly improved binding energies, ranging from -9.2 to -10.5 kcal/mol against wild-type FtsZ. The R29A mutation consistently reduced binding affinity, further validating Arg29 as a critical allosteric switch. key hydrogen-bond interactions stabilizing the most potent compounds involved residues Arg29, Asp187, and Asn25. The optimized compounds demonstrated favorable ADMET profiles. This computational framework identifies potent FtsZ inhibitors that disrupt theprotein's conformational switch, offering a promising strategy to overcome MRSA resistance and advance novel antibacterial development.

Keywords: FtsZ, antimicrobial resistance, Staphylococcus aureus, AI-driven drug design, molecular docking.

Abstract Id- P- 72

Medi Print-AI: 3D Printed Oral Films for Patient Centric Care

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Abstract
Pharmaceutical technology is rapidly evolving with innovations that enable safer, smarter, and more personalized drug delivery systems. Among these, 3D printing has emerged as a breakthrough technique for creating precise and customizable dosage forms. In this project, Lansoprazole oral films were developed using the INKREDIBLE Bioprinter, offering improved control over film thickness, drug loading, and delayed intestinal release. Even though AI was not directly used in this project, the combination of AI and 3D printing represents a major innovation in pharmaceutical technology. In the future, AI can support 3D printing by predicting optimal printing parameters, analyzing film quality, and adjusting formulations based on patient needs. This integration can make the printing process faster, more accurate, and more personalized. By linking AI with 3D printed dosage forms, pharmacies can move toward smarter, data-driven and patient-specific drug delivery solutions. To develop a 3D printed oral film using the INKREDIBLE Bioprinter for controlled delayed drug release. To prepare polymer-based placebo films using the solvent casting method as a substrate for drug deposition.To formulate delayed-release drug-loaded printing ink with optimized viscosity and stability for 3D printing. To precisely deposit drug droplets on the polymer films using a controlled 3D printing technique. (Inkredible Bioprinter) To evaluate the printed films for drug content uniformity, release profile, and mechanical properties. This project demonstrates that 3D printing using the INKREDIBLE Bioprinter can successfully create personalized Lansoprazole oral films with controlled delayed release. The approach offers better precision, flexibility, and patient-specific dosing compared to traditional methods. Although AI was not used directly, its future integration with 3D printing can further improve formulation accuracy and support advanced pharmaceutical technology innovations.

Abstract Id- P- 73

Targeting *Escherichia coli* PBP3 Through AI-Driven Tools for Novel Drug Discovery to Manage Antimicrobial Resistance

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Abstract
Antimicrobial resistance in *Escherichia coli* is a growing global health concern. As a major ESKAPEE pathogen, *E. coli* commonly causes drug-resistant infections, largely driven by β-lactam resistance associated with mutations in penicillin-binding protein 3 (PBP3), a key enzyme in cell wall synthesis and division. Thus, PBP3 is a promising target for novel antimicrobial development. This study aimed to identify a robust lead compound capable of maintaining high-affinity binding and stable interactions across both wild-type and mutated forms of *E. coli* PBP3. The wild-type PBP3 structure (PDB ID: 6I1I) was used for virtual screening of 2,254 compounds from the Selleckchem library. To address resistance, six mutant PBP3 models YRIN, YRIK, TVPY, TG, PYRI, and V were generated via homology modelling using SWISS-MODEL. Ensemble docking was performed with the SilicoXplore LigandLock to capture mutation-induced structural variability. Top hits were evaluated for pharmacokinetic properties using PharmK-AI. Screening and ensemble docking identified Compound CA3 as the primary candidate from the anticancer class, demonstrating strong *in silico* binding affinity with a docking score of -11.3 kcal/mol against wild-type (6I1I). Computational pharmacokinetic analysis using PharmK-AI predicted favourable ADME properties for CA3. Importantly, hydrogen bond interaction analysis via PyMol and Discovery Studio revealed stable binding modes between CA3 and key residues in both wild-type and modelled mutant PBP3 structures. Compound CA3 shows promise as a potential PBP3 inhibitor with consistent binding, stability, and favourable pharmacokinetics, providing a foundation for developing novel therapeutics against AMR.

Keywords: *Escherichia coli*, PBP3, Ensemble Docking, Antimicrobial Resistance.

Abstract Id- P- 74

Analytical Method Development and Validation of Ponesimod in its Pharmaceutical Dosage form by using Suitable Analytical Technique

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Abstract
Ponesimod is a selective sphingosine-1-phosphate receptor-1 (S1P1) modulator approved for the treatment of relapsing forms of multiple sclerosis, where it reduces lymphocyte migration and immune-mediated inflammation. Due to its clinical importance, a reliable stability-indicating analytical method is essential for quality control and formulation development. In the present study, a simple, rapid, and robust reverse phase high-performance liquid chromatography (RP-HPLC) method was developed and validated for the quantitative estimation of Ponesimod in bulk drug substance and tablet dosage forms. Chromatographic separation was achieved using an Inertsil C18 column (150 × 4.6 mm, 5 µm) with a mobile phase consisting of methanol and phosphate buffer in the ratio of 45:55 (v/v) at a flow rate of 1.0 mL/min. Detection was carried out using a UV detector at 265 nm. Ponesimod produced a sharp, symmetrical peak with a retention time of 3.438 minutes, indicating efficient separation. The method was validated in accordance with ICH Q2 (R1) guidelines for specificity, linearity, accuracy, precision, robustness, and sensitivity. Validation results demonstrated excellent precision with %RSD values below 2%, a tailing factor less than 2, and theoretical plates exceeding 2000, confirming good column efficiency and reproducibility. Forced degradation studies were performed under acidic, basic, oxidative, thermal, and photolytic stress conditions, and the method successfully separated Ponesimod from its degradation products, confirming its stability-indicating nature. Overall, the proposed RP-HPLC method is simple, sensitive, accurate, and reliable, and can be effectively applied for routine quality control analysis and stability evaluation of Ponesimod in bulk and pharmaceutical dosage forms consistently.

Keywords: Ponesimod, RP-HPLC, Method development and validation, Stability-indicating method, ICH Q2 (R1)

Abstract Id- P- 75

UV Spectrophotometric Method Development and Validation for Estimation of Drugs In Multi Component System

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Abstract
Rivaroxaban is a factor Xa inhibitor is commonly prescribed for the treatment of deep vein thrombosis and pulmonary embolism and Aspirin is widely recognized as an antithrombotic agent extensively utilized in the management and prevention of cerebrovascular and cardiovascular ailments, such as stroke. The development of analytical method is required for accurate analysis of both the drugs. For simple, precise & economical UV spectrophotometric method have been developed for the simultaneous estimation of Rivaroxaban & Aspirin in their synthetic mixture. Method 1 Ratio spectra derivative method & Method 2 Difference spectrophotometric method which is based on measurement of absorption at 245nm & 304nm i.e. maximum of Rivaroxaban & Aspirin, respectively. The absorbance data matrix was obtained by measuring the absorbance at 21 wavelength point, from 240-340nm with the interval of 5nm. Linearity was observed in the concentration range of 5-30mcg/ml for Rivaroxaban and 50-300mcg/ml for Aspirin using methanol as a solvent. The accuracy of the methods was assessed by recovery studies and was found to be within range of 98-102%for both the drugs. Precision of the method was estimated by repeatability and intermediate precision studies. The % RSD value were found to be less than 2, proving method were precise. for methods were compared using ANOVA, f-test, t-test. The result were validated statistically as per ICH (Q2) R2 guideline and were found to be satisfactory.

Keywords: Rivaroxaban, Asprin, Ratio spectra derivative method, Difference spectrophotometric method, Simultaneous estimation.

Abstract Id- P- 76

Application of White Analytical Chemistry Tool and A QbD Approach for Sustainable Analytical Method Development for Ritonavir

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Abstract
Ritonavir is a widely used antiretroviral drug that requires reliable analytical methods for routine quality control in bulk and pharmaceutical dosage forms. Conventional chromatographic methods often rely on the use of hazardous organic solvents such as acetonitrile, which raise environmental, safety, and cost concerns. In line with the principles of White Analytical Chemistry (WAC), there is a growing demand for green, eco-sustainable, cost-effective, and robust analytical techniques. Additionally, the integration of Analytical Quality by Design (A-QbD) ensures systematic method development with enhanced robustness and regulatory compliance. The present study focuses on developing and validating environmentally benign UV spectrophotometric and RP-HPLC methods for the quantitative estimation of Ritonavir using greener solvents. A UV spectrophotometric method was developed using an ethanol–water solvent system, with detection at a wavelength of 239 nm. For the RP-HPLC method, method development and optimization were carried out using a Box–Behnken design under the A-QbD framework. Ethanol concentration in the mobile phase, flow rate, and column temperature were selected as critical method parameters. The optimized chromatographic conditions employed an ethanol–water (65:35, v/v) mobile phase, a flow rate of 1.0 mL/min, and a column temperature of 30 °C. Both methods were validated in accordance with ICH Q2(R1) guidelines for linearity, accuracy, precision, robustness, and reproducibility. Environmental sustainability was evaluated using AGREE, Complex GAPI, and White Analytical Chemistry (WAC) assessment tools The UV method demonstrated excellent linearity in the concentration range of 20–100 µg/mL ($R^2 = 0.9991$). The optimized RP-HPLC method produced sharp and symmetrical peaks with a retention time of 6.0 ± 0.2 minutes and a tailing factor of 1.24, the RP-HPLC method showed linearity in the range of 5–25 µg/mL ($R^2 = 0.9995$). Both methods exhibited high precision, accuracy, and reproducibility. Assay results for Ritonavir tablets were found to be 99.02 ± 0.36% by the UV method and 99.16 ± 0.15% by the RP-HPLC method. Greenness assessment revealed high AGREE and WAC scores and favorable Complex GAPI profiles, indicating reduced solvent toxicity and lower waste generation compared to conventional acetonitrile-based methods The developed UV spectrophotometric and RP-HPLC methods provide a robust, sensitive, and environmentally sustainable analytical platform for the routine quality control of Ritonavir. The application of an A-QbD approach ensured method robustness and regulatory compliance, while the use of ethanol as a green solvent significantly enhanced environmental sustainability.

Keywords: Ritonavir, RP-HPLC, UV spectrophotometry, Analytical Quality by Design, Green Analytical Chemistry, Whiteness index, Box–Behnken design.

Abstract Id- P- 77

Multi-color assessment Tool for Development and Validation of a Stability-Indicating Method for the Quantification of Baricitinib

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Abstract
Baricitinib is an ATP-competitive kinase inhibitor that selectively and reversibly inhibits Janus Kinase (JAK) 1 and 2. Baricitinib used for moderate-to-severe active rheumatoid arthritis. The objective of this study is to develop a HPTLC method for baricitinib determination, which lowers the cost of analysis. Based on the literature survey, no previously published HPTLC method has been reported for the analysis of baricitinib, which encouraged the development of an HPTLC method.A precoated TLC plate uses silica gel 60 F254 as the stationary phase, which is run in a mobile phase of ethyl acetate, toluene, and methanol in a ratio of 5:3.5:1.5 (v/v). Densitometric analysis was conducted at 310 nm in an absorbance mode. According to ICH Q2(R2) criteria, the developed method was validated. Stability was performed as per ICH guidelines Q1A(R2) and Q1B. The Rf value of baricitinib was found to be 0.498±0.037. The linearity range lies between 300 to 900 ng/band with a correlation coefficient of 0.9958. The developed method has been successfully applied to tablet formulation, with excellent recoveries ranging from 98.11% to 102%. The % content of the baricitinib tablet was found to be 98.2-100.35%. Baricitinib shows excellent sensitivity, with a limit of detection of 50 ng/band and a limit of quantitation of 153 ng/band. Stability was found to be more susceptible to alkaline degradation. Based on the greenness assessment tools, the analytical eco-score of 76 and the pictograms for GAPI, AGREE, and AGREE prep indicated the method's greenness. The developed method exhibited excellent greenness. A sensitive, precise, rapid, simple, and robust HPTLC method has been proposed and validated.
Keywords: Baricitinib, HPTLC, Development, Validation, Forced Degradation Study, Green chemistry.

Abstract Id- P- 78

Development and Validation of U.V. Spectrophotometric Method for the Estimation of Nintedanib esylate

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ABSTRACT
The main purpose was to develop a simple, easy, rapid, specific and economical method to validate the UV-spectrophotometric method for the estimation of anticancer drug Nintedanib esylate in pharmaceutical marketed formulations. This study followed the ICH guidelines. The method was validated statistically including linearity, LOD, LOQ, assay of marketed formulation, precision, accuracy, repeatability, specificity and reproducibility. Spectrophotometric selection of maximum absorbance was conducted at 391 nm with methanol used as diluent, which shows maximum absorbance in a solvent. The prepared concentration range of 2.0 to 20µg/mL was done two times for good accurate results. The limit of detection and limit of quantitation for UV spectrophotometric method on linearity 1 was found to be 0.284µg/mL and 0.860µg/mL and linearity 2 was found to be 0. 281µg/mL and 0.852µg/mL. Both linearity 1 and linearity 2 were assessed with the regression coefficient equation (R^2) values of 0.9995 and 0.9993 respectively. The accuracy was done at three different levels 80%, 100% and 120% which show a very good recovery ranging from 98.54% to 100.87%. Also, we calculated the Nintedanib esylate capsule percent amount recovered in the marketed formulation it was found to be 104.77-109.83. Simple, sensitive, and rapid UV-spectrophotometric method was developed and validated. The precision method was exhibited successfully studied as an interday, intraday and repeatability. The % RSD value is below < 2, reflecting that the method is proficient and precise.

Abstract Id- P- 79

Degradation Kinetics Study of Dapagliflozin in Susceptible Condition Using Stability-Indicating Analytical Method

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Abstract:
Dapagliflozin, an anti-diabetic drug known for its ability to inhibit the reabsorption of glucose by the kidneys. In study, the degradation kinetic study of dapagliflozin was carried out in order to understand that how the drug behaves under various stress conditions, and to assess the drug's stability and degradation pathways in different stress conditions. To access the degradation kinetic results, the RP-HPLC analytical method was development for Dapagliflozin utilizing an Agilent Zorbax C18 Column with a Diode array detector and a mobile phase consisting of Acetonitrile and water (70:30 v/v). Dapagliflozin was detected and retained at 2.460 minutes at 224 nm. The method demonstrated rapidity, precision, accuracy, and linearity within the concentration range of 5-30 µg/ml, with LOD and LOQ determined to be 1.062 µg/ml and 3.221 µg/ml, respectively. The high correlation coefficient (R^2 = 0.996) indicated the method's reliability in quantifying dapagliflozin. Further the degradation kinetic study suggested that dapagliflozin exhibited significant degradation under basic stress conditions with a compound half-life ($t_{1/2}$) of 14.29 hours, following the second order kinetics. Dapagliflozin also showed the degradation in acidic, photolytic and thermal stress condition with $t_{1/2}$ of 3.25, 5.077 and 3.91 hours where it follows the first order kinetics of degradation. These findings suggest that dapagliflozin is susceptible to degradation under certain environmental stressors, highlighting the importance of understanding its stability profile for effective drug formulation and manufacturing processes. The insights gained from this study could potentially lead to improvements in drug development and storage practices, ensuring the drug's efficacy and safety for patients with diabetes.

Key Words: Dapagliflozin, RP-HPLC, UV Spectroscopy, Degradation Kinetics, Diabetics

Abstract Id- P- 80

Synthesis and Acoustical Study of water-Based Copper Nanofluids for Potential Applications

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Abstract
This study reports the synthesis of well-dispersed, uniformly sized copper nanoparticles and their structural and acoustical characterization. Copper nanoparticles were prepared using a simple and economical chemical reduction technique, with copper sulfate pentahydrate serving as the precursor material. The synthesis was performed under varied experimental conditions, and the crystalline characteristics of the nanoparticles were examined using X-ray diffraction analysis. UV–visible spectroscopy revealed a distinct absorption maximum at 295 nm. Scanning Electron Microscopy confirmed the formation of predominantly spherical nanoparticles with average particle sizes ranging from 30 to 60 nm. Ultrasonic investigations were conducted at a frequency of 5 MHz using an ultrasonic interferometer to measure ultrasonic velocity, density, and viscosity for copper nanofluids of different concentrations and at 25 °C. Additional acoustical parameters were derived from the measured data. Variations in ultrasonic parameters were analyzed to elucidate the interaction mechanisms between copper nanoparticles and the aqueous base fluid.

Abstract Id- P- 81

Integrated Microwave-Assisted Green Synthesis of Bioactive Heterocycles via Magnetically Retrievable Nano-Catalytic Systems

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Abstract
The synthesis of bioactive heterocycles is an essential part of medicinal chemistry, but traditional methods might include hazardous solvents, lengthy reaction durations, and difficult catalyst recovery. This work proposes an integrated, sustainable approach using magnetically retrievable nano-catalytic devices and microwave-assisted organic synthesis (MAOS). Using a green synthesis framework and a core-shell magnetic nanocatalyst, typically $Fe_3O_4SiO_2$ functionalised with basic or acidic moieties, we produced a variety of functionalised heterocycles (such as quinoxalines and benzimidazoles). Molecular collisions were greatly accelerated and reaction times were shortened from several hours to less than fifteen minutes by the use of microwave irradiation, which produced homogeneous interior heating. The optimised nano-catalytic system achieved high product yields that regularly varied between 92% and 98% while preserving outstanding atom economy, according to analytical data. The catalyst's magnetic properties, which enable quick separation using an external neodymium magnet and do away with the need for energy-intensive filtration or centrifugation, are an important part of this process. According to stability testing, the catalyst can be recycled for at least six cycles without experiencing a discernible loss of structural integrity or catalytic activity (less than 2% reduction in yield). Through combining electromagnetic heating with recyclable nanotechnology, this method provides a dependable, "green" technique that minimises environmental effect while maximising the throughput of bioactive scaffolds required for drug development.

Keywords: Microwave-Assisted Synthesis, Magnetically Retrievable Catalysts, Green Chemistry, Bioactive Heterocycles

Abstract Id- P- 82

IN-SILICO ASSESMENT OF 1,2,4-TRIHYDROXY ANTHRAQUINONE

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Abstract:
Oxidative stress and inflammation are key contributors to the development of various chronic diseases such as cancer, arthritis, and neurodegenerative disorders. In this study, an *in-silico* investigation of 1,2,4-trihydroxyanthraquinone was conducted to evaluate its antioxidant, anti-inflammatory activity. Molecular docking studies were performed against peroxiredoxin (PDB ID: 1PRX) to assess antioxidant activity and an inflammation-related target (PDB ID: 6R6X) to evaluate anti-inflammatory efficacy. The compound exhibited strong binding affinities, with docking scores of −9 kcal/mol for the antioxidant target and −11.4 kcal/mol for the anti-inflammatory target, indicating stable and energetically favorable interactions. Notably, the compound demonstrated effective interaction with key residues involved in inflammatory signaling pathways, suggesting its potential to modulate inflammation by inhibiting pro-inflammatory mediators. Multiple hydrogen bonds and hydrophobic interactions, primarily attributed to the hydroxyl groups, contributed to its radical scavenging ability and suppression of inflammation-associated oxidative damage. ADMET predictions indicated acceptable pharmacokinetic properties, good oral bioavailability, and a favorable safety profile. Overall, the *in-silico* findings highlight 1,2,4-trihydroxyanthraquinone as a promising multifunctional lead compound for managing oxidative stress-induced inflammation, warranting further *in-vitro* and *in-vivo* studies.

Keyword: - Molecular docking; *In-silico* study; 1,2,4-Trihydroxy anthraquinone.

Abstract Id- P- 83

In-Silico Evaluation of 1,2-Dihydroxy-9,10-Anthraquinone Derivatives for Antioxidant and Anti-Inflammatory Potential

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Abstract:
1,2-Dihydroxy-9,10-anthraquinone (alizarin) is a naturally occurring anthraquinone derivative widely recognized for its diverse biological activities, including antioxidant, antimicrobial, anti-inflammatory, and anticancer properties. The presence of a quinone core along with hydroxyl substituents makes this molecule a valuable scaffold for structural modification aimed at enhancing pharmacological potential. In the present study, a series of novel 1,2-dihydroxy-9,10-anthraquinone derivatives were evaluated using in-silico approaches to investigate their therapeutic potential and drug-likeness. Molecular docking studies were carried out against selected protein targets associated with oxidative stress and inflammation, specifically 5IKT and 3MNG, to predict antioxidant and anti-inflammatory activity. The docking results demonstrated favourable binding affinities ranging from −6.2 to −9.9 kcal/mol. The derivatives exhibited stable binding conformations within the active sites of the target proteins. Key molecular interactions included hydrogen bonding, π–π stacking, van der Waals forces, and hydrophobic interactions, all of which contribute to ligand–protein stability and potential biological effectiveness. Pharmacokinetic evaluation using ADME prediction tools revealed that most compounds complied with Lipinski's rule of five, indicating good oral bioavailability and acceptable drug-like properties. Toxicity prediction further suggested low risks of mutagenicity, carcinogenicity, and hepatotoxicity for several derivatives, supporting their safety profile. Structure–activity relationship (SAR) analysis emphasized the importance of substituent type and position in modulating biological activity and pharmacokinetic behaviour. Overall, the in-silico findings indicate that these derivatives are promising candidates for further experimental validation through in-vitro and in-vivo studies.

Keywords: 1,2-Dihydroxy-9,10-anthraquinone, Molecular docking, ADME prediction, Structure–activity relationship.

Abstract Id- P- 84

Development and Biological Investigation of New Benzotriazole-Derived Hybrid Molecules

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Abstract:
Benzotriazole is a privileged heterocyclic scaffold known for its wide range of biological activities and structural versatility. The present research focuses on the development of novel benzotriazole-derived molecular hybrids through the strategic integration of benzotriazole with selected bioactive pharmacophores. The primary aim of this study was to generate structurally diverse hybrid molecules with improved pharmacological potential using a molecular hybridization approach. The designed compounds were synthesized via multistep organic synthetic protocols employing appropriate reaction conditions and reagents.All synthesized derivatives were purified using conventional techniques and structurally confirmed through physicochemical and spectroscopic analyses including melting point determination, infrared spectroscopy, proton and carbon nuclear magnetic resonance spectroscopy, and mass spectrometry. The pharmacological potential of the synthesized hybrids was investigated through in-vitro and/or in-vivo biological screening models to evaluate activities such as antimicrobial, anti-inflammatory, anticancer, or antioxidant effects. The biological outcomes were compared with standard reference drugs to assess relative efficacy.The results demonstrated that several benzotriazole-based hybrids exhibited notable biological activity, indicating the beneficial impact of combining benzotriazole with complementary pharmacophoric units. Structure–activity relationship studies suggested that both the nature of substituents and the linker framework significantly influenced the observed pharmacological responses. Overall, the study highlights benzotriazole molecular hybrids as promising candidates for further drug development and supports molecular hybridization as an effective strategy for the discovery of new therapeutic agents. Future investigations involving advanced biological evaluation and optimization studies are recommended.

Keywords: Benzotriazole derivatives, Molecular hybrids, Spectral characterization, Biological evaluation, Structure–activity relationship

Abstract Id- P- 85

Design, Synthesis and *In-Silico* Studies of Pyrrolo[2,1-f][1,2,4]Triazinyl Containing Pyrazoles for Antioxidant Activity

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*

Abstract
Oxidative stress plays a significant role in the onset and progression of many chronic and degenerative diseases, highlighting the need for the design and development of new and effective antioxidant agents. Fused heterocyclic scaffolds such as pyrrolo[2,1-f][1,2,4] triazines containing pyrazoles have gained significant attention due to their promising therapeutic potential.The present study aimed to design, synthesize, and evaluate a series of pyrrolo[2,1-f][1,2,4] triazinyl-containing pyrazole derivatives for their antioxidant activity.The pyrrolotriazine nucleus was synthesized from pyrrole carbaldehyde and hydroxylamine via pyrrole-2-carbonitrile formation followed by acetylation. Subsequent Claisen–Schmidt condensation with substituted benzaldehydes and cyclization by treating with hydrazine yielded the targeted compounds. Molecular docking studies were performed against oxidative stress-related enzymes (PDB IDs: 5IJT and 5UCX) to assess binding interactions. Drug-likeness and pharmacokinetic properties were evaluated using SwissADME analysis. The antioxidant potential of the synthesized compounds was experimentally determined using DPPH radical scavenging and nitric oxide scavenging assays.All synthesized derivatives showed significant antioxidant activity in both DPPH radical scavenging and nitric oxide scavenging assays. Docking studies revealed strong binding affinities. SwissADME predictions confirmed favourable pharmacokinetic properties. None of the designed compounds violated Lipinski's rule of five.The study demonstrates that pyrrolo[2,1-f][1,2,4]triazine-linked pyrazoles are promising antioxidant candidates with good biological activity, strong molecular interactions, and acceptable drug-likeness properties, which may serve as potential lead molecules for further optimization and development of antioxidant therapeutics.
Keywords- Antioxidant, Lipinski Rule, nitric oxide scavenging, DPPH radical scavenging Pyrrolotriazine

Abstract Id- P- 86

Investigation of niclosamide Bioenhancement with cow urine distillate in ARDS using RP- HPLC

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Abstract
Acute Respiratory Distress Syndrome (ARDS), a severe and life-threatening condition, reflects humanity's ongoing struggle against critical illnesses. This study investigates the repurposing of Niclosamide (NIC), an anthelmintic drug, while addressing its low bioavailability using cow urine distillate (CUD) as a bioenhancer—rooted in traditional, holistic medicine. The research bridges science and culture, integrating indigenous knowledge with modern pharmaceutical advancements.A sophisticated methodological framework (Box–Behnken design and RP-HPLC) optimized NIC analysis and demonstrated significantly enhanced bioavailability when co-administered with CUD in a preclinical pharmacokinetics study. Using a lipopolysaccharide-induced ARDS rat model, the therapeutic potential of NIC with CUD was assessed by evaluating anti-inflammatory biomarkers like TNF-α, IL-1β, and IL-6 via ELISA analysis.Results showed improved anti-inflammatory activity and increased bioavailability, highlighting NIC's potential as a therapeutic agent for ARDS. This study underscores the value of drug repurposing and bio-enhancement strategies in overcoming drug delivery limitations. It also unfolds broader cultural and ethical questions about integrating traditional knowledge into contemporary medicine, challenging dominant scientific narratives.By blending science, tradition, and innovation, this research highlights the interdisciplinary approaches needed to address complex health challenges like ARDS, offering a pathway for life-saving solutions.

Keywords:ARDS; Niclosamide; Cow Urine Distillate; Bioenhancer; RP-HPLC; Pharmacokinetics

Abstract Id- P- 87

In-Silico Molecular Docking Studies of Indian Medicinal Plants Targeting Alzheimer's Disease

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Introduction

Alzheimer's disease (AD) is a progressive brain disorder that causes memory loss and cognitive decline, mainly due to the formation of amyloid-β plaques and tau tangles. In this study, computer-aided drug design (CADD) and artificial intelligence (AI) approaches were used to identify potential inhibitors targeting key AD-related enzymes such as acetylcholinesterase (AChE) and β-secretase (BACE1). AI-based virtual screening was applied to select promising compounds with good drug-likeness properties. The selected compounds were further evaluated using molecular docking studies with AutoDock Vina to analyse their binding affinity and interactions with target proteins. In addition, AI-based ADMET tools were used to predict pharmacokinetic and toxicity profiles.To identify phytoconstituents from Indian medicinal plants and study their activity against Alzheimer's disease using in-silico methods. To select proteins responsible for Alzheimer's disease.To perform docking studies of selected phytoconstituents against AD Proteins .Phytoconstituents from selected Indian medicinal plants were collected from databases and literature. Drug-likeness screening was performed using in-silico tools. Potential Alzheimer's disease–related targets were identified and analysed through network pharmacology using databases such as Gene Cards, STRING, and Cyto scape. Key targets were selected for molecular docking studies. Docking was carried out using Auto Dock Vina to evaluate binding affinity and interactions between phytoconstituents and target proteins. The best-scoring compounds were further analysed for ADMET properties to assess their pharmacokinetic suitabilitySelected phytoconstituents showed good binding with key Alzheimer's disease targets and acceptable pharmacokinetic properties, indicating potential therapeutic value.AI in Alzheimer's disease research represents a promising and efficient pathway toward developing effective and safe therapeutic agents for one of the most challenging neurodegenerative disorders.

Abstract Id- P- 88

Polyherbal Gel for the Management of Mouth Ulcers

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Abstract

Mouth ulcers (aphthous stomatitis) are painful lesions of the oral mucosa that interfere with eating, drinking and oral hygiene. Conventional treatments such as chlorhexidine and povidone-iodine mouthwashes provide symptomatic relief but are often associated with adverse effects like irritation, burning sensation and tooth staining upon prolonged use. To overcome these limitations, the present study focuses on the development of a polyherbal gel using extracts of Aloe vera, Azadirachta indica (Neem), Glycyrrhiza glabra (Liquorice), Acacia catechu, and Ocimum sanctum (Tulsi). The present study aimed to formulate and evaluate a polyherbal gel as a safer and effective alternative for the treatment of mouth ulcers. A polyherbal gel was formulated using extracts of Aloe vera, Azadirachta indica (Neem), Glycyrrhiza glabra (Liquorice), Acacia catechu and Ocimum sanctum (Tulsi), selected for their anti-inflammatory, antimicrobial, antioxidant and wound-healing properties. The formulation was evaluated for physicochemical parameters including pH, spreadability, homogeneity and antimicrobial activity to assess its suitability for oral application. The formulated polyherbal gel exhibited acceptable pH, good spreadability, uniform homogeneity and significant antimicrobial activity, indicating its appropriateness for application on the oral mucosa. The study demonstrates that the polyherbal gel has promising potential as a safe and effective herbal alternative for the management of mouth ulcers, with reduced risk of adverse effects and improved patient compliance.

Keywords: Mouth ulcers, Polyherbal gel, Aphthous stomatitis, Herbal formulation, Oral drug delivery.

Abstract Id- P- 89

A Study on Flaxseed Mucilage as a Natural Gelling Agent in Herbal Hair Gel

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Abstract
Flaxseed (*Linum usitatissimum*), obtained from the dried ripe seeds of the family Linaceae, is widely cultivated across the world for its fibre and seed, with India being one of the major producers. Increasing consumer awareness regarding the harmful effects of synthetic cosmetic ingredients has led to a growing preference for natural and herbal personal care products. Flaxseed is rich in essential fatty acids, antioxidants, and mucilage, which possess moisturizing, anti-inflammatory, and nourishing properties beneficial for hair and scalp health. The present study was undertaken to formulate and evaluate a herbal hair gel using flaxseed extract as the active ingredient. Flaxseed mucilage was extracted by aqueous boiling method and incorporated into a gel base using Carbopol 934 along with suitable excipients. The prepared herbal hair gel formulations were evaluated for physicochemical parameters including appearance, homogeneity, pH, viscosity, spreadability, washability, and extrudability. The results indicated that the formulated hair gel exhibited good consistency, smooth texture, and acceptable pH suitable for scalp application. The presence of flaxseed mucilage contributed to effective moisture retention, improved softness, and conditioning of hair. The evaluation studies confirmed that the developed flaxseed-based herbal hair gel is stable, safe, and effective. The formulation provides natural nourishment, hydration, and protection to hair, making it a promising alternative to synthetic hair styling products.

Keywords: Flaxseed (*Linum usitatissimum*), Herbal hair gel, Natural cosmetics, Hair care formulation, Flaxseed mucilage, Carbopol gel.

Abstract Id- P- 90

Herbal Medicines for Menstrual Pain: A Natural and Safe Alternative to Painkillers

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Abstract
Menstrual pain (dysmenorrhea) is one of the most common health problems experienced by women and often affects their daily activities, academic performance, and quality of life. Conventional painkillers such as non-steroidal anti-inflammatory drugs are frequently used to manage menstrual pain, but prolonged or repeated use may lead to adverse effects including nausea, gastric irritation, dizziness, and hormonal imbalance. Due to these limitations, there is a growing interest in herbal medicines as safer and more natural alternatives. This study focuses on the evaluation of selected herbal remedies commonly used for the relief of menstrual pain and their potential effectiveness compared to synthetic analgesics. A review of traditional knowledge and available scientific literature was conducted to understand the pharmacological actions of herbs such as chamomile, ginger, and thyme. These herbs are known to possess antispasmodic, anti-inflammatory, and analgesic properties, primarily through the inhibition of prostaglandin synthesis and relaxation of uterine muscles. The findings suggest that chamomile helps reduce uterine cramps, ginger exhibits pain-relieving activity comparable to ibuprofen, and thyme significantly lowers the risk of primary dysmenorrhea. Herbal formulations in the form of teas, powders, and sachets were found to be convenient and effective for rapid pain relief with minimal side effects. Overall, the use of herbal medicines in menstrual pain management appears to be a safe, economical, and effective approach that can reduce dependence on synthetic painkillers and improve women's health and well-being.

Keywords: Menstrual pain, Herbal medicines, Dysmenorrhea, Natural analgesics.

Abstract Id- P- 91

In vitro Cytotoxicity Assessment of *Phyllodium pulchellum* using MTT Assay

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Abstract
The search for safer and effective anticancer agents from natural sources has gained significant attention in recent years. Medicinal plants are known to possess bioactive phytoconstituents with potential therapeutic The objective of the present study was to evaluate the *in vitro* cytotoxic activity of the ethanolic extract of *Phyllodium pulchellum* using the MTT assay. The plant material was procured and authenticated, followed by ethanolic extraction. Preliminary phytochemical screening was carried out to identify major secondary metabolites. The cytotoxic activity of the extract was assessed by the MTT assay against RPMI 2650 (nasal carcinoma) and MDA-MB-231 (breast cancer) cell lines. Cell viability was measured and IC_{50} values were calculated. Standard anticancer drugs were used for comparison.Phytochemical analysis revealed the presence of alkaloids, tannins, saponins, and flavonoids. The ethanolic extract exhibited dose-dependent cytotoxicity against both cell lines, with IC_{50} values of 21.83 µg/ml for RPMI 2650 and 21.76 µg/ml for MDA-MB-231 cells. The extract demonstrated significant cytotoxic activity.The study indicates that *Phyllodium pulchellum* possesses promising *in vitro* anticancer potential. The findings support further investigation to isolate active phytoconstituents and explore their mechanisms of action.

Keywords: *Phyllodium pulchellum*; MTT assay; *In vitro* cytotoxicity; Anticancer activity; Medicinal plants.

Abstract Id- P- 92

Computational Exploration of Natural Flavonoids for Polycystic Ovary Syndrome Management through Network Pharmacology and Molecular Dynamics

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Polycystic ovarian syndrome (PCOS) is a complex endocrine and metabolic disorder that is linked to hormonal imbalance, insulin resistance, and chronic inflammation. Flavonoids are natural polyphenolic compounds that have antioxidant, anti-inflammatory, and hormone regulating properties, making them promising candidates for the management of Polycystic ovary syndrome.This study aimed to identify potential flavonoid-based therapeutic candidates for PCOS using an integrated network pharmacology and molecular modeling approach.A flavonoid library obtained from the Selleckchem database was screened for pharmacokinetic properties and toxicity profiles. PCOS associated genes were retrieved from the GeneCards and OMIM databases, and the overlapping targets were imported into the STRING database to construct a protein–protein interaction (PPI) network. Network construction and visualization were carried out using Cytoscape (v3.10.3), while GO enrichment and path way analyses were performed using KEGG and Shiny GO (v0.85). Key target proteins were further subjected to molecular docking studies to evaluate binding affinities. Molecular dynamics simulations were conducted to assess protein–ligand stability, and Density Functional Theory (DFT) calculations using Gaussian 09 with the B3LYP/6-31G basis set were performed to determine the electronic properties of the lead compound. The results of network pharmacology analysis revealed that AKT1, EGFR, and ESR1 were the major therapeutic targets in PCOS. Among the screened flavonoids, glabridin and bavachin showed better binding affinity of more than -8.0 Kcal/mol towards AKT1 and ESR1 gene. The MD simulation result confirmed the stability of the glabridin-protein complex. The DFT result further confirmed the stability and optimal electronic properties of glabridin and bavachin. The current study indicates that selected flavonoids may act as multi-target lead compounds for PCOS management by modulating interconnected signalling pathways. The findings support their potential for further in vitro and in vivo investigations towards developing alternative PCOS therapies.
Keywords: Polycystic ovary syndrome, Flavonoids, Selleckchem, Network Pharmacology, Molecular dynamics.

Abstract Id- P- 93

Design and Evaluation of a Functional Herbal Tea Granules

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Abstract:
The objective of the present investigation was to design, formulate, and evaluate a herbal tea granule formulation intended to exhibit antidiabetic potential. The formulation comprised Hibiscus rosa-sinensis (Java), Zingiber officinale (Ginger), Elettaria cardamomum (Cardamom), and Stevia rebaudiana (Stevia), selected based on their traditional use and reported antidiabetic and antioxidant properties. It was hypothesized that combining these botanicals would result in a synergistic enhancement of biological activity. Nine different formulations were developed by varying the composition and physicochemical characteristics of the herbal ingredients. Hibiscus rosa-sinensis, a commonly used component in herbal beverages, has been extensively studied for its antidiabetic and antioxidant effects, particularly using flower petals and leaves in experimental models. The optimized formulation was subjected to systematic evaluation, including phytochemical analysis, in vitro antioxidant assessment, antidiabetic activity screening, and sensory evaluation encompassing taste, color, aroma, and overall acceptability. Physical quality attributes such as moisture content, bulk density, and particle size distribution were also determined to assess formulation stability and handling characteristics. The findings indicated that the optimized herbal tea granules demonstrated acceptable physicochemical properties, favorable organoleptic attributes, and promising antioxidant and antidiabetic potential. The developed formulation may therefore be considered a functional herbal beverage with potential application in supportive dietary management of diabetes.

Keyword: Herbal tea granule, Hibiscus, Antioxidant, Antidiabetic.

Abstract Id- P- 94

Green Nanotechnology Synthesis of Silver Nanoparticles Using Adhatoda vasica and Symplocos racemosa

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Abstract
This study explores a green nanotechnology approach for the synthesis and characterization of silver nanoparticles (AgNPs) using aqueous leaf extracts of Adhatoda vasica and Symplocos racemosa as reducing and stabilizing agents. The plant-mediated method offers an eco-friendly, cost-effective, and sustainable alternative to conventional chemical synthesis by eliminating toxic reagents and harsh processing conditions. The formation of AgNPs was confirmed through visual color change and further characterized using UV–Visible spectroscopy, Fourier transform infrared spectroscopy (FTIR), X-ray diffraction (XRD), and scanning/transmission electron microscopy (SEM/TEM) to determine their optical properties, functional groups, crystalline nature, morphology, and particle size distribution. The synthesized nanoparticles were predominantly spherical, well-dispersed, and exhibited nanoscale dimensions with good stability. The phytochemicals present in the extracts played a crucial role in the reduction and capping processes. Furthermore, the biosynthesized AgNPs demonstrated significant biological activities, highlighting their potential applications in biomedical, antimicrobial, and environmental fields. Overall, this work emphasizes the effectiveness of plant-based green nanotechnology as a sustainable strategy for the production of functional silver nanoparticles.

Keywords: Green nanotechnology, Silver nanoparticles (AgNPs), Plant-mediated synthesis, Adhatoda vasica, Symplocos racemosa, Biosynthesis, Characterization, Phytochemicals.

Abstract Id- P- 95

Evaluation of The Anti-Ulcer Potential of Saffron Threads (*Crocus sativus* L.)

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Abstract
Peptic ulcer disease (PUD) is a complex gastrointestinal condition where the protective lining of the stomach or duodenum becomes eroded, resulting in the exposure of the underlying sensitive tissue. Saffron, obtained from the dried stigmas of *Crocus sativus* L. (Iridaceae), is one of the world's most valued spices, cultivated in Iran, India (Kashmir), Spain, and Greece. Saffron extracts have been shown to increase prostaglandin E_2 synthesis, mucus production, and nitric oxide bioavailability, further contributing to gastroprotection.To assess the in – vitro anti-ulcer activity of saffron extract. Most studies have focused on purified Saffron constituents rather than the whole saffron threads. The need for safer, multi-targeted anti-ulcer agents, this study aims to investigate the anti-ulcer potential of saffron threads.Procurement and authentication of saffron threads. Preparation of aqueous / hydro – alcoholic extract through cold maceration. Fingerprinting through HPTLC Technique. Performing in – vitro anti – ulcer activity of saffron threads i.e H+ K+ ATPase inhibition assay, Acid neutralizing capacity (ANC) and In – vitro urease inhibitory assay.All the above studies shows the positive results of anti – ulcer activities of saffron.The study may establish that saffron threads possess significant gastroprotective potential, making them suitable candidates for further pharmacological and clinical evaluation.

Keywords –In – vitro, antiulcer potential, saffron threads extract.

Abstract Id- P- 96

Herbal Topical Approach for Skin Infections Using Cleome viscosa Linn Seed Extract

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Abstract: Background: The rise in antimicrobial resistance and skin infections has driven the search for safe, effective, and natural topical products. Cleome viscosa Linn, a medicinal plant used traditionally, is recognized for its antimicrobial and skin-protective properties. Objective: This study aimed to create an oil-in-water (o/w) herbal cream using Cleome viscosa Linn seed extract and to assess its physical and chemical properties as well as its antimicrobial effectiveness. Methods: The seeds of Cleome viscosa Linn were soaked to extract the oil, which was mixed into an o/w cream base. The cream was tested for appearance, pH, viscosity, spreadability, thickness, washability, irritancy, greasiness, and stability. We measured antimicrobial activity using the agar well diffusion method against Escherichia coli and Staphylococcus aureus, with ciprofloxacin as a comparison. Results: The cream showed good physical and chemical properties, such as a smooth texture, faint green color, pleasant scent, pH near neutral, good spreadability, and acceptable viscosity. The formulation was non-greasy, non-irritating, easily washable, and stable. We observed significant antimicrobial activity against both tested organisms, marked by noticeable zones of inhibition. Conclusion: This study shows that Cleome viscosa Linn seed extract can be used to create a stable, cosmetically acceptable herbal cream with strong antimicrobial properties. This suggests it could be a natural option for treating skin infections
.

Keywords: Cleome viscosa Linn; Herbal cream; Antimicrobial activity; Seed extract; Topical formulation

Abstract Id- P- 97

Isolation and characterization of Flavonoid Kaempferol-3-Sophoroside from Hydro- alcoholic extract of *Grewia Hirsuta vhl* for antibronchitis activity.

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ABSTRACT: Flavonoids, which are naturally occurring polyphenolic compounds, are said to have a wide range of beneficial health effects, mostly due to their antioxidant properties**.** Flavonoids are among the most researched biochemically active compounds today because they are known to be extremely effective external defense elements against oxidative stress at different phases. Since, based on the result so far, it was found that the hydroalcoholic extract of GH exhibits anti-bronchitis activity. we decided to process the hydroalcoholic extract further, for the purpose of isolation constituent flavonoid form it's. It was then separated using chromatographic techniques, such as thin layer chromatography (TLC) and column chromatography. The isolated substance was then subjected to antioxidant testing after being analyzed by UV-visible, FTIR, NMR (H1 & C13), and mass spectra (MS). From the qualitative and spectral analysis. The isolated component is known as Kaempferol-3-Sophoroside.It showed good free radical scavenging behavior. The in vivo results of Kaempferol-3-Sophoroside - evident through reduced CRP levels, normalization of hematological parameters, and improvement in cytokine profiles (e.g., IL-6)—confirmed their role in modulating immune responses and reducing airway inflammation. The BALF analyses provided strong evidence of lowered protein and albumin leakage, indicative of reduced vascular permeability and pulmonary inflammation. Histopathological examination of lung tissues revealed marked improvements in alveolar structure, reduced eosinophilic and lymphocytic infiltration, and minimized hemorrhagic damage in extract-treated groups. This was corroborated by cytological observations and BALF cell counts, which showed lower infiltration of inflammatory cells.

Keywords: *Grewia hirsutevhl*, isolation, Kaempferol-3-sophoroside, Anti-inflammatory activity, Anti-bronchitis, BALF, IL-6, Flavonoid.

Abstract Id- P- 98

Extraction, phytochemical analysis, in vitro and in silico evaluation of the antioxidant activity of Jatropha gassypiifolia linn.

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Abstract
Oxidative stress damages cells and contributes to other diseases, making natural antioxidants from plants a promising solution. Jatropha gossypiifolia Linn., commonly called bellyache bush, is a plant used in traditional medicine to treat inflammation, problems caused by oxidative stress and other . Although this plant has a history of medicinal use, detailed scientific studies on its antioxidant power through extraction, chemical analysis, and both in vitro and in silico. This study explores the antioxidant activity of its leaf extracts to confirm its health benefits. The goals were to extract chemicals from the leaves and analyse them. Plant material will be randomly collected from the local region and authenticated by a botanist at RTMNU was assigned authentication number 375, dried, powdered, and extracted with ethyl acetate via maceration method (yield 3.83%). Quality checks showed ash content: total 7.89%, water insoluble 4.7%, acid-insoluble 2.67%, sulphated 22.5%, and moisture loss 3%. Phytochemical screening and isolation of active compounds will be conducted using column chromatography, followed by structural characterization through FTIR, NMR, and mass spectroscopy. Test antioxidant strength using simple lab methods like DPPH assays, and use computer modeling to predict how these chemicals interact with antioxidant enzymes. Lab tests measured effectiveness against a standard (ascorbic acid), while computer docking with PyRx. The findings are expected to scientifically validate the traditional use of Jatropha gossypiifolia Linn. and identify promising natural compounds for the development of safe, effective, and cost-efficient antioxidant therapies suitable for various pharmaceutical formulations.
Keywords: Jatropha gossypiifolia, Antioxidant activity, phytochemical extraction, pharmacognostic standardization, Molecular docking.

Abstract Id- P- 99

Evaluation of Antioxidant Activity of *Terminalia bellirica* Linn.

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Abstrct
Oxidative stress plays a significant role in the development of various chronic disorders due to the excessive generation of free radicals, which leads to cellular and molecular damage. This has increased interest in identifying effective antioxidant agents from natural sources. *Terminalia bellirica*, a medicinal plant widely used in traditional systems of medicine, is known to contain diverse bioactive phytoconstituents with potential antioxidant properties. The present study was undertaken to evaluate the antioxidant activity of *Terminalia bellirica* extracts.The plant material was collected and authenticated, followed by pharmacognostic and physicochemical evaluation to ensure its quality, purity, and authenticity. Extraction of the plant material was carried out using the maceration method with suitable solvents. Preliminary phytochemical screening of the extracts revealed the presence of tannins, phenolic compounds, alkaloids, and saponins, which are well recognized for their antioxidant potential. The antioxidant activity of the extracts was assessed using free radical scavenging assays, particularly the 2,2-diphenyl-1-picrylhydrazyl (DPPH) method. Percentage inhibition of free radicals was calculated at different concentrations, and IC_{50} values were determined and compared with a standard antioxidant.The results demonstrated significant antioxidant activity of *Terminalia bellirica* extracts in a concentration-dependent manner. The strong free radical scavenging effect observed may be attributed to the high content of phenolic and tannin compounds present in the plant. The findings of this study suggest that *Terminalia bellirica* possesses considerable antioxidant potential and may serve as a valuable natural source of antioxidants for managing oxidative stress-related conditions.
Keywords: *Terminalia bellirica*; antioxidant activity; DPPH assay; phytochemicals; oxidative stress

Abstract Id- P- 100

Isolation and characterization of a bioactive compound from *Celosia argentea* Linn. roots by Spectroscopic method

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Abstract
The current study presents the isolation of bioactive compound from the roots of *Celosia argentea* Linn. (Family-Amaranthaceae). The main objective of this study is to isolate active bio-constituents from the roots of *Celosia argentea*. The ethanolic fraction of hydro-alcoholic extract of *Celosia argentea* Linn, was subjected to fractionation using column chromatography and eluted with mobile phase composed of Ethyl acetate**:** Ethanol (50:50). It was then characterized using various spectroscopic methods like UV, IR, NMR and MS. On the basis of chemical, spectral evidences and upon comparison with the literature data, the isolated compound was identified as gallic acid. The structure of the isolated compound was established on the basis of physical, chemical properties and spectroscopic evidences. Column chromatographic method shows better resolution for the gallic acid, present in ethanolic fraction of extract of *Celosia argentea* root. The study concluded the presence of gallic acid as an active bio constituent in the roots of *Celosia argentea* Linn. The present Column chromatographic method and spectroscopic methods may be used in due course of time for the isolation and characterization of novel components in many unexplored medicinal plants respectively.
Keyword: Isolation, *Celosia argentea* Linn., characterization, spectroscopic methods.

Abstract Id- P- 101

Modeling Psychosis Through Chronic Stress, Olfactory Bulbectomy, and Glucocorticoid Exposure in Rats: A Comparative Study

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ABSTRACT:
Animal models are essential for understanding the biological mechanisms of psychosis and stress-related mental disorders, as well as for testing new treatments before clinical trials. Aim and objective of the present study is to perform preclinical assessment and comparison of frequently used rat models, Chronic Unpredictable Mild Stress (CUMS), Olfactory Bulbectomy (OBX), and dexamethasone-induced glucocorticoid exposure which are commonly applied to mimic behavioral and neurological changes seen in psychotic and depressive conditions. The CUMS model involves long-term exposure to a variety of mild stressors and reliably results in a lack of pleasure, behavioral hopelessness, social isolation, cognitive difficulties, and overactivation of the hypothalamic pituitary adrenal (HPA) axis with impaired feedback control. OBX leads to increased locomotor activity, emotional instability, and memory issues, along with changes in monoamine neurotransmission and ongoing HPA axis dysfunction, making it a strong model for simulating psychosis-like behaviors. Long-term use of dexamethasone directly interferes with glucocorticoid signaling, causing behavioral hopelessness, anxiety-like responses, resistance to glucocorticoid receptors, and decreased neuroplasticity, which reflects the hormonal imbalances linked to stress-related mental illnesses. The study was performed by using two groups: Control and Induction group. The assessment was performed by using actophotometer, Y maze test, Open field test, Anhedonia and stereotypy as well as biochemical estimation (Dopamine and Catalase) and histopathological examination. OBX model shows the prominent results as compared to the two above said models. Conclusion: Hence, it is concluded that OBX model has been found to be better in inducing the psychosis like condition.

Keyboards: olfactory bulbectomy, psychosis, CUMS, hyperactivity, dopamine

Abstract Id- P- 102

Targeting Loop 2 and Loop 3 of the OmpK36 Porin: A Computational Strategy Against Antibiotic Resistance in Klebsiella pneumoniae

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ABSTRACT:
The rapid emergence of multidrug-resistant Klebsiella pneumoniae, a critical ESKAPE pathogen, poses a major global health challenge. Reduced outer-membrane permeability caused by structural alterations in porin proteins, particularly OmpK36, significantly limits antibiotic entry. Clinically relevant loop insertions in OmpK36, especially within loop 2 and loop 3 regions, constrict the porin channel and further enhance resistance. Targeting these regions using structure-based computational approaches represents a promising strategy to overcome porin-mediated antibiotic resistance. To identify and optimize small-molecule inhibitors targeting the loop 2 and loop 3 regions of the TD-inserted OmpK36 porin using computational drug design approaches. A large compound library from the SelleckChem database was filtered using physicochemical and ADMET criteria, followed by structure-based virtual screening against the TD-inserted OmpK36 porin (PDB ID: 7PZF) using blind docking in the SilicoXplore platform. Binding interactions were analyzed using molecular visualization tools, and selected lead molecules were further optimized through derivative design and re-docking. The study focused on Structure-based virtual screening of approx 15,000 drug-like molecules against the TD-inserted OmpK36 porin, resulting in the identification of a distinct subset of compounds with high binding affinity within the constricted porin channel. Detailed interaction analysis revealed that the top-ranked compounds consistently occupied the loop 2 and loop 3 regions, forming stable hydrogen bonds and hydrophobic interactions with key amino acid residues responsible for pore constriction and permeability regulation. These interactions suggest effective blockage of the antibiotic translocation pathway. Based on binding affinity scores and interaction patterns, four lead molecules were shortlisted as potential OmpK36 inhibitors. Subsequent ADMET evaluation indicated that these leads possess favorable pharmacokinetic properties and acceptable toxicity profiles. To further enhance inhibitory potential, structural derivatives of the lead compounds were designed and re-docked against both loop regions. The optimized derivatives demonstrated improved binding affinity and stronger interaction networks compared to their parent molecules, indicating enhanced stability within the porin channel and improved target engagement. This study presents a systematic computational framework combining ADMET guided filtering and blind docking using SilicoXplore to identify promising inhibitors targeting the TD-inserted OmpK36 porin, offering a rational strategy to combat antibiotic resistance in Klebsiella pneumoniae.

Abstract Id- P- 103

Exploring the Antiepileptic Effects of Karanjin Using Rodent Electroconvulsive Seizure Model

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ABTRACT:
Epilepsy, a chronic neurological disorder characterized by recurrent seizures, affects millions worldwide, with about 30% of patients resistant to existing antiepileptic drugs (AEDs). Karanjin, a bioactive furanoflavonoid from *Pongamia pinnata*, was investigated for its antiepileptic potential.Molecular docking using *AutoDock Vina* assessed karanjin's binding to key seizure-related target including (α-amino-3-hydroxy-5-methyl-4-isoxazolepropionicacidreceptor) AMPA receptor ((PDB ID: 8YFO)and serotonin transporter (PDB ID: 6DGV). In vivo efficacy was tested in Sprague-Dawley rats using the Maximal Electroshock Seizure (MES) model. Karanjin was administered intraperitoneally at 25 and 50 mg/kg, with lamotrigine (25 mg/kg) as the control. Biochemical assays evaluated antioxidant markers, and histopathological analysis assessed hippocampal neuroprotection.Karanjin showed strong binding affinities toward seizure-related targets in silico. In vivo, there was a dose-dependent reduction in tonic hind limb extension, seizure duration, and postictal recovery time; the 50 mg/kg dose showed efficacy comparable to lamotrigine. Biochemical assays demonstrated increased antioxidant enzymes (SOD, catalase, GSH) and reduced oxidative stress markers (MDA, NO). Histopathology confirmed preserved neuronal architecture and decreased cellular degeneration in high-dose treated groups.Karanjin exhibits anticonvulsant effects by modulating neurotransmission, reducing oxidative stress, and protecting neurons. These findings support its potential as a candidate for generalized tonic-clonic epilepsy treatment, warranting further pharmacokinetic and clinical evaluation.

Abstract Id- P- 104

Exploring the potential of Borneol in modulating Alzheimer's disease in rats.

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ABSTRACT:
Alzheimer's disease (AD), a chronic neurological illness that impairs cognitive abilities, is the most prevalent cause of progressive dementia in the senior population. The main pathogenic causes for AD are oxidative stress and brain acetylcholine depletion, albeit the exact reason is yet unknown. Drugs that are currently on the market address symptoms with recognized adverse effects.Scopolamine in a dose of 1 mg/kg was administered for seven days to induce AD. For seven days in a row, donepezil 3 mg/kg orally and borneol 1.5 and 2.5 mg/kg intranasal were administered, respectively. Y maze and MWM were used in behavioural experiments to evaluate memory and learning. Before beginning dosage, rats were trained on MWM from day 1 to day 4. The 5th day of the dosing, probe trial was done. 30minutes after last dosing Y maze was done. On the next day the rats were sacrificed the brain were isolated for biochemical estimation and histopathological examination.The Borneol administration increased the spontaneous alternation percentage in the Ymaze and escape latency in MWM in scopolamine-induced rats. Number of entries in Y maze and time spent in target quadrant in MWM also increased. It has been determined that administering Borneol improves memory by showing antioxidant qualities.The goal of the current study was to examine Borneol's anti-Alzheimer effect on scopolamine-induced behavioural and neurochemical alterations in rats. This is an attempt to find novel substances to combat memory impairment caused by Alzheimer's disease. This has the potential to become a new treatment for Alzheimer's disease related memory loss.

Keywords: Alzheimer's Disease, Borneol, Cognitive Impairment, Memory, Antioxidant, Neuroprotection, Rats.

Abstract Id- P- 105

Targeting Gut Dysbiosis-Driven Depression with Prebiotic Inulin

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ABSTRACT:
Depression is a multifactorial psychiatric disorder influenced by genetic, environmental, and neurobiological factors. Increasing evidence highlights the gut–brain axis as a critical mediator in the pathophysiology of depression. Antibiotic-induced gut dysbiosis has emerged as an important contributor to neurobehavioral disturbances. Cefaclor, a second-generation cephalosporin, has been shown to disrupt intestinal microbial balance and induce depressive like behaviors in rodent models. Prebiotics such as inulin, a non-digestible fructan, selectively stimulate beneficial gut bacteria and enhance short-chain fatty acid production, thereby supporting gut barrier integrity, neurotransmission, and anti-inflammatory pathways. The objective of this study is to evaluate the therapeutic potential of inulin in ameliorating cefaclor-induced gut dysbiosis and associated depression-like behaviors in mice. Mice will be divided into control, cefaclor-treated, and cefaclor plus inulin-treated groups. Depression-like behaviors will be assessed using the tail suspension test, splash test, and open field test. Gut microbiota composition will be evaluated through microbial assessment, while SCFA levels will be quantified to assess microbial metabolic activity. Neurochemical and inflammatory markers, including brain-derived neurotrophic factor, serotonin, and cytokines, will be measured using standard molecular assays. Inulin supplementation is expected to restore gut microbial diversity disrupted by cefaclor treatment. Enhanced SCFA production, normalization of serotonin and BDNF levels, and reduction in pro-inflammatory cytokines are anticipated. Behavioral assessments are expected to demonstrate significant improvement, with reduced depressive-like behaviors, improved grooming activity, and enhanced locomotor performance in the inulin-treated group. The study is expected to demonstrate that inulin effectively mitigates cefaclor-induced dysbiosis and its associated neurobehavioral consequences. These findings highlight the translational potential of dietary prebiotics as a safe and promising strategy for managing depression linked to antibiotic-induced microbial imbalance, positioning inulin as a valuable adjunct in microbiota–gut–brain axis–based therapeutic approaches.

Keywords: Depression; Gut–brain axis; Cefaclor; Dysbiosis; Prebiotics; Inulin; Short-chain fatty acids; Microbiota

Abstract Id- P- 106

Exploration of Esculin as a Potential Therapeutic for Alzheimer's Disease through the Inhibition of Acetylcholinesterase

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ABSTRACT:
Alzheimer's disease (AD) is a progressive neurodegenerative disorder characterized by gradual memory loss and cognitive decline. Current cholinesterase inhibitors provide minimal efficacy and cause adverse effects. This study aimed to investigate potential of Esculin (ES) on AD induced mice focusing on its efficacy against acetylcholinesterase (AChE). Neuroprotective effects of ES were evaluated in scopolamine-induced AD model using Swiss albino mice through behavioural and biochemical tests. ES significantly restored scopolamine-induced cognitive deficits in all behavioral parameters compared to standard Donepezil. ES in dose-dependent manner significantly restored locomotor activity, improved spatial memory, enhanced recognition performance in scopolamine-induced mice, grooming and rearing behaviors. Biochemically, ES reduced hippocampal AChE and TNF-α levels, increased antioxidant enzymes (catalase, SOD, GSH), and decreased lipid peroxidation. These findings establish preclinical evidence that ES exhibits potent cholinesterase inhibition, anti-inflammatory, and antioxidant properties, demonstrating neuroprotection through multiple pathways. ES represents a promising multi-target therapeutic candidate for advancing AD management.

Keywords: Alzheimer’s disease, Esculin, Acetylcholinesterase inhibitor, Scopalamine induced AD

Abstract Id- P- 107

Selective Inhibition of HDAC6 Modulates Microglial Polarization and Attenuates Neuroinflammation in an LPS-Induced Neurodegenerative Mouse Model.

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ABSTRACT:
Neuroinflammation, which is primarily brought on by the ongoing overactivation of microglia, is a key feature in the pathogenesis of many neurodegenerative diseases. Due to their functional plasticity, these immune cells that dwell in the central nervous system can alternate between a pro-inflammatory (M1) phenotype that exacerbates neuronal damage and an anti-inflammatory (M2) phenotype that promotes tissue repair and neuroprotection. This study aimed to evaluate the degree to which particular inhibitors of Histone Deacetylase 6 (HDAC6) could modify this microglial polarisation. To track phenotypic changes, BV-2 microglial cells exposed with lipopolysaccharide (LPS) to simulate an inflammatory milieu were administered selective inhibitors, such as tubastatin A. The subsequent Western Blot and PCR analysis of pro-inflammatory cytokines and particular M1/M2 markers showed that HDAC6 inhibition greatly reduced the production of reactive oxygen species (ROS) and the expression of M1 indicators. M2-associated markers showed a strong increase at the same time, suggesting a successful shift to a neuroprotective state. These findings imply that specific HDAC6 inhibitors serve as essential "molecular switches" that can alter the brain's immunological response. These inhibitors provide a unique and highly targeted therapeutic approach for the treatment of neurodegenerative illnesses by reducing neuroinflammation and promoting a reparative cellular milieu, ultimately offering a method to maintain neuronal integrity and halt the course of the disease.

Keywords: Neuroinflammation, Microglial Polarization, HDAC6 Inhibitors, M1/M2 Phenotype

Abstract Id- P- 108

Pharmacogenetic Evaluation of *CYP2C19* Genetic Polymorphisms and their Impact on Clopidogrel Antiplatelet Responsiveness in Patients with Ischemic Heart Disease

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ABSTRACT:
The genetic diversity of the CYP2C19 enzyme, which is in charge of converting the prodrug into its active metabolite, severely impairs the clinical efficacy of clopidogrel, which is nonetheless a mainstay of dual antiplatelet therapy for patients with cardiovascular disease. With an emphasis on the frequency of loss-of-function (LOF) alleles, this study examined the effects of CYP2C19 genetic variants on antiplatelet responsiveness within a particular regional population. This was accomplished by employing Light Transmittance Aggregometry (LTA) to quantify platelet reactivity and Polymerase Chain Reaction-Restriction Fragment Length Polymorphism (PCR-RFLP) for genotyping a cohort of ischaemic heart disease patients on a standardised clopidogrel regimen. The results of this study showed that high on-treatment platelet reactivity (HTPR) was significantly connected with at least one LOF allele, such as 2 or 3, which was present in about 47.5% of the individuals. In particular, compared to Normal Metabolisers, those categorised as Poor Metabolisers (PM) and Intermediate Metabolisers (IM) had a three-fold higher risk of clopidogrel resistance, with residual platelet aggregation levels surpassing 70%. On the other hand, carriers of the gain-of-function 17 allele showed reduced residual reactivity and an ultrarapid metaboliser phenotype. A substantial p-value ($p < 0.003$) was validated by statistical analysis, indicating that treatment failure and subsequent major adverse cardiovascular events (MACE), like stent thrombosis, are mostly determined by genetic status. The study's finding emphasises how important pharmacogenetic screening is for identifying non-responders in clinical practice. By switching patients with LOF alleles to alternative treatments like ticagrelor or prasugrel, a personalised medicine strategy can significantly improve therapeutic outcomes and lower the frequency of recurrent ischaemic episodes in genetically predisposed populations.
Keywords: CYP2C19 Polymorphism, Clopidogrel Resistance, Pharmacogenetics, Platelet Aggregation.

Abstract Id- P- 109

Study on the Detection, Characterization, and Assessment of Polymorphic Forms in Antidiabetic Drugs

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ABSTRACT:
Polymorphism is the ability of a solid drug substance to exist in more than one crystalline form and is a key factor in pharmaceutical development, as different polymorphs may show variations in solubility, dissolution rate, stability, and bioavailability. These variations can directly affect the quality and performance of drug products. In antidiabetic therapy, where long-term and consistent drug action is required, understanding polymorphism is especially important. The present study focuses on the identification, characterization, and evaluation of polymorphs in selected antidiabetic drugs, namely metformin hydrochloride and dapagliflozin. Different polymorphic forms are prepared using suitable crystallization and recrystallization methods. Solid-state characterization is carried out using analytical techniques such as powder X-ray diffraction, differential scanning calorimetry, Fourier-transform infrared spectroscopy, and thermogravimetric analysis. The polymorphic nature of the drugs under study is confirmed by preliminary observations that show solid-state variations. In order to choose stable and pharmaceutically acceptable forms appropriate for formulation development, this study emphasises the significance of polymorphic evaluation.

Keywords: Polymorphism, antidiabetic drugs, metformin, dapagliflozin, solid-state characterization, stability, bioavailability, pharmaceutical formulation

Abstract Id- P- 110

Design, Synthesis and Anticancer Activity of Isoxazole containing 1,2,4 Triazine and its Derivatives against MCF-7 cell Line

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ABSTRACT:
This research centres on the design, synthesis, and anticancer activity of derivatives of 1,2,4 triazine that contain isoxazole. The field of pharmaceutical chemistry combines essential concepts Isoxazole containing 1,2,4-triazines possess various biological activities, such as anticancer, antioxidant, and anti-inflammatory effects. Their capacity to modulate kinases, inhibit lipid and protein kinases, and interact with molecular targets underscores their importance in the development of anticancer drugs. In this investigation, a collection of N- [5-(substituted phenyl) 1,2-oxazole-3-yl]-5,6-diphenyl-1,2,4triazine-3-amine derivatives were devised using computational methods and assessed through SwissADME, molecular docking analyses. In-silico findings revealed that all designed compounds were adhered to Lipinski's rule of five, while docking studies against anticancer indicated strong binding affinities, particularly for proteins 3HB5 and 8DUG. The synthesized derivatives underwent further characterization through physicochemical and spectroscopic techniques. The anticancer potential of selected compounds (N-[5-(4-Methoxylphenyl)-1,2-oxazole-3-yl]-5,6-diphenyl-1,2,4-triazine-3-amine and 2-{3 [(5,6Diphenyl-1,2,4-triazine-3-yl)amino]-1,2-oxazole-5-yl}phenol) was investigated against the MCF-7 breast cancer cell line using the MTT assay, indicating significant cytotoxic effects. In summary, the results validate that the synthetic approach taken is effective for developing isoxazole-linked 1,2,4-triazine derivatives with encouraging anticancer properties, emphasizing their potential as lead candidates for future drug development.

Keywords: Isoxazole derivatives, 1,2,4-Triazine, Heterocyclic compounds, docking, SwissADME, Anticancer activity.

Abstract Id- P- 111

Brain-Targeted Delivery of an Antidepressant via Nanosized Lipid-Based Intranasal In-Situ Gel: Optimization and In-Vitro, In-Vivo Evaluation

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ABSTRACT:
Intranasal drug delivery is a great area of interest because olfactory region of the nasal mucosa has direct connection between nose and brain. Nasally applied drug directly reaches to the brain either by direct transport from olfactory region or from blood. Present research work is carried out with aim to develop Sertraline nanoparticles loaded *In-situ* nasal gel through brain targeted drug delivery system. The solid lipid nanoparticles were prepared by hot high shear homogenization coupled with ultrasonication method using 3^2 full factorial designs. For all formulation batches (F1-F9); particle size was found to be in the range of (57- 217nm) with Polydispersity index (0.115-0.713), zeta potential (-14.9 to -23.4 mV) and %entrapment efficiency (75.61-89.93%). A Sertraline nanoparticle loaded in nasal in-situ gel was prepared by cold method. Our findings strongly suggested that administration of sertraline nanoparticles loaded nasal *in-situ* gel contributes solubility enhancement and avoidance of hepatic first-pass metabolism. Thus, NPs further enhanced the delivery of sertraline to brain by reducing particle size below 200 nm which eventually enhances the diffusion and permeation of sertraline through blood brain barrier. This study evidently recognized that intranasal sertraline nanoparticles loaded in-situ gel is suitable for the treatment of depression
.

Keywords: Depression, Sertraline hydrochloride, Nanoparticles, Nose-to-brain targeting, Intranasal drug delivery, Nasal *in-situ* gel.

Abstract Id- P- 112

Modulation of oxidative stress and inflammatory marker in ulcerative colitis pathophysiology

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ABSTRACT:
The present study was designed to explore the pathophysiological changes occurring in ulcerative colitis (UC). Colitis was induced by the intrarectal administration of 150 µL of 5% acetic acid on the 8th day. The acetic acid–induced UC model is known to produce severe inflammation in colonic tissues, primarily affecting the innermost mucosal lining of the colon and rectum, thereby mimicking ulcerative colitis in mice.Inflamed colonic tissues were evaluated for inflammatory mediators, including myeloperoxidase (MPO), tumor necrosis factor-α (TNF-α), and interleukin-6 (IL-6), as well as oxidative stress markers such as reduced glutathione (GSH), malondialdehyde (MDA), and catalase (CAT). Liver function parameters (SGOT and SGPT), body-weight loss, and stool consistency were also assessed in colitic mice. In addition, colon length and spleen weight were measured as indicators of disease severity.Disease activity index (DAI) was scored by observing body weight changes, stool consistency and gross bleeding in colon. Blood in stool as well as stool consistency was observed for 11 days and scores were generated for each group. Intra-rectal administration of acetic acid showed the macroscopic histological changes as generally evident in UC Overall, the acetic acid–induced UC model proved to be a reproducible and reliable experimental model for evaluating the pathophysiology of ulcerative colitis.

Key words: Ulcerative colitis, TNF alpha, IL-6

Abstract Id- P- 113

Advanced Bioinspired Stimuli-Adaptive Nanoplatform for Prolonged Ocular Therapy in Glaucoma

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ABSTRACT:
Pilocarpine hydrochloride–loaded nanosuspensions were prepared using low-molecular-weight (LMW) chitosan and sodium tripolyphosphate (STPP) to enhance the solubility and intraocular bioavailability of the drug. The nanosuspensions were successfully formulated by the ionotropic gelation method, producing nanoparticles in the size range of 84.75–235.09 nm. The optimized formulation (F1) exhibited a polydispersity index of 0.381 and a zeta potential of −21.5 ± 1 mV, indicating good stability. SEM analysis confirmed spherical nanoparticles with a smooth surface and uniform drug distribution within the polymer matrix. The optimized batch showed a high cumulative drug release of 93.34 ± 0.86% and followed Higuchi and first-order kinetic models, providing sustained drug release for up to 8 hours. The formulation was isotonic, reducing ocular irritation and improving patient compliance. Stability studies revealed no significant changes in particle size or zeta potential. Overall, LMW chitosan/STPP-based nanosuspensions show strong potential for effective glaucoma treatment.

Keywords: Nanosuspension, Pilocarpine hydrochloride, Chitosan/STPP, Ionotropic gelation method, Transcorneal permeation**.**

Abstract Id- P- 114

In silico Drug-Likeness and Toxicity Profiling of a Tolbutamide Derivative using ADMET Prediction Tools

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ABSTRACT:
To evaluate safety, potential for abuse, and health hazards, forensic evaluation of pharmaceutical substances necessitates a thorough grasp of their pharmacokinetic behavior and toxicity profile. To assess a novel tolbutamide derivative's drug-likeness and forensic importance, the study used oral toxicity prediction and *in silico* ADMET. The compound's good lipophilicity, moderate water solubility, and appropriate molecular weight (412.44 g/mol) all supported its feasibility for oral administration. Moderate intestinal absorption, low blood–brain barrier permeability, and non-substrate behavior toward main cytochrome P450 enzymes were anticipated by pharmacokinetic analysis, indicating fewer metabolic interactions. The chemical was classified under toxicity class 6, signifying minimal acute oral toxicity, based on the high projected LD_{50} value of 7900 mg/kg. Furthermore, the molecule demonstrated a positive safety profile by exhibiting no skin sensitization, no hERG inhibition, and no AMES toxicity. According to these results, the tolbutamide derivative has a low expected toxicological risk and encouraging pharmacokinetic properties. The study emphasizes the value of computational toxicology in forensic science for regulatory screening of pharmaceutical derivatives, risk assessment, and early medication safety assessment.

Keywords: Tolbutamide derivative, ADMET, Toxicity profile, Pharmacokinetic, Lipophilicity, *In silico studies*

Abstract Id- P- 115

Role of LHRH Antagonist In Reversing Anti-Anxiety Like And Anti-Depressant Action of Quercetin

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Abstract

Flavonoids, primarily rutin, kaempferol, and quercetin, are known to be present in spices that contain oregano, onion, and lavender. Quercetin is a bioflavonoid that has been shown to have a range of behavioural effects, including antidepressant and anxiolytic effects. Recent research has shown quercetin reduces the behavioural and metabolic impacts of stress. Additionally, it reduces the brain's expression of CRF. We postulated that quercetin may engage LHRH in its anxiolytic and antidepressant-like effects because CRF is frequently linked to elevated anxiety and sadness. We examined the effects of quercetin on LHRH or LHRH antagonist-induced alterations in open arm entry in the elevated plus maze model test and immobility time in the forced swim test in order to bolster this theory. According to the results, quercetin (20–40 mg/kg, p.o.) or an LHRH antagonist (100 µg/kg, s.c.) increased open arm entries and decreased immobility duration in a dose-dependent manner, suggesting anxiolytic and antidepressant-like effects. These effects were equivalent to those of the conventional antidepressants (fluoxetine, 10–20 mg/kg, i.p.) and anxiolytics (diazepam, 1-2 mg/kg, i.p.). Quercetin had the exact opposite impact on these parameters as did the administration of an LHRH antagonist (50–100 µg/kg, s.c.). These findings point to quercetin's reciprocal function in the anxiogenic and depressant-like effects of LHRH.

Keywords: anxiety, depression, quercetin, CRF, immobility.

Abstract Id- P- 116

Computational identification of natural androgen receptor modulators from Carica papaya and Triticum aestivum for polycystic ovary syndrome

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Abstract

Polycystic Ovarian Syndrome (PCOS) is a prevalent endocrine disorder characterized byhyperandrogenism, anovulation, and cystic ovarian morphology. Current pharmacologicaltherapies often present limitations or adverse effects, prompting interest in phytotherapeuticagents with potential anti-androgenic activity. *Carica papaya* and *Triticum aestivum* aretraditionally used plants known for their reproductive health benefits, yet their anti-androgenicpotential in PCOS remains insufficiently explored.To investigate the anti-androgenic effects of *Carica papaya* and *Triticum aestivum* in atestosterone-induced PCOS rat model, supported by phytochemical screening and moleculardocking analysis.Phytochemical constituents of *Carica papaya* and *Triticum aestivum* were identified throughevaluate their binding affinity toward androgen-related targets. A total of 27 mature femalealbino Wistar rats (185–200 g) were divided into five groups: control (olive oil), negative control(testosterone-induced), positive control (Clomiphene Citrate), and two treatment groups (minorand major). PCOS was induced via daily subcutaneous injections of testosterone propionate forthree weeks, followed by a four-week treatment period. Histological and reproductive parameterswere assessed post-treatment.The major treatment group receiving 0.08 g *Carica papaya* (in 1 mL WFI) followed by 0.03 gTriticum aestivum (in 1 mL WFI) demonstrated marked improvement in ovarian follicular development. Restoration of primary, secondary, and antral follicles indicated significant reversal of hyperandrogenic damage. The combination of *Carica papaya* and *Triticum aestivum* exhibits promising anti-androgenic and estrogen-modulating effects. This phytotherapeutic intervention significantly improves reproductive parameters in PCOS rats, supporting its potential as a safer alternative therapeutic strategy.

Keywords: Anti-androgen, *Carica papaya, Triticum aestivum,* Clomiphene Citrate, Docking

Abstract Id- P- 117

Design, Formulation, and Anticancer Evaluation of Metal–Curcumin Complex-Loaded SNEDDS

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Abstract
Curcumin, a bioactive compound from *Curcuma longa*, exhibits potent antioxidantand anticancer properties but suffers from poor aqueous solubility, rapid degradation, and low bioavailability. Metal complexation and advanced lipid-based delivery systems have emerged as promising strategies to enhance its therapeutic performance.To synthesise and characterise curcumin–metal complexes, identify the mostsuitable complex for formulation, and develop a Self-Nanoemulsifying Drug Delivery System(SNEDDS) and solid-SNEDDS (S-SNEDDS) to improve solubility, permeability, and anticanceractivity.Curcumin were complexed with selected metal ions (Ca^{2} , Cu^{2} , Zn^{2} , Mg^{2} , Na)and was extracted from turmeric. Complexes were characterised using UV–Vis, FT-IR, TLC, andLC–MS. Solubility and assay results guided the selection of the optimal complex forformulation. SNEDDS was developed using Arachis oil, Cremophor RH-40, PEG 400, andethanol based on solubility studies and pseudoternary phase diagrams. Solidification wasperformed using adsorbent carriers. S-SNEDDS was evaluated for droplet size, zeta potential,redispersibility, in vitro solubility, permeability, and MCF-7 cytotoxicity via MTT assay. Calcium–curcumin showed the highest solubility and was selected for formulation. The optimised SNEDDS produced nano-sized droplets and enhanced dissolution. S-SNEDDS significantly increased permeability across membranes compared to pure curcumin. MTT studies demonstrated higher cytotoxicity and improved cellular uptake for Ca-curcumin and Cucurcumincomplexes.The combination of metal complexation with SNEDDS technology significantlyenhances curcumin's solubility, permeability, and anticancer activity, presenting a promisingapproach for developing advanced natural product-based therapeutics.
Keywords: Curcumin–metal complexes; SNEDDS; Solubility enhancement; Calcium–curcumin; Cytotoxicity.

Abstract Id- P- 118

Caffeinyl Schiff Base Pharmacological Study

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Abstract-
Living things produce chemical compounds known as natural products (NPs), which are among the most significant sources of physiologically active chemicals for drug discovery. The amazing structural and chemical diversity that NPs have accumulated over millions of years of evolution has led to a wide range of pharmacological actions. Long before modern pharmacology was developed, natural ingredients were widely employed in traditional medicine, especially in herbal medicines. Many important pharmacological families used in modern medicine, such as cardiovascular medications, antifungals, antibiotics, and anticancer treatments, are either directly or indirectly derived from natural compounds. Coffee beans, tea leaves, and other plant sources include caffeine, a well-known natural substance that is a member of the xanthine alkaloid family. In addition to being used therapeutically to treat headaches and migraines, it is frequently utilized as a central nervous system stimulant to improve mental alertness. Without structural changes, caffeine can be produced chemically or derived from natural sources. Schiff bases are a significant class of chemicals with a variety of biological and industrial uses. They are created when primary amines condense with carbonyl compounds. They are useful in pharmaceutical and medical sciences because of their antibacterial, anti-inflammatory, antioxidant, and anticancer properties.
Key words- Natural products, Cardiovascular medications, Caffeine, Xanthine alkaloid.

Abstract Id- P- 119

FLUOXETINE-BASED MULTI-TARGET DIRECTED LIGANDS FOR ALZHEIMER'S DISEASE: DESIGN AND EVALUATION

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Abstarct
To design, synthesize, and evaluate novel fluoxetine-based conjugates as multi-target directed ligands for the treatment of Alzheimer's disease.To design fluoxetine-based hybrid conjugates, evaluate their interactions with Alzheimer's disease- related targets through molecular docking, synthesize promising candidates, and assess their anti-Alzheimer potential through suitable nano-formulation strategies. Fluoxetine-isatin Schiff base conjugates were designed and assessed for interactions with Alzheimer's disease–related targets using standard molecular docking protocols. Promising candidates were synthesized via Schiff base formation and characterized using spectroscopic techniques.Molecular docking revealed that fluoxetine-isatin Schiff base conjugates showed improved binding affinity toward Alzheimer's disease-related targets compared to fluoxetine, owing to additional hydrogen bonding and π–π interactions from the isatin moiety. Selected conjugates were successfu20lly synthesized and structurally confirmed, supporting the hybrid strategy for multi-target Alzheimer's therapy.Fluoxetine-isatin Schiff base hybrid conjugates exhibited improved target interactions and were successfully synthesized, supporting their potential as multi-target candidates for Alzheimer's disease therapy.
Keywords: Alzheimer's Disease, Fluoxetine, Acetylcholinesterase, Molecular docking, β-Amyloid.

Abstract Id- P- 120

Enhancing the Therapeutic Efficacy of Ilaprazole: A Proton Pump Inhibitor as Ora l Multiple Emulsion Formulation Approach

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Abstract:
This project explores the formulation and evaluation of Ilaprazole multiple emulsions as a drug delivery system (DDS) for enhanced therapeutic outcomes. Multiple emulsions, complex systems containing at least two immiscible liquids, offer potential for controlled drug release, which is crucial for drugs like Ilaprazole, a proton pump inhibitor. The study aimed to develop a stable multiple emulsion that could enhance bioavailability, prolong drug release, and improve patient compliance, addressing limitations of conventional Ilaprazole formulations. The research involved a two-step emulsification process to prepare water-in-oil-in-water (W/O/W) multiple emulsions. Seven formulations (F1-F7) were meticulously prepared, varying the ratios of surfactants from the Span (40, 60, 80) and Tween (20, 40, 60) series to optimize stability and release kinetics. Key parameters evaluated included organoleptic properties, physical stability, and in vitro drug release profiles, quantified using a Franz diffusion cell with spectrophotometric analysis at 305 nm (λmax for Ilaprazole). Formulation F7, comprising Span40 and Tween60, demonstrated a statistically significant ($p<0.05$) slower and more sustained drug release profile compared to formulations F1-F6. After 3 hours, F7 released only 14.24% of the drug, a stark contrast to the other formulations that exhibited release rates ranging from 47.16% to 142.26%. Furthermore, F7 maintained a consistent release rate, achieving only 14% drug release within the observed period. This controlled release behavior led to the selection of F7 for further optimization. The findings suggest that multiple emulsions, particularly formulation F7, hold promise for the controlled delivery of Ilaprazole, potentially reducing dosing frequency, minimizing side effects, and enhancing patient compliance. Future in vivo studies are warranted to validate these in vitro results and fully elucidate the translational potential of Ilaprazole multiple emulsions.

Keypoints: - Emulsions, Ilaprazole, Sustained, Bioavailability, Stable, Surfactants

Abstract Id- P- 121

Review on Biological Orchestration of the Estrous Cycle

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Abstract
The estrous cycle is a fundamental reproductive process in female mammals, governed by a finely tuned interplay of hormonal, neural, and physiological mechanisms. This cyclical phenomenon ensures optimal timing for ovulation and fertility, thereby playing a critical role in species survival. Understanding the biological orchestration of the estrous cycle provides insight into reproductive health, fertility regulation, and endocrine function.This abstract is based on a comprehensive review of existing literature on mammalian reproductive endocrinology. Peer-reviewed articles, textbooks, and experimental studies were analyzed to examine hormonal regulation, ovarian dynamics, and neuroendocrine feedback mechanisms involved in the estrous cycle. Emphasis was placed on the roles of the hypothalamus, pituitary gland, ovaries, and associated hormones such as gonadotropin-releasing hormone (GnRH), luteinizing hormone (LH), follicle-stimulating hormone (FSH), estrogen, and progesterone. The findings highlight that the estrous cycle is orchestrated through a coordinated feedback system involving the hypothalamic–pituitary–ovarian axis. Pulsatile secretion of GnRH stimulates the release of FSH and LH, which regulate follicular development and ovulation. Estrogen and progesterone exert both positive and negative feedback effects, ensuring precise timing of each phase—proestrus, estrus, metestrus, and diestrus. Disruptions in this hormonal balance can lead to irregular cycles and reduced fertility. The biological orchestration of the estrous cycle represents a complex and highly regulated process essential for reproductive efficiency in mammals. A thorough understanding of its mechanisms not only advances fundamental biological knowledge but also has practical implications for veterinary medicine, animal breeding, and reproductive health management. Continued research in this area may contribute to improved strategies for addressing reproductive disorders.
Key words: Estrous cycle; Reproductive endocrinology, Ovarian follicular dynamics, Hypothalamic–pituitary–ovarian axis.

Abstract Id- P- 122

The Evolving Landscape of Ovarian Cancer Pharmacotherapy: A Systematic Review of Targeted Molecular Strategies and Diagnostic Innovations

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Abstract
Ovarian cancer remains the most lethal gynecological malignancy, often termed the "silent killer" due to its asymptomatic progression and late-stage diagnosis. While the traditional "gold standard" of cytoreductive surgery and platinum-based chemotherapy initially shows high response rates, approximately 70% of patients experience recurrence and subsequent chemoresistance. This review explores the paradigm shift from broad-spectrum cytotoxic agents to precision medicine, specifically focusing on Poly (ADP-ribose) polymerase (PARP) inhibitors, Antibody-Drug Conjugates (ADCs), and novel multi-biomarker diagnostic tools like the Vienna Index.A comprehensive literature search was conducted using databases including PubMed, JAMA Oncology, and Google Scholar for studies published between 2024 and early 2026. Keywords utilized included "High-Grade Serous Ovarian Carcinoma (HGSOC)," "PARP inhibitor resistance," "Antibody-Drug Conjugates," and "Liquid Biopsy." Inclusion criteria focused on Phase III clinical trials, systematic reviews, and meta-analyses investigating targeted therapeutic outcomes and non-invasive diagnostic advancements. Data were synthesized to compare the efficacy of traditional versus molecularly targeted interventions.The review identifies three critical advancements:PARP inhibitors (e.g., Olaparib) have demonstrated a significant increase in progression-free survival (PFS) in BRCA-mutated patients, effectively delaying recurrence.The emergence of Mirvetuximab Soravtansine (an ADC targeting Folate Receptor alpha) shows a 35% reduction in the risk of disease progression or death compared to standard chemotherapy in FRα-positive platinum-resistant cases.Newer diagnostic frameworks, particularly those integrating CA-125 with Human Epididymis Protein 4 (HE4) and AI-driven algorithms (Vienna Index), reached a diagnostic accuracy (AUC) of 0.975, significantly outperforming traditional CA-125 monitoring alone.The management of ovarian cancer is transitioning into a highly personalized era. Integrating molecular profiling into standard care allows for "tailored" pharmacology that overcomes the limitations of platinum resistance. Future pharmacological research must prioritize the development of dual-blockade immunotherapies and more accessible, multi-modal screening tools to improve the five-year survival rate, which currently remains stagnant for advanced-stage cases.
Keywords: Make sure to list these at the bottom of your abstract: Ovarian Cancer, Pharmacology, PARP Inhibitors, Precision Medicine, Biomarkers.

Abstract Id- P- 123

In Silico Investigation of Sulphonamide-Chalcone Derivatives for Antidiabetic Activity

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Abstract:
Diabetes mellitus is a rapidly growing metabolic disorder associated with severe micro- and macro-vascular complications. Sulphonamide and chalcone scaffolds possess well-reported antidiabetic and enzyme-inhibitory properties, and hybridization of these pharmacophores may generate potent multitarget agents.The present study aimed to design and evaluate a series of sulphonamide–chalcone derivatives through in silico approaches to identify promising candidates for antidiabetic activity.A library of novel derivatives was sketched using ChemDraw and optimized by energy minimization. Drug-likeness and ADMET properties were predicted using SwissADME and pkCSM platforms. Molecular docking was performed against key diabetic targets—α-glucosidase, α-amylase, and PPAR-γ—using AutoDock Vina. Binding affinity, interaction patterns, and stability of ligand–protein complexes were analyzed, and the best hits were further validated by molecular dynamics simulations and MM-GBSA calculations.Most derivatives satisfied Lipinski's criteria and exhibited favorable pharmacokinetic profiles with low predicted toxicity. Docking studies revealed that several compounds showed higher binding affinity than standard drugs such as acarbose and pioglitazone. Key interactions included hydrogen bonding with catalytic residues, π–π stacking, and sulphonamide-mediated electrostatic contacts, suggesting strong enzyme inhibition potential. Three lead molecules demonstrated stable trajectories during simulations with consistent RMSD and binding energy values.The computational investigation indicates that sulphonamide–chalcone hybrids can act as promising antidiabetic agents through effective inhibition of carbohydrate-metabolizing enzymes and modulation of PPAR-γ. The identified lead compounds warrant further synthesis and in-vitro evaluation to confirm their therapeutic potential.

Keywords: Sulphonamide-chalcone, Antidiabetic, Molecular docking, ADMET, *In silico*.

Abstract Id- P- 124

Green Synthesis of Curcumin Quantum Dots and Evaluation of Their Antimicrobial Efficacy

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Abstract:
Curcumin is a natural compound found in Curcuma longa that has strong antimicrobial properties. However, its use in clinical and pharmaceutical settings is limited because it doesn't dissolve well in water, has low bioavailability, and degrades quickly. In this study, we developed curcumin quantum dots (Cur-QDs) to address these challenges and improve antimicrobial effectiveness. We created Cur-QDs using a straightforward, eco-friendly method that involved carefully controlled alkaline hydrolysis of curcumin, followed by thermal treatment and dialysis for purification. Spectroscopic and microscopic analyses confirmed the creation of nanosized quantum dots, showing consistent particle size, and better water dispersibility. We tested the antimicrobial effectiveness of Cur-QDs against selected Gram-positive and Gram-negative bacteria using standard laboratory methods. The results showed that Cur-QDs had much stronger antimicrobial activity compared to regular curcumin, as indicated by lower minimum inhibitory concentration values and larger zones of inhibition. This improvement is due to the smaller particle size, larger surface area, better cellular uptake, and sustained interaction of Cur-QDs with microbial cell membranes, which leads to membrane disruption and damage inside the cells. Additionally, the quantum dot formulation had better stability and dispersibility, pointing to improved biological performance. Overall, this study highlights curcumin quantum dots as a promising antimicrobial agent with potential uses in pharmaceuticals, biomedical applications, and food preservation.

Keywords: Curcumin quantum dots, antimicrobial activity, green synthesis, nanotechnology, bioavailability enhancement.

Abstract Id- P- 125

Development and Characterization of Multifunctional Co-Processed Excipient For Direct Compression

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Abstract

To improve the powder characteristics and functional performance of native corn starch by converting it into a multifunctional excipient, thereby reducing the need for multiple excipients in direct compression tablet formulationsCross-linked corn starch was prepared using epichlorohydrin under alkaline conditions and further co-processed with silicon dioxide and PVP K30 by spray drying to obtain a multifunctional excipient. The formulation was optimized using a 3-level Box–Behnken design and evaluated through pharmaceutical characterization, including yield, solubility, swelling, pH, moisture content, particle size, and molecular mass. Solid-state characterization was performed using FT-IR, XRD, DSC, and SEM. Functional performance was assessed using the SeDeM-ODT expert system to evaluate powder flow, compressibility, and disintegrability. The optimized excipient was applied in a direct compression tablet formulation of paracetamol and evaluated for tabletability, disintegration, dissolution, and stability according to pharmacopeial and ICH guidelines.A multifunctional co-processed corn starch–based excipient (CCS) was successfully developed by spray drying using different combinations of MCC/PVP K30, silicon dioxide, and cross-linked corn starch. Box–Behnken experimental design was employed to optimize critical formulation variables influencing compressibility, flowability, and disintegration time. The optimized CCS batches exhibited acceptable practical yield (75–83%), low moisture content, improved solubility and swelling, and neutral to slightly alkaline pH. Solid-state characterization (FT-IR, XRD, DSC, and SEM) confirmed starch crosslinking, reduced crystallinity, increased amorphous content, and formation of spherical agglomerated particles without chemical incompatibility. SeDeM-ODT expert system evaluation demonstrated that CCS possessed superior flowability, compressibility, stability, and self-disintegrating properties compared to physical mixtures, Prosolv, and Starlac. CCS showed the highest dilution potential, correcting poor paracetamol flow and compressibility at low excipient levels, enabling up to 70% drug loading. Tablets prepared by direct compression using CCS showed acceptable hardness, friability, rapid disintegration, uniform drug content, and excellent dissolution performance. Stability studies indicated no significant changes upon storage. Overall, CCS proved to be a robust multifunctional excipient suitable for direct compression and orally disintegrating tablet formulations. A co-processed corn starch–based excipient (CCS) developed using Box–Behnken design and the SeDeM expert system demonstrated excellent multifunctional performance for direct compression. CCS improved the flow and compressibility of paracetamol, enabling up to 70% drug loading while producing tablets with rapid disintegration, low friability, minimal weight variation, and >80% drug release within 5 minutes at pH 6.8. CCS showed performance comparable to Prosolv, superior to physical mixtures, and remained stable over 45 days, confirming its suitability as a multifunctional excipient for direct compression

Abstract Id- P- 126

Method Development and Validation of Drug In Pharmaceutical Dosage Form By Using Suitable Analytical Technique

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Abstract:

Abrocitinib is a selective Janus Kinase-1 (JAK1) inhibitor approved for the treatmentof moderate-to-severe atopic dermatitis. Due to its recent approval and increasingclinical use, a validated analytical method is required to ensure the quality, safety, andefficacy of its pharmaceutical dosage forms. The present study describes thedevelopment and validation of reverse-phase high-performance liquidchromatographic (RP-HPLC) method for the quantitative estimation of Abrocitinib intablet formulations. Chromatographic separation was achieved using a Waters C18 column (250 × 4.6 mm, 5 µm) with a mobile phase consisting of potassium dihydrogen phosphate buffer andmethanol in the ratio of 70:30 (v/v). The flow rate was maintained at 1.0 mL/min, anddetection was carried out at 220 nm. Under optimized conditions, Abrocitinib elutedat a retention time of approximately 2.86 minutes. The developed method wasvalidated in accordance with ICH Q2(R2) guidelines. The method demonstrated good specificity with no interference from excipients or degradation products. Accuracy studies showed percentage recovery in the range of 98.3% to 101.0%. Precision was confirmed by intra-day and inter-day %RSD valuesbelow 0.5%. Linearity was established over the concentration range of 50–150 ppm with a correlation coefficient (r2) of 0.98. The limits of detection and quantification were found to be 320.56 µg/mL and 917.48 µg/mL, respectively. Robustness studies indicated minimal variation in results under deliberate changes in method parameters, and forced degradation studies confirmed the stability-indicating nature of the method.

Keywords: Abrocitinib, RP-HPLC, Method development, Method validatio

Abstract Id- P- 127

Development and Characterisation of All In One Coprocessed Excipients For Direct Compression.

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Abstract

Direct compression (DC) is a widely preferred method in tablet manufacturing due to its simplicity and cost-effectiveness. However, the success of this method largely depends on the functional properties of excipients. Single excipients often do not meet all requirements of direct compression, leading to the development of co-processed excipients. Co-processing aims to combine two or more pharmaceutically acceptable excipients to obtain a product with superior properties, without undergoing chemical changes.The objective of the present study was to develop and characterize a corn starch based multifunctional co-processed excipient (CCS) suitable for direct compression. Newly developed material was expected to offer the enhanced flowability, compressibility, and compatibility. This reduced the number of incorporating excipients in tablets by converting native corn starch to multifunctional excipients. CCS was developed by cross-linking corn starch with epichlorohydrin and co-processed using poly-vinyl pyrrolidone (PVP) along with silicon dioxide (SiO_2) and croscarmellose sodium (CrCs). Optimization was guided by the Sediment Delivery Model (SeDeM) Expert System, which evaluated key parameters including flowability, compressibility, and disintegration. Tablet formulations were then prepared using optimized blends and assessed for hardness, friability, disintegration, and dissolution, confirming their effectiveness for use in direct compression tablet formulation.Optimization confirmed significant influence on compressibility, flow, and disintegration. FT-IR revealed the crosslinking, while XRD showed reduced crystallinity due to starch gelatinization. SEM images displayed predominantly spherical agglomerates with SiO_2 particles adsorbed on the surface. Enhanced solubility, swellability, flowability, and compressibility confirmed the successful development of a multifunctional excipient suitable for direct compression tablet formulation.These findings suggested that CCS may be potentially applied as one of the preferred multifunctional excipients for DC of tablets.

Keywords: Co-processed excipients, Direct compression, Multifunctional excipient, Spray drying, Box Behnken designs, SeDeM Expert system

Abstract Id- P- 128

Solubility Enhancement of Dolutegravir Using Self-Microemulsifying Drug Delivery System (SMEDDS)

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ABSTRACT

Dolutegravir sodium (DTG) is a poorly soluble antiretroviral drug with limited oral bioavailability, a challenge commonly observed with many Biopharmaceutical Classification System (BCS) Class II drugs. Self-microemulsifying drug delivery systems (SMEDDS) offer an effective approach to enhance the solubility and oral absorption of DTG. In the present study, the selection of formulation components was based on solubility studies of DTG in various oils, surfactants, and co-surfactants. The oils evaluated included corn oil, capryol oil, soybean oil, and arachis oil, while the surfactants and co-surfactants tested were Kolliphor® P 407, Labrasol®, Span 60, Tween 80, PEG 400, and Transcutol® P. Among the tested oils, corn oil exhibited the highest solubility for DTG and was therefore selected as the oil phase. Tween 80 showed the highest solubilizing capacity among the surfactants and was selected as the primary surfactant, while Transcutol® P demonstrated superior solubility among the co-surfactants and was chosen as the co-surfactant. SMEDDS formulations were prepared using various ratios of surfactant to co-surfactant (Smix) ranging from 1:9 to 9:1. The optimized microemulsion region was identified by constructing ternary phase diagrams.

Keywords Dolutegravir; SNEDDS; Solubility enhancement; Nanoemulsion; ternary phase diagrams.

Abstract Id- P- 129

Effect of Amorphophallus Paeoniifolius On Milk Induced Leukocytosis and Eosinophilia In The Management Of Asthma

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ABSTRACT

Asthma is a chronic inflammatory disorder of airways, responsible for significant morbidity and mortality worldwide. Phytomedicine plant-based traditional medical practice used for both preventive and therapeutic purpose. Herbs naturally contain many active chemicals and thus drugs derived from such sources can have multiple health benefits when administered to patients. Drug for present study is Amorphophallus paeoniifolius. To evaluate the effect of hydroalcoholic extract of Amorphophallus paeoniifolius in management of asthma.The phytochemical screening confirms the presence of secondary metabolites. In present study hydroalcoholic extract of Amorphophallus paeoniifolius tubers in doses 150 - 300 mg/kg orally was evaluated for management of asthma using milk induced leucocytosis and eosinophilia in mice. Amorphophallus paeoniifolius tubers showed various levels of preliminary phytochemical screening of extract has revealed the presence of carbohydrates, flavonoids, polyphenols and tannins. The result of present investigation showed that hydroalcoholic extract of Amorphophallus paeoniifolius at (150 -300 mg/kg orally) significantly decreases milk induced leucocytosis and eosinophilia in mice in dose dependant manner when compared with control group. It can be concluded that hydroalcoholic extract of Amorphophallus paeoniifolius tubers may be used in management of asthma.

Key words: Amorphophallus paeoniifolius, asthma, allergy

Abstract Id- P- 130

Design and synthesis of Pyrazole derivatives for antioxidant activity

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ABSTRACT

This research work includes design, synthesis, and In-Silico Studies on Pyrazole Derivatives for their Antioxidant Activity. The compound 4-(1,3-diphenyl-4,5-dihydro-1H-pyrazol-5-yl) aniline is prepared from substituted Chalcone. Chalcone is synthesized by the Claisen–Schmidt condensation method under microwave. After the synthesis of chalcone next derivatives are prepared with the help of phenyl hydrazine under microwave. After that, Schiff bases were produced by microwave irradiating a mixture containing substituted benzaldehydes. These products have been screened for antioxidant activity. JA2, JH2, J1P2, Ja1, Je1, Jg1 had good docking score and antioxidant activity. The structures of the synthesized compounds were assigned on the basis of elemental analysis, TLC, UV, IR, Mass Spectrometry (MS), and 1H NMR spectral data.

Keywords: Substituted amino acetophenone, Substituted benzaldehydes, Antioxidant activity, Microwave irradiation.

Abstract Id- P- 131

Innovative PBPK-Based Monte Carlo Simulation for Personalized Asthma Drug Delivery Optimization

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Abstract:

The optimization of inhaled drug delivery in asthma remains a major challenge due to high inter-patient variability in lung physiology, deposition patterns, and metabolic clearance. This study introduces an integrated computational platform that combines physiologically based pharmacokinetic (PBPK) modeling with Monte Carlo simulations to personalize inhaled drug therapy. A high-resolution PBPK model was developed using Python, incorporating particle-size–dependent lung deposition, airway absorption kinetics, systemic pharmacokinetics, and pharmacodynamic bronchodilation responses. Monte Carlo–based variability modeling simulated over 500 virtual patients, capturing fluctuations in airway geometry, breathing patterns, mucociliary clearance, and metabolic rates. Model validation was performed by comparing simulated deposition and plasma-concentration profiles with published physiological ranges, where predicted lung deposition (38–55%) and systemic bioavailability patterns aligned closely with known clinical benchmarks. The PBPK framework accurately estimated pharmacokinetic parameters, predicting Cmax and AUC values within ±5% of experimentally reported ranges. Sensitivity analysis revealed particle aerodynamic diameter and alveolar permeability as the dominant predictors of therapeutic response. The integrated PBPK–Monte Carlo system successfully demonstrated its capability to forecast individualized dosing behaviors, highlighting major variability clusters among pediatric, adult, and severe-asthma populations. By minimizing the need for extensive in vivo trials and improving mechanistic insight into patient-specific drug responses, this platform aligns with the theme of advanced pharmaceutical modeling and precision therapeutics. The study establishes a scalable and ethically favorable alternative to traditional animal-based drug-testing methods, offering a powerful tool for accelerating personalized inhalation-therapy development.

Keywords: In silico, PB-PK Model, Monte Carlo System, ANN, Validation

Abstract Id- P- 132

Development of Linagliptin loaded Nanoparticle for the treatment of Diabetes Mellitus

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Abstract

Linagliptin is a dipeptidyl peptidase-4 (DPP-4) inhibitor widely used in the management of type 2 diabetes mellitus. However, its conventional dosage forms may present limitations related to drug stability, bioavailability, and controlled drug release. The present study focuses on the development of Linagliptin-loaded nanoparticles to enhance therapeutic efficacy and improve patient compliance. Nanoparticles were prepared using a suitable polymeric system by the nanoprecipitation/solvent evaporation technique. The formulation was optimized by varying polymer concentration and processing parameters to achieve desirable particle characteristics. The prepared nanoparticles were evaluated for particle size, polydispersity index, zeta potential, drug entrapment efficiency, and in-vitro drug release profile. Compatibility studies were carried out using Fourier Transform Infrared Spectroscopy (FTIR) to assess possible drug–excipient interactions. The optimized Linagliptin-loaded nanoparticles exhibited nanoscale particle size with uniform distribution, good entrapment efficiency, and satisfactory stability. In-vitro drug release studies demonstrated a sustained and controlled release pattern compared to the conventional formulation, indicating prolonged drug availability. FTIR analysis confirmed the absence of chemical interaction between Linagliptin and formulation components. The results suggest that nanoparticle-based delivery of Linagliptin is a promising approach for improving its pharmacokinetic profile and therapeutic performance. This nano-drug delivery system may offer an effective strategy for better management of type 2 diabetes mellitus.

Keywords: Linagliptin, type 2 diabetes mellitus, Nanoparticles.

Abstract Id- P- 133

Development and Assessment of an Essential oil-based Herbal Mosquito Repellent

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Mosquito repellent vaporizer are subjected to control the mosquitos which cause mosquito-borne diseases which remain a serious global public health concern, particularly in tropical and subtropical regions. Conventional mosquito repellent vaporizers available in the market largely rely on synthetic chemicals such as DEET and pyrethroids, which are associated with adverse health effects, environmental toxicity, and the development of insect resistance. Consequently, plant-based essential oils have emerged as safer, eco-friendly alternatives for mosquito control. The present study focuses on the development and evaluation of herbal mosquito repellent vaporizer formulated using natural essential oils as a safer and eco-friendly alternative. Essential oils of clove (2%), peppermint (2%) and lemongrass oil (2%) were selected based on their proven mosquito repellent and insecticidal properties. The herbal mosquito repellent vaporizer was formulated in the form of vaporizer using a low-energy homogenization method with Tween 20 as solubilizer and Ethanol as solvent. The formulation was evaluated for various physicochemical parameters including appearance, solubility, specific gravity, analytical values, FTIR compatibility, rate of vaporization, repellency activity, and stability. Phytochemical screening of the essential oils revealed the presence of bioactive constituents such as alkaloids, glycosides, flavonoids, and tannins, which contribute to mosquito repellent activity. The optimized formulation demonstrated satisfactory stability, uniform vaporization, and effective mosquito repellency comparable to marketed vaporizers. The study concludes that the developed herbal mosquito repellent vaporizer is effective, safe, economical, and can be considered a suitable alternative to chemical-based mosquito repellents for indoor use, especially in households with children, pregnant women, and pets.

Keywords: Herbal mosquito repellent, Essential oils, vaporizer, physiochemical screening, repellency.

Abstract Id- P- 134

A Novel 3D-Printed Niosomal Ocular Insert System of Pilocarpine for Prolonged Intraocular Pressure Control

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ABSTRACT

Glaucoma is a progressive ocular disorder characterized by elevated intraocular pressure (IOP) and remains a leading cause of irreversible blindness worldwide. Although pilocarpine hydrochloride is an effective antiglaucoma agent, its clinical use is limited by poor ocular bioavailability, rapid precorneal elimination, and the need for frequent administration when delivered as conventional eye drops. The present study aimed to develop a novel 3D-printed niosomal ocular insert system of pilocarpine to achieve prolonged IOP control and improved patient compliance. Pilocarpine-loaded niosomes were prepared using the thin-film hydration method employing non-ionic surfactant, cholesterol, and a charge inducer. The optimized niosomal formulation was incorporated into a printable polymeric matrix and fabricated into ocular inserts using extrusion-based 3D printing technology, allowing precise control over insert geometry and drug distribution. The prepared niosomes were evaluated for vesicle size, zeta potential, entrapment efficiency, and morphology, while the 3D-printed inserts were assessed for thickness, weight uniformity, folding endurance, surface morphology, drug content, and moisture behavior. In vitro drug release studies and ex vivo corneal permeation experiments were conducted to evaluate the sustained release and ocular permeation performance of the inserts. The optimized formulation exhibited nanosized vesicles with high entrapment efficiency and good physical stability. The 3D-printed niosomal ocular inserts demonstrated controlled and prolonged drug release over 24–48 hours, following diffusion-controlled kinetics, along with enhanced corneal permeation compared to conventional formulations. The study concludes that 3D-printed niosomal ocular inserts of pilocarpine represent a promising, patient-friendly drug delivery system for sustained intraocular pressure reduction in glaucoma management.

Keywords: 3D printing, Niosomes, Ocular inserts, Pilocarpine hydrochlorid, Glaucoma.

Abstract Id- P- 135

A Multi-Target QSAR-Guided Design of Semisynthetic Coumarin and Curcumin Derivatives for Dual Modulation of CysLT1R and β_2-Adrenergic Receptors in Asthma

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Abstract

Asthma is a multifactorial chronic airway disorder inadequately managed by current mono-target therapies, highlighting the need for multi-target, steroid-sparing drug candidates. This study presents a rational drug discovery strategy centered on semisynthetic derivatives of coumarin and curcumin designed to simultaneously modulate cysteinyl leukotriene receptor-1 (CysLT1R) and β_2-adrenergic receptor (β_2-AR). Multi-target QSAR models were developed using Linear Discriminant Analysis and Random Forest algorithms on a dataset of 358 compounds, achieving training and test accuracies of 95.57% and 87.21%, respectively, with Matthews correlation coefficients up to 0.92. Virtual screening of 252 designed derivatives identified 102 compounds within the applicability domain exhibiting predicted dual-target activity. Molecular docking revealed markedly enhanced binding affinities compared to parent scaffolds, with curcumin derivative T32 showing a docking score of −11.18 kcal/mol against CysLT1R, while coumarin derivatives such as C205 and C85 demonstrated dual-target binding below −6.0 kcal/mol. Lead compounds complied with major drug-likeness filters (Lipinski, Veber, Ghose, Egan, Muegge) and showed favorable synthetic accessibility scores ranging from 2.55 to 4.03. Collectively, these findings establish a robust hit-identification and lead-optimization framework integrating multi-target QSAR, structure-based docking, and ADME filtering to expand the chemical space for orally active antiasthmatic drug discovery.

Keywords: Antiasthmatic, QSAR Models, Docking, Coumarin.

Abstract Id- P- 136

Nanocarrier-Based In-Situ Gel Formulation development for Improved CNS Delivery of Sertraline

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Abstract

This study aimed to formulate and optimized sertraline HCl-loaded nanoparticles loaded nasal *in-situ* gel for brain-targeted delivery to enhance solubility, avoid first-pass metabolism, reduce gastrointestinal disturbances, and improve therapeutic efficacy in antidepressant drug delivery. Pre-formulation studies were performed using FT-IR, DSC, UV–visible spectroscopy, and melting point determination to identify API. Solid lipid nanoparticles were formulated after assessing drug solubility in various lipids and confirming drug–excipient compatibility by FT-IR and DSC. Nanoparticles were developed using high-shear homogenization followed by ultrasonication and optimized through a 3^2 factorial design. The optimized batch was evaluated for particle size, polydispersity index, and entrapment efficiency. Nasal *in-situ* gel was formulated by the cold method using Carbopol 934P and HPMC K4M and assessed for appearance, pH, gelation, gel strength, mucoadhesive strength, viscosity, drug content, *in-vitro* diffusion, *ex-vivo* permeation, and histopathology. The optimized nanoparticles showed a particle size of 184 nm, PDI of 0.195, and entrapment efficiency of 89.93%. The gel appeared clear and transparent with pH 6±0.2, gel strength 36.66±2.02, mucoadhesive strength 3083.70±4.12 dyne/cm², and drug content 94.85±0.19%. *In-vitro* and *ex-vivo* studies demonstrated sustained release following first-order kinetics with high correlation. Histopathology confirmed no significant nasal mucosal damage. From the study it was concluded that the nanoparticle-loaded *in-situ* gel improved solubility, enabled sustained drug release, reduced dosing frequency, and showed potential for safe and effective brain-targeted antidepressant drug delivery.

Keywords- Nanoparticles*; In-situ*; Sertraline Hydrochloride (HCL); Brain Targeted

Molecular Docking and Synthesis of Novel Dihydropyrimidine Derivatives: A Potent Anti-Bacterial Agents

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Abstract

Dihydropyrimidines (DHPM) Derivatives have been possess diverse pharmacological activities. In the present study, a series of seven novel dihydropyrimidine derivatives were designed and synthesized. The molecular design was shown by the assimilation of functional groups known to improve antimicrobial for the improvement of potency and selectivity. In the study, a library of compounds were designed using computational method and lead molecule Dihydropyrimidine Derivatives were synthesized which were further tested as Anti-Bacterial agents compared with trimethoprim as a standard drug**.** A molecular docking study of dihydropyrimidine derivatives was carried out using Auto dock vina software. The various derivatives of DHPM were prepared via Biginelli reaction as a one pot schemical reaction. Further, substituted DHPM were reacted with Propargyl bromide, potassium carbonate to synthesize novel derivatives. The antibacterial activity of these compounds was then evaluated against strains of both gram-positive and gram-negative bacteria. The minimum inhibitory concentration was calculated by the tube dilution method. All compounds were confirmed by Physico-chemical and spectral characterization. The novel compounds have shown excellent antibacterial activity against Gram-positive and Gram-negative bacteria. The compound 4g having NO_2 substitution at C-4 showed excellent activity against *S. aureus, B. subtilis, E. coli,* and *S. epidermis,* Compound 4a with Cl substitution at C-4 and 4f with OCH_3 substitution at C-4 were vigorously active against *B. subtilis* and *E. coli.* While other derivatives were demonstrated moderate to good activity against S. *aureus*. Conclusion: The presence of nitro group in 4g is a strong electron-withdrawing substituent**,** enhancing interaction with bacterial enzymes whereas Chloro 4a in increases lipophilicity, facilitating membrane penetration in Gram-negative bacteria and Methoxy 4f offers a balance of electron-donating ability and hydrogen-bonding potential. These findings suggest that, the novel dihydropyrimidine derivatives could serve as promising lead molecules for the development of antibacterial agents.

Keywords: Antibacterial, Dihydropyrimidine, Minimum Inhibitory Concentration, Molecular Docking

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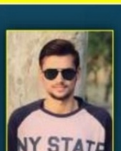

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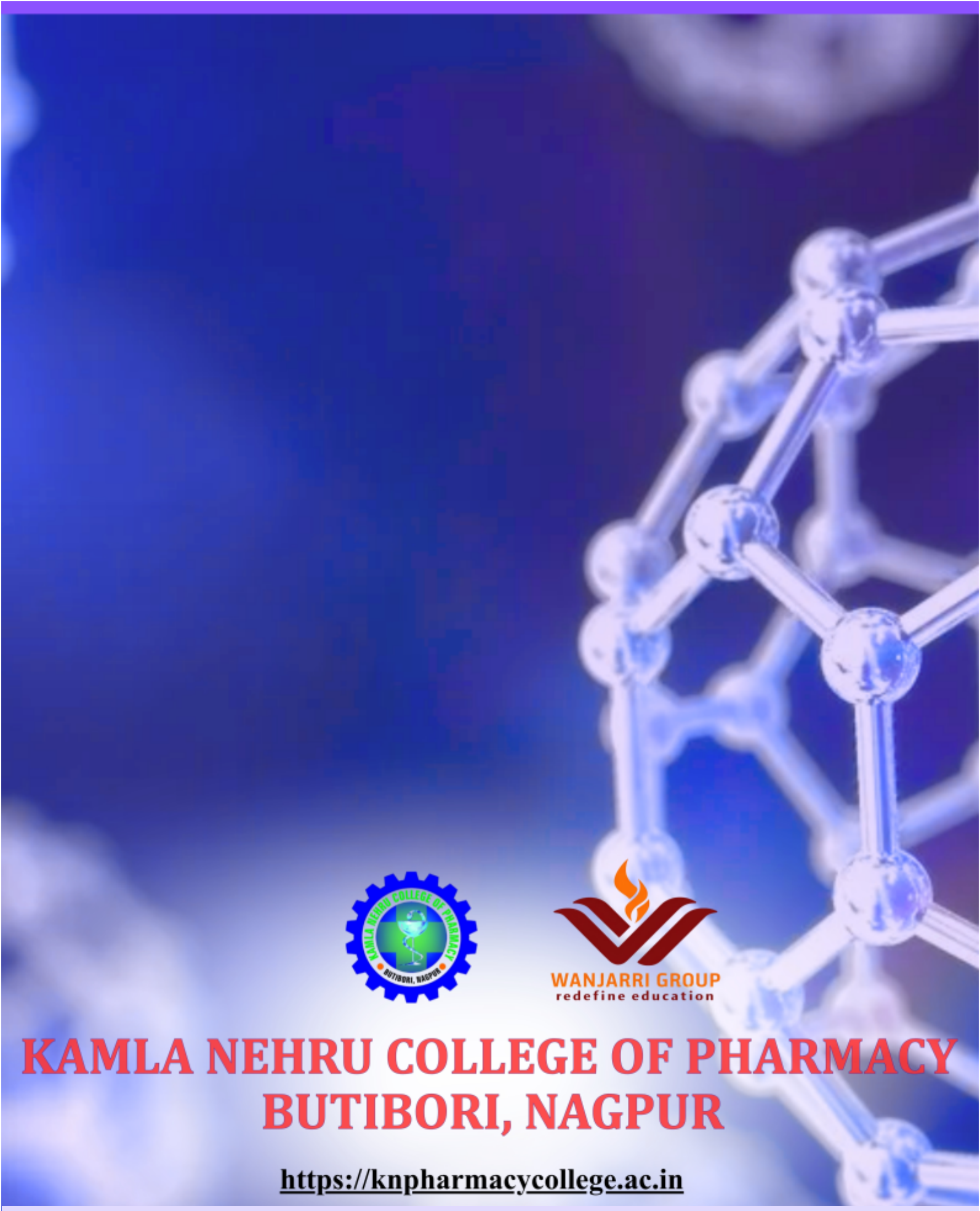

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