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INTERNATIONAL CONFERENCE

Hybrid Mode: (Offline & Online)

PHARMATECH 2024

"Digital Transformation in Pharmaceuticals: A New Era"

SATURDAY, 30 NOV 2024

VENUE:

R V INSTITUTE OF PHARMACY

9th KM Milestone Bijnor Moradabad Road,
State Highway No. 76 Uttar Pradesh – 246728

SOUVENIR

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MESSAGES

MESSAGE
FROM THE DESK OF CHIEF GUEST
PHARMATECH 2024

It is indeed a matter of pleasure that Pharmaceutical Education Society and Faculty of pharmacy, R. V. Institute of Pharmacy, Bijnor are Organizing the first annual conference of PHARMATECH 2024 with theme Digital Transformation in Pharmaceuticals: A New Era at R. V. Institute of Pharmacy, Bijnor on 30 November 2024.

I am also happy to note that this international conference will foster innovative environment provide collaborative platform for academician, researchers, scientist and students and develop a vision to guide the future activity of pharmacy profession through plenary sessions, panel discussions, oral and poster presentations on the new concept of the Pharmacy world. I also understand that a souvenir is also being released to commemorate the occasion.

I take this opportunity to convey my best wishes and greetings and wish the PHARMATECH-2024 a grand success.

With best wishes,

Prof. (Dr.) Vibhu Sahani
Chairman Finance Committee, PCI
Dean, Faculty of pharmacy,
Chaudhary Charan Singh, University, Meerut

MESSAGE
FROM THE DESK OF PRESIDING GUEST
PHARMATECH 2024

Dear Esteemed Participants of PHARMATECH 2024,

As the Vice Chancellor of Shobhit University, it is an honour to extend my heartfelt greetings to all attendees of this distinguished International Conference. The collaboration between the Pharmaceutical Educational Society (PESOTS) and the Faculty of Pharmacy at R V Institute of Pharmacy, Bijnor for organizing International Conference PHARMATECH 2024 is commendable.

This conference serves as a nexus for the brightest minds in pharmaceutical sciences, fostering innovation and knowledge exchange. Your participation contributes significantly to this collective pursuit of excellence. May this event be a source of inspiration, sparking new ideas and collaborations that propel the pharmaceutical field to greater heights.

Best Wishes,

Prof. (Dr.) Ranjit Singh
Hon'ble Vice-Chancellor
Shobhit University, Saharanpur
Advisor, PESOTS

MESSAGE
FROM THE DESK OF GUESTS OF HONOUR
PHARMATECH 2024

Dear Esteemed Participants of PHARMATECH 2024,

It is with great pleasure that I extend my warmest greetings to all gathered for this prestigious International Conference. As Pro-Vice Chancellor of Glocal University, Saharanpur, I commend the Pharmaceutical Educational Society (PESOTS) and the Faculty of Pharmacy at R V Institute of Pharmacy for orchestrating this intellectual symphony.

Your presence contributes to the vibrancy of this forum, where ideas converge, innovations are born, and collaborations flourish. May PHARMATECH 2024 be a catalyst for transformative breakthroughs in pharmaceutical sciences. Best wishes for a fruitful exchange of knowledge and an impactful conference.

Warm Regards,

Prof. (Dr.) Satish Kumar Sharma
National President
Pharmaceutical Educational Society
Hon'ble Pro-Vice Chancellor
Glocal University, Saharanpur, U.P

MESSAGE
FROM THE DESK OF GUESTS OF HONOUR
PHARMATECH 2024

It is indeed a matter of pleasure that Pharmaceutical Education Society and Faculty of Pharmacy, R V Institute of Pharmacy the first conference of PHARMATECH 2024 with theme Digital Transformation in Pharmaceuticals: A New Era at R V Institute of Pharmacy, Bijnor on 30 November 2024.

I am also happy to note that this International conference will foster innovative environment provide collaborative platform for academician, researchers, scientist and students and develop a vision to guide the future activity of pharmacy profession through plenary sessions, panel discussions, oral and poster presentations on the new concept of the Pharmacy world. I also understand that a souvenir is also being released to commemorate the occasion.

I take this opportunity to convey my best wishes and greetings and wish the PHARMATECH 2024 a grand success.

With best wishes,

Dr. Bhavana Srivastava
Research Officer, Central Council for
Research in Ayurvedic Sciences
(Under Ministry of Aayush, New Delhi)

MESSAGE
FROM THE DESK OF GUESTS OF HONOUR
PHARMATECH 2024

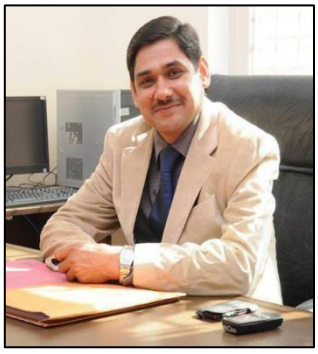
Esteemed Pharmacy Professionals,

With great pleasure, I extend my warmest greetings to all attending PHARMATECH 2024, an International Conference of paramount significance. The collaboration between the Pharmaceutical Educational Society (PESOTS) and the Faculty of Pharmacy at R V Institute of Pharmacy, Bijnor is a testament to the commitment to advancing pharmaceutical sciences.

I commend your dedication to scholarly pursuits. Your participation in this intellectual convergence is pivotal in shaping the future of pharmaceutical research. May your discussions be insightful, collaborations fruitful, and discoveries groundbreaking. Wishing PHARMATECH 2024 a resounding success and a lasting impact on academia.

Warm Regards,

Dr. Navneet Verma
Pro Vice Chancellor
IFTM University, Moradabad



MESSAGE
FROM THE DESK OF CHIEF PATRON
PHARMATECH 2024

It is a matter of great pleasure that Faculty of Pharmacy, R. V. Institute of Pharmacy, Bijnor is organizing an international conference (PHARMATECH 2024) in collaboration with Pharmaceutical Educational Society (PESOTS).

The topic Digital Transformation in Pharmaceuticals: A New Era selected for the conference is very apt under the present scenario. I would say that there is a need to do comprehensive and systematic review of the entire scientific literature and make it more effective.

Conferences give a platform to discuss, deliberate and resolve such issues. The lectures, papers and presentations will be very useful for the delegates and the students. I am sure that this conference will be able to find breakthroughs for the benefit of the pharma science and also masses in general.

I wish a grand success to the conference.

Mr. Yogendra Deshwal
Hon'ble Chairman
R V I T, Bijnor, UP

MESSAGE

FROM THE DESK OF CHIEF PATRON

PHARMATECH 2024

With great pleasure, I extend my warmest greetings to all attending PHARMATECH 2024, an International Conference of paramount significance. R. V. Institute of Pharmacy, Bijnor is organizing an international conference (PHARMATECH 2024) in collaboration with Pharmaceutical Educational Society (PESOTS).

The topic Digital Transformation in Pharmaceuticals: A New Era selected for the conference is very apt under the present scenario. I would say that there is a need to do comprehensive and systematic review of the entire scientific literature and make it more effective.

A heartfelt thank you to the organizers for your thorough planning and meticulous attention to detail. Your efforts have created an inspiring environment that encourages networking and collaboration among leaders in the industry.

I wish a grand success to the conference.

Mr. Arvind Kumar

Hon'ble Secretary
R V I T, Bijnor, UP

MESSAGE
FROM THE DESK OF CHIEF PATRON
PHARMATECH 2024

It is an honour and privilege to extend my heartfelt greetings to everyone gathered for the International Conference PHARMATECH 2024. This auspicious event, meticulously organized by the Pharmaceutical Educational Society (PESOTS) and the Faculty of Pharmacy at R. V. Institute of Pharmacy, promises to be a beacon of enlightenment in the field of pharmaceutical sciences.

Conferences such as PHARMATECH serve as pivotal platforms for the exchange of knowledge, fostering collaboration, and driving advancements in the ever-evolving realm of pharmaceuticals. The commitment and dedication exhibited by PESOTS and R. V. Institute of Pharmacy in curating this international conference are truly commendable.

To the organizers, your meticulous planning and attention to detail are evident in every aspect of this conference. Thank you for your tireless efforts in creating a platform that not only showcases the latest advancements in pharmaceutical sciences but also facilitates networking and collaboration among industry leaders.

May this conference be a catalyst for new ideas, collaborations, and breakthroughs in the field.

I extend my best wishes for a successful and enriching experience at PHARMATECH 2024.

Warm regards,

Dr. S. C. Kulshreshtha

Hon'ble Chairman
Shri Ram Group of Colleges, Muzaffarnagar
Advisor, PESOTS

MESSAGE
FROM THE DESK OF PATRON
PHARMATECH 2024

It is both an honor and a privilege to welcome you to the International Conference PHARMATECH 2024, organized by the Pharmaceutical Educational Society (PESOTS) and the Faculty of Pharmacy at R. V. Institute of Pharmacy. This event is not just a gathering; it is a celebration of knowledge and innovation in the pharmaceutical sciences.

Conferences like PHARMATECH are vital for fostering collaboration and advancing our understanding in this dynamic field. The commitment of PESOTS and R. V. Institute of Pharmacy to create such an enriching experience is commendable, and we are grateful for their dedication.

As we embark on this journey of discovery, let us embrace the opportunity to share insights, innovations, and research findings. PHARMATECH 2024 is a platform for experts, scholars, and professionals to engage in meaningful dialogue, explore new synergies, and contribute to the collective advancement of our field.

A special thank you to the organizers for their meticulous planning and attention to detail. Your efforts have laid the groundwork for an inspiring and fruitful conference that encourages networking and collaboration among industry leaders.

May this conference spark new ideas, foster partnerships, and lead to significant breakthroughs in pharmaceutical sciences. We wish you a successful and enriching experience at PHARMATECH 2024

Best Regards
Mr. Devendra Kumar
Hon'ble Vice Chairman
R V I T, Bijnor, UP

MESSAGE
FROM THE DESK OF PATRON
PHARMATECH 2024

It is a great honor to welcome you to the International Conference PHARMATECH 2024, hosted by the Pharmaceutical Educational Society (PESOTS) and the Faculty of Pharmacy at R. V. Institute of Pharmacy. This event stands as a remarkable opportunity to celebrate knowledge and innovation within the pharmaceutical sciences.

Conferences like PHARMATECH play a crucial role in promoting collaboration and enhancing our understanding of this ever-evolving field. The dedication of PESOTS and R. V. Institute of Pharmacy in bringing this enriching experience to life is truly admirable, and we are thankful for their hard work.

As we embark on this exciting journey, let us take advantage of the opportunity to share insights, innovations, and research findings. PHARMATECH 2024 serves as a platform for experts, scholars, and professionals to engage in meaningful discussions, explore new collaborations, and contribute to the advancement of our field.

A heartfelt thank you to the organizers for your thorough planning and meticulous attention to detail. Your efforts have created an inspiring environment that encourages networking and collaboration among leaders in the industry.

May this conference ignite new ideas, foster partnerships, and lead to significant breakthroughs in pharmaceutical sciences. We wish you a successful and fulfilling experience at PHARMATECH 2024

With best wishes,

Mr. Sunny Deshwal
Hon'ble Managing Director
R V I T, Bijnor, UP

MESSAGE
FROM THE DESK OF CONVENOR
PHARMATECH 2024

It is a great pleasure and immense pride for all of us that R. V. Institute of Pharmacy, Bijnor and Pharmaceutical Education Society (PESOTS) jointly would be organizing an International Conference, PHARMATECH 2024 Digital Transformation in Pharmaceuticals: A New Era on 30 November, 2024. Currently, there are lot of innovations and development taking place in Pharmaceutical Sector. The objective of this conference is to bring the experts across the globe on a common platform and to discuss the current and emerging opportunities & challenges in pharmaceutical sector. I hope the conference would provide a platform for open discussion among the students, delegates and experts.

I would like to extend my heartiest welcome to all participants to our campus and wish them a very beneficial participation.

I extend my gratitude to management, vice chancellor, organizing committee, eminent speakers, delegates and students for enthusiastic and tenacious efforts.

My best wishes for the grand success of the event.

Prof. (Dr.) Hitesh Kumar
Director, R V Institute of Pharmacy,
Bijnor U.P.

MESSAGE
FROM THE DESK OF CONVENOR
PHARMATECH 2024

Dear Esteemed Participants, Organizers, and Guests of PHARMATECH 2024,

It is with great pleasure and enthusiasm that I extend my warmest greetings to all of you gathered for the International Conference PHARMATECH 2024, organized by the Pharmaceutical Educational Society (PESOTS) and the Faculty of Pharmacy at R V Institute of Pharmacy.

This conference serves as a beacon for the exchange of knowledge, ideas, and advancements in the dynamic field of pharmaceuticals. The collaborative efforts put forth by PESOTS and Faculty of Pharmacy at R V Institute of Pharmacy to bring together experts, researchers, and professionals from across the globe is commendable.

In the realm of pharmaceuticals, conferences like PHARMATECH provide a platform for interdisciplinary discussions, fostering innovation and paving the way for groundbreaking discoveries. As we navigate the frontiers of science and healthcare, it is imperative that we share our experiences, challenges, and triumphs to collectively propel the industry forward.

I am confident that the diverse range of topics and the caliber of speakers at PHARMATECH 2024 will contribute significantly to the growth and development of pharmaceutical sciences.

I extend my best wishes for a fruitful and inspiring conference. May PHARMATECH 2024 be a melting pot of ideas, a catalyst for innovation, and a testament to the collective pursuit of excellence in pharmaceutical sciences.

Warm regards,

Prof. (Dr.) Girendra Kumar Gautam,
Founder General Secretary
Pharmaceutical Educational Society
Director, Shri Ram College of Pharmacy Muzaffarnagar

MESSAGE
FROM THE DESK OF CO CONVENOR
PHARMATECH 2024

It gives me an immense pleasure to welcome all dignitaries and participants in the one-day international conference PHARMATECH-2024 on Digital Transformation in Pharmaceuticals: A New Era on 30 November, 2024 organized by Faculty of Pharmacy, R V Institute of Pharmacy & Pharmaceutical Educational Society (PESOTS).

The idea behind this International Conference is to motivate students, faculties and researchers to represent their research work. This international conference provides common platform for eminent scientists, academic researchers, faculty and students to share their knowledge and innovative ideas with each other.

The theme of this conference is focused on to highlight new methodologies techniques of smart materials and their applications for sustainable development in Pharma field.

I am proud to say that invited speakers are renowned persons in their field. I am happy to say that participants from different universities of different states. The conference received large number of submissions for Oral and Poster Presentations.

We're looking forward to an excellent meeting with great scientists, academicians, young researchers, and students from different states around the country and sharing new and exciting results in Pharma field.

I wish all the best success in their present and future endeavours.

Sincerely

With best regards

Dr. Vimal Kumar Bharti

Professor, R V Institute of Pharmacy,
Bijnor U.P.

MESSAGE
FROM THE DESK OF CO CONVENOR
PHARMATECH 2024

Dear Colleagues,

I am honored and delighted to welcome you to the International Conference PHARMATECH 2024 on Digital Transformation in Pharmaceuticals: A New Era on 30 November, 2024 organized by Faculty of Pharmacy, R V Institute of Pharmacy & Pharmaceutical Educational Society (PESOTS). The Conference is designed to provide and share latest information and developments in the field of Pharma sector. The conference provides great opportunity for students, research scholars and academicians to present their innovative ideas and research work on national platform.

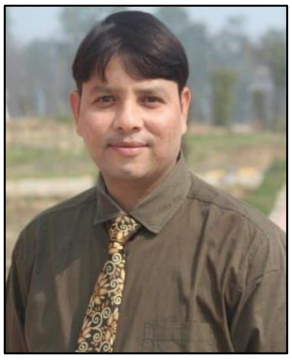
The Conference looks forward to be filled with two interactive sessions, scientific poster presentations and valedictory ceremony by bringing together renowned speakers and scientists which will surely make it a memorable event.

I, being the Co-convener of the conference has always gained valuable support from Organizing secretary, Co-Ordinator's and steering committee members and my sincere regards to the organizers.

We are looking forward to meet all of you in Faculty of Pharmacy, R V Institute of Pharmacy for this wonderful session.

With Regards

Dr. Sanjeev Kumar
Director, R V Institute of Technology,
Bijnor U.P.



MESSAGE
FROM THE DESK OF CO CONVENOR
PHARMATECH 2024

It is with great pleasure and anticipation that I extend my warmest welcome to all of you for the PHARMATECH 2024 on Digital Transformation in Pharmaceuticals: A New Era on 30 November, 2024 organized by Faculty of Pharmacy, R V Institute of Pharmacy & Pharmaceutical Educational Society (PESOTS).

In the dynamic landscape of pharmaceuticals, the pursuit of innovation is not merely a goal, but a necessity. Our conference aim to serve as a platform for thought leaders, researchers, academicians, industry experts and practitioners to coverage and exchange ideas and collectively propel the pharmaceutical industry forward. This conference provides a unique opportunity to delve into the latest developments, share insight and explore the various benefits and opportunities that arise from these innovations.

I look forward to enthusiastic participation and success of the PHARMATECH 2024, International conference on Digital Transformation in Pharmaceuticals: A New Era

Best Regards,

Dr. Vikas Chandra Sharma
National Joint Secretory, PESOTS
Principal, DDM College of Pharmacy
Una, Himachal Pradesh

MESSAGE

FROM THE DESK OF ORGANIZING SECRETARY

PHARMATECH 2024

I am honored and delighted to welcome you, to International Conference on Advancements in Pharmaceutical Innovation: Exploring benefits and Opportunities. **PHARMATECH 2024 on Digital Transformation in Pharmaceuticals: A New Era** on 30 November, 2024 organized by Faculty of Pharmacy, R V Institute of Pharmacy & Pharmaceutical Educational Society (PESOTS). I believe we have chosen a venue that guarantees a successful technical conference amid the culture and scenery of Utter Pradesh. Our Professional & technical program is rich and varied with many eminent personnel keynote speeches and various technical poster presentations split between different sessions.

We also expect to provide Professional, technical demonstrations, and numerous opportunities for informal research development. As a program committee member of international conference PHARMATECH 2024, I know that the success of the conference depends ultimately on many people who have worked with us in planning and organizing both the technical program and supporting social arrangements.

In particular, we thank the Program Chairs for their wise advice and brilliant suggestion on organizing the technical program; the Program Committee for their thorough and timely reviewing of the abstracts, and our Professional Associates for their invaluable contributions for making this International Conference PHARMATECH 2024 a successful venture.

With Warm Regards,

Mr. Kamal Jeet Khalsa
Associate Professor, Dept of Pharmacology
R V institute of Pharmacy, Bijnor, UP

MESSAGE

FROM THE DESK OF ORGANIZING SECRETARY

PHARMATECH 2024

It gives me great pleasure that **PHARMATECH 2024 on Digital Transformation in Pharmaceuticals: A New Era on 30 November, 2024** organized by Faculty of Pharmacy, R V Institute of Pharmacy & Pharmaceutical Educational Society (PESOTS).

I am happy to note that the theme of this conference is related with contemporary ideas of Pharmacy and Scientific applications which will upsurge the knowledge of research community of various research fields at interdisciplinary level.

The conference will motivate young research participants to learn new ideas. We have received overwhelming response from throughout country. Delegates from various organizations, academic institutions and industries are participating in the conference. We are fortunate to have eminent scientists and academicians as invited speakers.

I would like to extend immense gratitude to Chief guest Dr. Vibhu Sahani (Chairman, Finance Committee Pharmacy Council of India), Presiding guest Prof. (Dr.) Ranjit Singh (Hon'ble Vice-Chancellor, Shobhit University, SRE Advisor, PESOTS), Guest of honour Prof. (Dr.) Satish K. Sharma (National President, PESOTS Pro Vice Chancellor Glocal University, Saharanpur), Dr. Bhavana Srivastava (Research Officer, Central Council for Research in Ayurvedic Sciences (Under Ministry of Ayush, New Delhi), Dr. Navneet Verma (Pro Vice Chancellor IFTM University Moradabad) and all of them for being accepted our invitation. Conference includes four invited talks, and Oral & Poster presentations. On the behalf of the organizing committee of the conference, I would like to express our gratitude to honoured Chief Patrons & Patrons.

I would like to express a warm welcome and thank you to all of the delegates, and I hope them enjoyable and stimulating talks and exchanges throughout the conference.

With best regards,

Mr. Shivam
Associate Professor, Dept of Pharmacology
R V institute of Pharmacy, Bijnor, UP

ORAL & POSTER PRESENTATION

PT2024/ICA/OP/001	AVDHESH KUMAR	PHYTOCHEMICALSCREENINGOFPHYLLANTHUS AMARUS LEAVES AND ROOT EXTRACTS
PT2024/ICA/OP/002	ARADHANA GUPTA	THE PHARMACOGNOTIC PROPERTIES OF ANDROGRAPHISPANICULATA:ACOMPREHENSIVE REVIEW
PT2024/ICA/OP/003	SHEETAL SHARMA	PREPARATIONOFINNOVATIVETOPICALPATCHES FOR NON MELANOMA SKIN CANCER
PT2024/ICA/OP/004	ABULKALAAM	LIPIDNANOPARTICLES:PREPARATIONTECHNIQUES, CHARACTERIZATION, CHALLENGES, AND STRATEGIES FOR ORAL DRUG DELIVERY
PT2024/ICA/OP/005	SAUMYASINGH	UNLOCKING THE THERAPEUTIC POTENTIAL OF CHITOSANNANOPARTICLESINPHARMACEUTICAL APPLICATIONS
PT2024/ICA/OP/006	SANASAIFI	UNRAVELING THE BIOLOGICAL ACTIVITY OF JAK/STATSIGNALINGINHEALTHANDDISEASE
PT2024/ICA/OP/007	VANDANA CHOUDHARY	FLAXSEEDMUCILAGE-BASEDHYDROGELSTAILORED WITH ACRYLIC ACID TO FORM NON-TOXIC, BIOPOLYMER FOR CONTROLLED RELEASE OF CALENDULA OFFICINALIS: IN VITRO AND IN VIVO ASSAY
PT2024/ICA/OP/008	MOMINSUBURA MOHD RIYAZ	INTEGRATIVE NETWORK PHARMACOLOGY AND TLC ANALYSIS OF HERBAL EXTRACTS FOR ANTICONVULSANTEFFECTSINPRECLINICALSTUDIES
PT2024/ICA/OP/009	DUSHYANT KUMAR	PHYTOCHEMICALSCREENINGBARKOFCORDIA-MYXA AND CURCUMA LONGA RHIZOME
PT2024/ICA/OP/010	JITENDRASINGH YADAV	FORMULATION OF OPHTHALMIC PREPARATION BY USING TRANSITIONAL METAL COMPLEX SYNTHESISED FROM FRESH LEAF EXTRACT OF HEDYCHIUMCORONARIUMFORTHETREATMENTOF DIABETIC CATARACT
PT2024/ICA/OP/011	SIMPI SHARMA	REVIEW ON VARIOUS TECHNOLOGY OF MICROENCAPSULATIONANDITSAPPLICATION
PT2024/ICA/OP/012	ASWIN KUMAR	NANOBOTS:THEFUTURE OFCANCERTREATMENT
PT2024/ICA/OP/013	SHIKHAYADAV	IMPORTANCEOFNANOFORMULATIONINDRUG DELIVERY SYSTEM
PT2024/ICA/OP/014	MILAN AGARWAL	DIGITALTRANSFORMATIONINPHARMACEUTICALS: A NEW ERA

PT2024/ICA/OP/015	SAMEEKSHA	DEVELOPMENTANDEVALUATIONOFNANO STRUCTURED LIPID CARRIER
PT2024/ICA/OP/016	POOJAMALIK	ROSMARINUS OFFICINALIS (ROSEMARY) OIL BENEFICIALFORANTIOXIDANTANDANTIMICROBIAL
PT2024/ICA/OP/017	RAVINDER KUMAR	REVOLUTIONIZINGDRUGDISCOVERY:LEVERAGING AI AND MACHINE LEARNING
PT2024/ICA/OP/018	RAJNI	REVOLUTIONIZING HEALTHCARE: LEVERAGING DIGITALHEALTHANDPHARMACEUTICALRESEARCH FOR PERSONALIZED MEDICINE
PT2024/ICA/OP/020	RUCHISINGH	PHARMACOGNOSTIC, PHYTOCHEMICAL AND CARDIOPROTECTIVEACTIVITYOFSELAGINELLA BRYOPTERIS AND CALOTROPIS GIGANTEA
PT2024/ICA/OP/021	POOJANAIN	SYNTHESISANDPHARMACOLOGICALEVALUATION OF SOME NEW SCHIFF BASE SULPHONAMIDE DERIVATIVES
PT2024/ICA/OP/022	ABHISHEKVAISH	ROBOTICSINPHARMACEUTICALLABORATORIESAND MANUFACTURING
PT2024/ICA/OP/023	AKASH KUMAR	DIGITALHEALTHINPHARMA:ENHANCINGDRUG DISCOVERY, CLINICAL TRIALS, AND PATIENT OUTCOMES
PT2024/ICA/OP/024	UTKARSH SHARMA	DIGITALTRANSFORMATIONINPHARMACEUTICALS: A NEW ERA
PT2024/ICA/OP/025	MOHIT SAINI	RECENTADVANCEMENTINBIOELECTRONIC DEVICES: A REVIEW
PT2024/ICA/OP/026	ALPANARAM	FORMULATIONANDCHARACTERIZATIONOF GASTRORETENTIVE MICROSPHERES OF ANTIHYPERTENSIVE DRUG COMBINATION.
PT2024/ICA/OP/027	MOHIT SAINI	RECENTADVANCEMENTINBIOELECTRONIC DEVICES: A REVIEW
PT2024/ICA/OP/028	MEENAKSHI SHARMA	CGRPRECEPTORANTAGONISTS:-GEPANTS
PT2024/ICA/OP/029	RITESHKUMAR SRIVASTAV	ANOVELINSIGHTOFTIRZEPATIDEFORDIABETES MELLITUS AND OVERWEIGHT
PT2024/ICA/OP/031	AKANSHILAMBA	ARESEARCHARTICLEONTHEDEVELOPMENTOF NOVEL DRUGS AND EVALUATION OF ANTICOAGULATION

PT2024/ICA/OP/032	DISHA CHATTOPADHYAY	UNREVEALING THE PLAUSIBLE MOLECULAR MECHANISMSOFCINNAMONINAMELIORATIONOF DYSMENORRHEAANDMENORRHAGIA:A COMPREHENSIVE REVIEW
PT2024/ICA/OP/033	PRIYANKA BHARDWAJ	A REVIEW ON PHARMACOLOGICAL EFFECTS OF SP (SAWPALMETTO)INTHETREATMENTOFPATIENTS WITH BPH (BENIGN PROSTATIC HYPERPLASIA)
PT2024/ICA/OP/034	ANANYSHREE SAINI	INNOVATIVEINSIGHTS:DECODINGCUTTINGEDGE TECHNOLOGICAL ADVANCEMENTS IN PHARMA SECTOR
PT2024/ICA/OP/035	NUZHAT TASKIN	TERNARY EUTECTIC COMPOSITION IN MULTICOMPONENTSYSTEMS:FUNDAMENTALSAND APPLICATIONS
PT2024/ICA/OP/036	PRAGATIJAIN	TELEMEDICINEANDREMOTEPATIENT MONITORING
PT2024/ICA/OP/038	ABDULHAFEEZ	THE METHANOLIC EXTRACT OF ALBIZIA ODORATISSIMA (AO) BARK ATTENUATED THE DEVELOPMENTOFDIABETICNEPHROPATHYINRATS
PT2024/ICA/OP/039	VIKASH SINGH	PHARMACEUTICALPERSPECTIVESONGLYCYRRHIZA GLABRA: A NATURAL APPROACH TO WOUND HEALING
PT2024/ICA/OP/040	VAISHALI BHARAT	FUNCTIONALELECTROSPUNNANOFIBERS: PRODUCTION, CHARACTERISTICS, AND APPLICATIONS IN WOUND HEALING.
PT2024/ICA/OP/041	BHANUPRATAP SINGH	EFFECTOFHERBALPLANTSONNICOTINEINDUCED GASTRIC ULCER
PT2024/ICA/OP/042	RAJNI	REVOLUTIONIZING HEALTHCARE: LEVERAGING DIGITALHEALTHANDPHARMACEUTICALRESEARCH FOR PERSONALIZED MEDICINE
PT2024/ICA/OP/043	AYUSHIGOEL	PHARMATECH_DIGITALTRANSFORMATIONIN PHARMACEUTICALS: A NEW ERA
PT2024/ICA/OP/044	SUDHANSHU	ACOMPREHENSIVETOTREATAPEPTICULCERTO USED ON HERBAL DRUGS
PT2024/ICA/OP/045	ARYANSHARMA	ARTIFICIALINTELLIGENCEINPHARMACEUTICAL TECHNOLOGY AND DRUG DELIVERY DESIGN
PT2024/ICA/OP/046	TANI CHOUDHARY	PHARMATECHDIGITALTRANSFORMATIONIN PHARMACEUTICAL: A NEW ERA
PT2024/ICA/OP/047	NIDHIAGRAWAL	FORMULATION AND CHARACTERIZATIONS OF MULTIPARTICULATESYSTEMFORTHETREATMENT OF COLORECTAL CANCER

PT2024/ICA/OP/048	ALOKCHAUHAN	REVIEWOFNANOPARTICLES
PT2024/ICA/OP/049	ADERSH PATEL	MEDICINALCHEMISTRYOFNATURALPRODUCTS: UNLOCKING NATURE'S POTENTIAL FOR DRUG DISCOVERY
PT2024/ICA/OP/050	ARICHIT CHAUHAN	NANO-TECHNOLOGYINCOSMETICPRODUCT DEVELOPMENT
PT2024/ICA/OP/051	AMRITAGUPTA	A REVIEW ONTHE PHARMACOLOGY AND TOXICOLOGYOFPHYTOCHEMICALS:BENEFITSAND RISKS
PT2024/ICA/OP/052	SHUBHAM TIWARI	AREVIEWONPHYTOCHEMICALSOFCURCUMA LONGA (TURMERIC): TRADITIONAL USES AND MODERN APPLICATION
PT2024/ICA/OP/053	HIMANSHU SHARMA	EXPLORATION OF ANTIDIABETIC POTENTIAL OF AERIALPARTOFBLUMEALACERA:AWILDSPECIES
PT2024/ICA/OP/055	RUPAL CHOUDHARY	AREVIEWONADVANCESINTHEHERBAL TREATMENT OF MOUTH ULCER
PT2024/ICA/OP/056	BALWANSINGH	EGCGTRANSFEROSOMES:ANOVELSTRATEGYINTHE FIGHT AGAINST NON-MELANOMA CARCINOMA
PT2024/ICA/OP/059	VASUDEV SHARMA	AREVIEWARTICLEONFORMULATIONOFANTIACNE LOTION AND EVALUATION OF SCREENING TEST OF PREPARED LOTION
PT2024/ICA/OP/060	VIPASHA SINGH	ARESEARCHPAPERONPHARMACEUTICAL EVALUATION OF THE DUCKWEED PLANT
PT2024/ICA/OP/061	SUJEETKUMAR YADAV	AREVIEWONHEPATOPROTECTIVEACTIVITYOF MEDICINAL PLANTS
PT2024/ICA/OP/062	MANANVERMA	3DPRINTINGTECHNOLOGYINPHARMACEUTICALS
PT2024/ICA/OP/065	ZEESHANKHAN	ARESEARCHPAPERONTHEFORMULATIONOF HARBAL SHAMPOO & EVALUATION OF ANTI- DANDRUFF ACTIVITY
PT2024/ICA/OP/066	PRIYANKA GUPTA	SYNTHESISOFNEWNOBELSULFONICDRUGSAND EVALUATION OF ANTIHYPERTENSIVE
PT2024/ICA/OP/067	ARCHANA TOMAR	ANOVERVIEW ON:FLOATINGTABLETS
PT2024/ICA/OP/069	KAMLESH KUMARYADAV	FORMULATIONDEVELOPMENTANDEVALUATIONOF ETHOSOMAL GEL OF NYCTANTHES ARBOR - TRISTIS HERBAL PLANT

PT2024/ICA/OP/070	ANURAG JAISWAL	IMPACTOFCLIMATE CHANGEON BIODIVERSITY
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PT2024/ICA/OP/074	DUSHYANT KUMAR	PHYTOCHEMICALSCREENINGBARKOFCORDIA-MYXA AND CURCUMA LONGA RHIZOME
PT2024/ICA/OP/075	AVDHESH KUMAR	PHYTOCHEMICALSCREENINGOFPHYLLANTHUS AMARUS LEAVES AND ROOT EXTRACTS
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PT2024/ICA/OP/201	SUCHITA TRIPATHI	QBDBASEDFORMULATIONOPTIMISATIONAND CHARACTERIZATIONOFFINASTERIDELOADED NANOGEL FOR ALOPECIA
PT2024/ICA/OP/202	HARSHVERMA	THEROLEOFDIGITALTWININCLINICALTRIAL
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PT2024/ICA/OP/204	HARSHVARDHAN	VITILIGO:INSIGHTSINTOITSPATHOPHYSIOLOGY, DIAGNOSIS AND TREATMENT ADVANCES OF MELANOCYTES DEGENERATIVE DISORDER
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ABSTRACTS

PHYTOCHEMICALSCREENINGOF*PHYLLANTHUSAMARUS*LEAVESAND ROOT EXTRACTS

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Hepatotoxicity- All around world hepatotoxicity are caused due the Drug induced liver toxicity. They lead to damage of livercell and necrosis due to theinterruption metabolites of drug enzymes P450 and decrease the level of antioxidant from the liver cell. *Phyllanthus amarus* is a perennial herb growing as a weed throughout India. It is commonly known as Bhumiamla belonging Family Euphorbiaceae.Itshowshepatoprotectiveactivityduetoanti-oxidantactivity.Itisalsopreventsuch as diabetes, hepatitis, and cancer and vitiligo.It is Extracted by using Soxhlet apparatus with the aquouessolventandsubjectedtomakeconcentratedusingarotaryevaporatorat30°Candtoobtain thecrudeextract.Theboth(leavesandroot)extractsusedforitsphytochemicalscreeningandfind outthepresenceofAlkaloids,flavonoids,saponins,glycosides,andsteroids.Thebothextractsused for further hepatoprotectiveactivity. The Both extractwas determined for the statistical evaluation in triplicate manner (n=3).
Keywords:Hepatotoxicity,*Phyllanthusamarus*,PhytochemicalScreening.

THEPHARMACOGNOSTICPROPERTIESOF*ANDROGRAPHISPANICULATA*:A COMPREHENSIVE REVIEW

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Andgraphics paniculata is also known as ‘King of bitter’ and in Hindi known as Kalmegh, comes in *Acanthaceae* family, with very great activity in traditional medicine, be indication of healing. This review enclose under the pharmacognostic properties of *Andrographis paniculata* with phytochemical profile against it. This plant well of with bioactive compounds, such as neoandrographolide, andrographolide, and dehydroandrographolide due which be the owner of varietyofpharmacologicaleffects.MajorconstituenthasbeenstudiedinAndrographolideindetail andoutlinepromisingeffectsforreducinginflammation,showingantimicrobial,antiviralproperties and formodulating immuneresponse.Thisplantisused forhealth benefitstraditionally connected with immunity, anti-inflammatory effects and digestive health also. Such this type of studies indicate a high lymphocyte and T-cell increase for the defence against such infections. Promising immunostimulant has been shown, thus the remedy can be developed for overall immunity and againstcold,fluoranyothertypesofrespiratoryinfections.Inflammationprocesseffectsmayplace it among the candidates for immune system management concerning the promotion of skin health and inflammatory conditions. Apart from respiratory and immune benefits, *Andrographis paniculata* support digestive health, liver function and general organ protection by reducing oxidative stress. We explore the studies point like neuroprotective, wound healing and anticancer properties of this widening appeal of multipurpose herbal medicine. Further, we also investigate that the Andrographolide inhibits the NF-kB pathway, which is mainly involved in the regulation ofimmuneresponsetoinfection.Throughtheinhibitionofthispathway,andrographolidedecreases production of pro-inflammatory cytokines and mediators.
Keywords: Andrographis paniculata, Andrographolide, Pharmacogenetic properties, Immune support, Anti-inflammatory.

PREPARATIONOFINNOVATIVETOPICALPATCHESFORNONMELANOMA SKIN CANCER

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Non-melanoma skin cancer (NMSC), including basal cell carcinoma (BCC) and squamous cell carcinoma(SCC),accountsforasignificantproportionofcancercasesglobally.Currenttherapeutic approaches, such as surgical excision, cryotherapy, and systemic drugs, often present challenges including invasive procedures, extended recovery times, and adverse systemic effects. As an innovative alternative, topical drug-delivery systems in the form of patches offer a targeted noninvasive, and patient-friendly option for the treatment of NMSC.These patches are engineered to deliver anti-cancer agents, such as 5-fluorouracil (5-FU), imiquimod, diclofenac, or photosensitizersforphotodynamictherapy,directlytotheaffectedskinlesions.Byusingadvanced polymericmatricesandnanocarriertechnologies,theyenhancedrugpermeationthroughthestratum corneumandensurelocalizedandsustainedreleaseatthetumorsite.Formulationsoftenincorporate skinpenetrationenhancers(e.g.,ethanol,DMSO)oradvanceddeliverysystemslikeliposomesand nanoparticles to optimize therapeutic efficacy.The patches are designed with multiple functional layers, including a protective backing layer, a drug reservoir, and an adhesive layer, ensuring stability, controlled drug release, and ease of application. Emerging innovations involve stimulusresponsive materials that release drugs in response to environmental triggers such as pH, light,ortemperature.Additionally,biodegradablepolymersarebeingexploredtoeliminatetheneed for patch removal and improve environmental sustainability.Preclinical studies have demonstrated thepotentialofthesepatchestodeliverprecisedoses,reducesystemictoxicity,andenhancepatient compliance by avoiding invasive procedures. Clinical trials are increasingly validating their safety andefficacy,withpromisingresultsforreducingtumorsize,alleviatingsymptoms,andpreventing recurrence. However, challenges such as achieving uniform drug distribution, preventing skin irritation, and ensuring prolonged adhesion on irregular skin surfaces remain to be addressed.This researchemphasizesthepotentialoftopicalpatchesasatransformativeapproachindermatological oncology. Future advancements, including integration of artificial intelligence (AI) for optimizing formulations and development of multi-drug delivery systems, could further improve treatment outcomes. Continued research and clinical validation are critical to establish their role as a mainstream treatment for NMSC, offering a non-invasive and effective therapeutic alternative for millions of patients worldwide.

Keywords-NMSC(Nonmelanomaskincancer),BCC(Basalcellcarcinoma),Anticanceragents ,Preclinicalstudies.

LIPID NANOPARTICLES: PREPARATION TECHNIQUES, CHARACTERIZATION,CHALLENGES,ANDSTRATEGIESFORORALDRUG DELIVERY

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Lipid nanoparticles (LNPs) have shown great potential as a delivery system for oral medications, due to their distinctive capability to encapsulate both hydrophilic and lipophilic drugs which improves their bioavailability and safeguards delicate compounds from breakdown. The methods forpreparingLNPsincludehigh-pressurehomogenization,solventevaporation,andmicroemulsion techniques, each influencing factors like particle size, stability, and the patterns of drug release. CharacterizingLNPsisvitalandrequiresassessingfactorssuchasparticlesize,zetapotential,drug loadingefficiency,andmorphologytoguaranteeconsistencyandefficacy.Themaindifficultiesin oral delivery using LNPs are linked to overcoming challenges posed by the gastrointestinal tract, such as the breakdown of drugs by enzymes and the acidic pH, both of which can affect drug stability and bioavailability. Moreover, managing the rate of drug release and achieving targeted delivery are significant obstacles. Strategies to address these challenges include surface modificationofLNPstoenhancemucoadhesion,incorporatingstabilizers,andemploying

absorption enhancers to facilitate intestinal uptake. Improvements in LNP formulation and drug encapsulation techniques are continuously expanding the possibilities for oral delivery, making LNPs a flexible and scalable solution for administering complex therapeutic agents. However, ongoing research is essential to optimize their safety profile and therapeutic efficacy, paving the way for their broader application in pharmaceutical development.

Keywords: Lipid nanoparticles, High-pressure homogenization, Solvent evaporation, Microemulsion techniques, Particle size, Zeta potential, Mucoadhesion, Therapeutic efficacy.

UNLOCKINGTHETHERAPEUTICPOTENTIALOFCHITOSAN NANOPARTICLES IN PHARMACEUTICAL APPLICATIONS

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Chitosan, a natural polysaccharide obtained from chitin, has attracted considerable interest in pharmaceutical research because of its distinctive characteristics, such as biodegradability, biocompatibility, and low toxicity. The emergence of chitosan nanoparticles (CSNPs) has opened up new therapeutic options, positioning them as a flexible option for drug delivery, gene therapy, and tissue engineering. The nanoscale size of CSNPs enhances their cellular uptake, allowing for targeted delivery of drugs and improved bioavailability. Moreover, the positive charge of chitosan allows it to bind to negatively charged cell membranes, which prolongs the presence of drugs at their target sites and boosts their therapeutic impact. CSNPs offer controlled release of drugs, minimizing side effects and optimizing therapeutic efficacy. They also allow for the encapsulation of various drug types, such as peptides, proteins, and nucleic acids, ensuring their stability and effectiveness. In addition to drug delivery, CSNPs display antimicrobial, anti-inflammatory, and wound-healingcapabilities,expandingtheirpotentialusesacrossdifferenttherapeuticfields.Recent advancements in modifyingCSNPs'surfaceproperties have led toimprovedtargetingabilities and diminished immunogenic responses. Despite these advantages, challenges such as scalability, stability, and regulatory concerns remain barriers to clinical translation. Ongoing studies focusing onthephysicochemicalpropertiesofCSNPs,theirperformancebothinvitroandinvivo,andtheir biocompatibility are crucial for their successful use in pharmaceuticals, paving the way for innovative treatments for various diseases.Keywords**:** Chitosan nanoparticles (CSNPs), Biodegradability,Drugdelivery,Genetherapy,TargetedDrugdelivery,Controlledrelease,Cellular uptake, Biocompatibility.

UNRAVELLINGTHEBIOLOGICALACTIVITYOFJAK/STATSIGNALINGINHEALTHANDDISEASE

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TheJAK/STATsignalingpathwayisfundamentaltomaintainingvariousphysiologicalprocesses that are essential for health, particularly in immune regulation, hematopoiesis, and cellular homeostasis. In the immune system, this pathway allows for the activation of immune cells in response to cytokines, such as interferons and interleukins, which help coordinate the body's defenseagainstinfectionsandinflammation.However,dysregulationofthispathwaycontributes tothepathogenesisofvariousdiseases,includingautoimmunedisorders**,**infectiousdiseases,and cancer**.** In autoimmune diseases such as rheumatoid arthritis and systemic lupus erythematosus, aberrant activation of JAK/STAT signaling leads to excessivecytokine production and chronic inflammation.JAKinhibitors,suchastofacitinib**,**areusedtomitigatetheseeffects.Ininfectious diseases, viruses like HCV and HIV exploit JAK/STAT signaling to avoidimmune detection or promotereplication,whiletypeIinterferonsactivatethispathwaytocounterviralinfections.

However, excessive activation can contribute to pathologicalinflammation, as seen in sepsis. In cancer,constitutiveactivation ofJAK/STAT signaling, particularlyJAK2/STAT5,drivestumor proliferation,especiallyinhematologicmalignancieslikechronicmyelogenousleukemia(CML). JAK inhibitors like ruxolitinib are approved for certain cancers and are under investigation for others.TargetingJAK/STATsignalingholdspromisefortherapeuticinterventionacrossarange ofdiseases,butfurtherresearchisneededtooptimizetheirclinicalefficacyandminimizeadverse effects.Keywords: JAK/STAT signaling, autoimmune diseases, inflammation, rheumatoid arthritis, lupus, viral infections, cancer.

FLAXSEED MUCILAGE-BASED HYDROGELS TAILORED WITH ACRYLIC ACIDTOFORMNON-TOXIC,BIOPOLYMERFORCONTROLLEDRELEASEOF *CALENDULA OFFICINALIS*: *IN VITRO AND IN VIVO ASSAY*

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Mucilage, a type of biopolymer, exists in all parts of plants and can be intracellular or extracellular. These colourless and odourless secretions possess emerging commercial applications in the fields of biomaterials, agriculture, cosmetics, and pharmaceuticals due to their inherent properties of being non-toxicandbiodegradable.Inordertoexploittheirpotential,themucilagecanbefurthermodified with synthetic polymers for various other applications, one of which is drug delivery. This paper presents a study on the modification of flax seed mucilage with acrylic acid (FLX:AA) and a cross- linker, ethylene glycol dimethacrylate, by free radical polymerization. The semi-synthetic hydrogels thus synthesized were characterized for their stimuli-responsive properties in water, saline solution, and glucose solution and in solutions of varying pH of 2, 4, 7, and 8. In addition to this, protein absorptionandbloodcompatibilitytestswereusedtoevaluatethepolymer'sbiocompatibility.FTIR, SEM,XRD,andTGAtoolswereemployedtocharacterizethesynthesizedhydrogels.Thehydrogels showing the best swelling were selected for both *in vitro* and *in vivo* studies. The encapsulation efficiency was found to be 61.65% after 24 hours of exposure to the flower extract of Calendula officinalisforcarryingoutaninvitrostudy.An*invivo*studyonanimalswasperformedbyfollowing the excision model. The continuous monitoring of the wound has shown significant improvement in wound contraction, epithelization time, and wound index. In this model, antioxidant activity, total protein, and hydroxyproline levels in the healing tissue samples were higher than in the control samples. The results supported that calendula extract (CE) encapsulated hydrogels (CE^{+}FLX: AA) promoted faster healing than without encapsulation (CE^{-}FLX: AA) hydrogels and then that of the control sample.

INTEGRATIVENETWORKPHARMACOLOGYANDTLCANALYSISOFHERBAL EXTRACTS FOR ANTICONVULSANT EFFECTS IN PRECLINICAL STUDIES.

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Epilepsy is a neurological disorder characterized by recurrent seizures and impacts a large proportion of the world's population. Although conventional AEDs are commonly used in the management of the condition, their efficacy is limited by side effects, drug resistance, and inconsistentresults.Thus,thereisincreasinginterestinherbalmedicineasanalternativetreatment forepilepsy.Inthecurrentstudy,anticonvulsantpropertiesofsevenherbalextractsareinvestigated basedontheintegrationofnetworkpharmacologywithThinLayerChromatographyanalysis.The

selected herbs for the study are *Acorus calamus, Tinospora cordifolia, Bacopa monnieri, Ferula asafoetida, Nardostachys jatamansi, rock salt and Centella asiatica*. Water decoction of these herbs was followed by ethanol extraction using Soxhlet extraction. Preliminary TLC analysis showedmanybioactivecompoundslikealkaloids,flavonoids,saponins,andterpenoids,knownto possess pharmacological activity. The anticonvulsant activity of these herbs, especially their interaction within the central nervous system, was predicted using network pharmacology on the molecular targets and signaling pathways involved. The anticonvulsant activity was determined usingthePTZ-inducedseizuremodelinSwissalbinomicewithclonazepamasthepositivecontrol. Theresultsfurtherrevealedthatthefrequencyandintensityofseizureswerehighlyreducedbythe herbal extracts as in the case of Combination of formulations. The effect may involve the anticonvulsantactivitythatisbroughtaboutthroughGABAergicandglutamatergicpathwaysand further inhibition of elevated neuronal activities.The safety of the herbal extracts was confirmed bytoxicologicalstudiesatthetesteddoses.Theresultsofthecurrentstudysuggestthateitherthese herbal extracts, as such or in combination, are promising adjunct therapies for epilepsy. Further research should aim at detailing their mechanisms and optimizing their use with an evaluation of thepossibilityofusingthemasanaturalanticonvulsantinhumans.Keywords:Epilepsy,Network pharmacology, Thin Layer Chromatography, Anticonvulsant, Herbs.

PHYTOCHEMICALSCREENINGBARKOF*CORDIA-MYXA*AND*CURCUMA LONGA* RHIZOME

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Peptic ulcers (PU) are sores or lesions in the gastrointestinal mucosa extending throughout the muscularis mucosae, typically characterized by different stages of necrosis, neutrophil infiltration blood flow reduction, increased oxidative stress and inflammation.*Cordia myxa* is one of the traditional medicinally important deciduous plants present in tropical and subtropical region in all over india. It is belong to family Boraginaceae. It is common name Indian cherry. its shows anti-ulcerative property due to antioxidant. Curcuma longa is a perennial herb, leafy, belongs to the Zingiberaceae family, and measures up to 1 m high with a short stem, pointed leaves and funnel-shapedyellowflowers.itisusedasanti-uler,antioxidant,anti-inflammatoryetc.Bothareextracted using soxhlet apparatuswith aquoues and methanolic solvent and subjected to make concentration using a rotatory evaporator at 30*c and to obtain crude drug and the both (rhizome and bark) of *cordia-myxa* and *Curcuma longa* extracts respectively. Used for its phytochemical screening and find out the presence of Alkaloids, Flavonoids, glycosides, and steroid. Both extracts are used for further antiulcer activity. Keywords: Antiulcer, Cordia myxa, Curcuma longa, Phytochemical screening.

FORMULATIONOFOPHTHALMICPREPARATIONBYUSINGTRANSITIONAL METAL COMPLEX SYNTHESISED FROM FRESH LEAF EXTRACT OF HEDYCHIUM CORONARIUM FOR THE TREATMENT OF DIABETIC CATARACT

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Diabetes cataract is one the most common endocrinological disorder which is globally affecting a large number of the persons. Uncontrolled diabetes may trigger secondary delirious complications affecting the kidneys, eyes, cardiovascular system and central nervous system. Elevated blood glucose level causes detrimental secondary ocular complications like diabetic cataract, diabetic retinopathy, diabetic keratanopathy, diabetic glaucoma and diabetic papillopathy. In this work we evaluated the role of the nicotine exacerbation on the diabetic cataract and evaluated the pharmacologicalapproachinmanagementofthediabeticcataractusingtransitionalmetal

coordination complex. The extensive literature survey was done to find suitable candidates for the ligand and metal ion for the metal coordination synthesis which not only manage the diabetes but alsoimprovesthedamagedonetothelensduetocataractcausedbydiabeticcataract.Therationale behind selecting the transitional as metal ion for the complex was the insulinomimetic effect of transitionalmetalsaltsandNSAIDwasselectedbecauseofthepreviousreportedbeneficialeffects of NSAID against diabetic complications due to reduction in oxidative stress as well as in inflammatory mediators like interleukins. The complex was synthesized using as metal ion and NSAID as the ligand. The synthesized complex was evaluated for physiochemical properties and structuralconfirmation.Thecurrentworkalsoexploretheroleofophthalmicdrugdeliverysystem effect against diabetic cataract, to design a system with maximum effect and minimum obnoxious effects.KEYWORDS:HedychiumCoronarium,Diabetescataract,Insulinomimeticeffect,NSAID, Ophthalmic drug delivery system.

REVIEWONVARIOUSTECHNOLOGYOFMICROENCAPSULATIONANDITS APPLICATION

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Microencapsulation isthephenomenon of entrapping/surroundingor enveloping solid particle, droplets of liquids and gases inside a small sphere or thin polymer coating and this small sphere is known as microsphere or microcapsule. The diameter of this microsphere is 1micrometer to several 100 micro meter in size. In recent time there has been rapid boost in the development of microencapsulation technology for incorporating heath promoting substance without reducing its bioavailability and also providenecessaryprotectionformenvironmentalfactorslikeair,lightandmoisture.Themostcommon microencapsulation techniques are spray drying, spray chilling , extrusion, inclusion, complication, fluidizedbedcoating,lyophilzation,coacervationandcrystallization.Thisarticlesreporttheadvanceand recent techniques of microencapsulation and its application. Forthcoming various benefits afforded by microencapsulation techniques in the different area like pharmaceutical and food industry .Keyword- Microcapsule ,Pharmaceutical ,Microencapsulation technology ,Release mechanism

NANOBOTS:THEFUTUREOFCANCERTREATMENT

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Earlydetectionofcancerremainsasignificantchallenge.Whendiscoveredlate,canceroftenresults in high mortality rates. Consequently, there is an urgent need to develop new, more sensitive, and effective diagnostic and therapeutic approaches for cancer management. The advancement of innovative cancer treatments has become a crucial aspect of medical progress. Nanobots, at the forefront of interdisciplinary research, represent one of the most promising applications in nanomedicine. As nanotechnology progresses, nanobots are becoming increasingly valuable in cancer diagnosis and treatment, enabling the creation and deployment of functional molecular and nanoscale devices. In recent years, numerous practical applications of nanobots in cancer therapy have evolved from laboratory experiments to living organisms, and from theoretical concepts to actualimplementation.Furthermore,nanobotscanbeprogrammedtoperformcomplextaskswithin thehumanbody,suchastriggeringtargetedcelldeath,stimulatingimmuneresponses,andrepairing damagedDNA.Thispaperexaminesandevaluatesrecentdevelopmentsinnanobottechnologyfor cancer treatment, focusing on their key characteristics and applications in drug delivery, tumor detection, and diagnostics, targeted therapy, minimally invasive surgery, and othercomprehensive treatments. Additionally, we explore the obstacles and future research directions for nanobots in enhancingcancertherapies.Itisanticipatedthatmedicalnanobotswillbecomemoresophisticated, capableofperformingvariousmedicaltasks,and eventually evolveinto functionalnano-submarines

operating within the bloodstream. Keywords: Nanobots, cancer therapy, nanomedicine, cellular engineering

IMPORTANCEOFNANOFORMULATIONINDRUGDELIVERYSYSTEM

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Nanomedicine andNano drug delivery systemare a relating newbut rapidlydeveloping a science wherematerialsinNanoscalerangeareemployedtoserveasmeansofdiagnostictoolsortodeliver therapeutic agents to specific targeted sites in a controlled manner. The development of Nano particals based drug formulation has yielded the opportunities to address and treat challenging disease. Nano particles varyin size but generally rangingfrom 100- 500nm.This study provided a brief discussion about Nano particles. It based on drug delivery system which is widely used to improve the safety and therapeutic efficacy and encapsulated drug due to their unique physiochemical and biological properties. Due to their small size and large surface area, Nano particlesdrugshowincreasesolubilityandthusenhancebioavailibity.Nanodrugdeliverysystem referstoaNovelapproachinthepharmaceuticalfield,harnessingthepotentialofNanotechnology fordrugdelivery.Nanodrugformulationplayavitalroleinpharmaceuticalfieldsuchasimproves bioavailibity of drug, reduction of the dosing frequency, increase strength, durability, improve electricalconductivityandenhancecatalyticactivityetc.TherearemanytypeofNanoformulation such as solid lipid nanoparticles, carbon anno tube, Nano crystal, in organic Nano particles, Nano silica etc. Keynotes -Drugdelivery system, Nano particles, Nanocarriers, Targeteddrug delivery system

DIGITALTRANSFORMATIONINPHARMACEUTICALS:ANEWERA

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Abstract-Intheoldentimethepharmaceuticalindustryweredrivingbymanprocessbutnowinthe moderneracdrivingbydigitaltransformationandre-shapingthepharmaceuticalindustries.This grand change is happening due to digital transformation with advancements in technology, pharmaceutical company are corporating digital tool to optimize operation, improve patient outcome,enhanceresearchanddevelopmentandstreamlinesupplychain.Justtransformationfrom analogueto digitalisre-shaping the entire ecosystemanddrug discovery,production and delivery. This digital revolution is powered by technology such as Artificial intelligence (AI) , Machine learning (ML), Blockchain , Internet of Things (IoT), the Big data analytics, all of which are enhancingefficiencyinvocationandpatientoutcome.Digitaltransformationindrugdiscoveryand development. The most profound impact of digital transformation can be seen in the field of drug discoveryanddevelopment.Traditionally,drugdevelopmenthasbeenatimeconsuming,costlyand riskyprocess.Butdigitaltoolarechangethelandscape.AIandMLalgorithmcanshiftthroughvast datasettoidentifypotentialdrugcandidatesandpredicttheefficiencyandtoxicity.AIcanidentify biological,chemicalandclinicaldata,thusacceleratingtheearlystageofdrugdiscovery.Machine learning is also proved a very beneficial tool which can predict patient response, aiding in the developmentofpersonalizedmachine.Blockchaininclinicaltrial-blocktechnologyisveryuseful to ensure transparency, security and integrity in clinical trial data. By this all clinical trial data can besecurelystoredandtrackedatthetimeofneed,reducingtheriskoffraudandensuringcomplaints with regulatory standards. Digital technology is a revolutionizing pharmaceutical manufacturing and supply chain management. Smart manufacturing the advancement of Internet of things and automation technologies has lead to the development of smart manufacturing system in pharmaceuticalfield.It'sprovidingsensormonitorandeverystageofproductionprocess.Providing realtimeinsideintomachineperformanceproductqualityandpotentialissues.3Dprintingisbeing

used in pharmaceutical manufacturing for personalized machines. Best technology'spermit for the creation of individualization dosage and formulations tailored to the patient's unique needs. The introductionofRegulatorytechnologiessolutionshasstreamlinedregulatorycomplianceprocesses. By automating task such as documents management, submission tracking and reporting, pharmaceutical companies can reduce the risk of Human error. Key words- Digital manufacturing and supply chain optimization, social media, 3D printing and drug manufacturing, Digital transformation, Digital era, Digital marketing success, Regulatory technologies.

DEVELOPMENTANDEVALUATIONOFNANOSTRUCTUREDLIPIDCARRIER

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Nano structured lipid carrier (NLC) is the second generation of lipid nanoparticle, which is composedofbothsolidlipidandliquidlipid.NLCisutilizedasadeliverysystemduetoitsspecific structure with high loading capacity of the active ingredients. Apart from increasing loading capacityforactiveingredients,italsocanhelptoenhancethephysicalandchemicalstabilityofthe active ingredients for long-term storage and trigger release of it. NLCs have the ability to strongly immobilizedrugsandpreventtheparticlesfromcoalescingbyvirtueofthesolidmatrixascompared toemulsions.Inaddition,themobilityoftheincorporateddrugmoleculesisalsodrasticallyreduced in the solidphase.Furthermore, the liquidoildropletsinthe solid matrix increasethedrug loading capacity as compared to SLNs. NLCs also have the advantages over polymeric nano particles including low toxicity, biodegradability, drug protection, controlled release, and avoidance of organic solvents during production. Recently, NLCs have been intensively studied as delivery carriers for hydrophilic and hydrophobic drugs. The NLCs were developed with a perspective to meetindustrialneedsintermsofqualificationandvalidation,scaleup,simpletechnology,lowcost etc.
Keywords: NCL, lipids, matrix, SLNs, nanoparticle

ROSMARINUSOFFICINALIS(ROSEMARY)OILBENEFICIALFOR ANTIOXIDANT AND ANTIMICROBIAL PROPERTIES

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From the literature review it was observed that there is number of literature published on the antioxidantcapacityandantimicrobialactivityofplantextract,butnoreferenceswereavailablefor Sun Protection factor, antioxidant activity, anti-collagenase and anti-elastase activity of rosemary essential oil (RMO) based formulation. RMO (*Rosmarinus officinalis*) gas chromatography-mass spectroscopyanalysisrevealed35chemicalconstituents.Carnosol(12.65%),terpinen-4-ol(20.6%), β-pinene (10.55%), caryophyllene (2.54%), epi-camphor (9.97%), camphor (7.26%), α-pinene (1.9%),and1,8-cineolewerethemostprevalentcomponentsofRMOessentialoil.Fromtheresult itwasobservedthatoxygenatedmonoterpenoidswaspresentinthemajority.Becauseoftheiranti- aging and antioxidant properties, these substances can be used in skincare regimens to delay skin aging and possibly reduce or prevent oxidative stress. The primary uses of rosemary oil have historically capitalized on the antiseptic and anti-inflammatory actions of the oil. This review summarizes recent developments in our understanding of the antimicrobial and anti-inflammatory activities of the oil and its components, as well as clinical efficacy. Specific mechanisms of anti-oxidant,skinaging,antimicrobialandanti-inflammatoryactionarereviewed,andthetoxicityofthe oil is briefly discussed. Keywords: Rosemary oil, Anti-microbial activity, Anti-inflammatory, Antioxidant, Skin aging properties,

REVOLUTIONIZINGDRUGDISCOVERY:LEVERAGINGAIANDMACHINE LEARNING

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The integration ofArtificial Intelligence (AI) and Machine Learning (ML) into drug discovery processesistransformingpharmaceuticalresearchbysignificantlyimprovingefficiency,accuracy, andcost-effectiveness.Traditionaldrugdiscovery,oftenspanningoveradecadeandcostingbillions ofdollars,faceschallengessuchasthehighrateoffailureinclinicaltrialsandthesheercomplexity of biological systems.AI and ML offer solutions by enabling the rapid analysis of vast datasets,predicting the efficacy and toxicity of compounds, identifying novel drug targets, and optimizing drug design. In particular, MLmodelscan predictmolecularproperties, analyze protein structures, and simulate drug-target interactions with high accuracy, greatly reducing the need for trial-and- errorexperimentation.Deeplearningalgorithmsareincreasinglyusedforstructure-baseddrug design,screeninglargechemicallibraries,andfacilitatingpersonalizedmedicinebytailoring treatmentstoindividualgeneticprofiles.Furthermore,naturallanguageprocessing(NLP) techniques help to mine biomedical literature for insights and patterns that may be overlooked by humanresearchers.Recentadvancements,includinggenerativemodelsfordesigningnovelmoleculesan dAI-powered tools forpredicting the outcomesofclinicaltrials,have the potentialto revolutionize the drug development pipeline. These innovations not only accelerate discovery but alsoholdpromiseforreducingcostsandimprovingthesafetyandefficacyofnewdrugs.AsAIand ML continue to evolve, their integration with bioinformatics, genomics, and cheminformatics islikelytofurtherenhancethescopeandimpactofdata-drivendrugdiscovery.However,challenges such as data quality, model interpretability, and regulatory acceptance remain. Addressing theseissueswillbecrucialtofullyrealizingthepotentialofAIandMLindrugdiscoveryanddevelopment, thereby enabling more efficient and successful therapeutic innovations.

REVOLUTIONIZINGHEALTHCARE:LEVERAGINGDIGITALHEALTHAND PHARMACEUTICAL RESEARCH FOR PERSONALIZED MEDICINE

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Thehealthcareindustryisundergoingafundamentalupheavalduetothegrowingincorporationof new technology. Advances in big data analytics, machine learning, and artificial intelligence (AI) have revolutionized patient diagnosis, care, and treatment. Through their remarkable abilities in predictive analytics, early disease detection, and personalized medicine, AI-powered technologies are improving the effectiveness and precision of healthcare delivery. Additionally, geographic limitations have been solved via telemedicine and remote patient monitoring technologies, which provide convenient and easily accessible healthcare services, especially in underprivileged areas. Peoplearenowabletoactivelymonitorandmanagetheirhealththankstowearabletechnology,the InternetofMedicalThings,andsensortechnologies.Thesegadgetsmakeiteasiertogatherdatain real time, allowing for more individualised and preventative care. Furthermore, the creation of personalisedimplants,prosthetics,andanatomicalmodelsmadepossibleby3Dprintingtechnology has transformed the medical industry and had a big influence on treatment plans and surgery planning.Acceptingthesedevelopmentscouldleadtothedevelopmentofamoreeffective,patient-centered healthcare system that prioritises preventivecare, individualisedtreatment, and improved general health outcomes. Digital technology and advanced data analysis have the potential to revolutionise translational research, despite scientific and legal barriers to its clearance and usage. Thesetechnologieshavethepotentialtodrasticallychangethehealthcarelandscapeastheydevelop further,providingamoreaccessible,effective,andsustainablehealthcareecosystemforcoming

generations.Thefutureofadvancedhealthcaretechnologywillbeshapedbyinnovationonseveral fronts, which will transform healthcare delivery, improve patient outcomes, and give patients and healthcareprofessionalstheresourcestheyneedtomakebetterdecisionsandreceiveindividualised care.Thefutureofhealthcareislikelytobemoreaccessible,effective,andefficientthaneverbefore as these technologies advance and are incorporated into routine medical procedures.

PHARMACOGNOSTIC,PHYTOCHEMICALANDCARDIOPROTECTIVEACTIVITY OF SELAGINELLA BRYOPTERIS AND CALOTROPIS GIGANTEA

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AbstractSincethebeginningofhumancivilization,plantshavebeenusedinalleviatingthehuman distress and it was recorded for about thousands of years ago that the plants are being used for medicinalpurposes.Medicinalplantsarerichsourceofbioactivephytochemicalsorbionutrients.
Studies carried out during the past 2–3 decades have shown that these phytochemicals have an important role in preventing chronic diseases like cancer,diabetes and coronary heartdisease. The major classes of phytochemicals with disease-preventing functions are dietary fibre, antioxidants, anticancer, detoxifying agents, immunity-potentiating agents and neuropharmacological agents. Each class of these functional agents consists of a wide range of chemicals with differing potency. Some of these phytochemicals have more than one function. There is, however, much scope for further systematic research in screening Indian medicinal plants for these phytochemicals and assessingtheirpotentialinprotectingagainstdifferenttypesofdiseases.Thecardioprotectiveplants contain a variety of bioactive compounds, including diosgenin, isoflavones, sulforaphane, carotinized,catechin,andquercetin,havebeenprovedtoenhancecardioprotection,hencereducing theriskofcardiacabnormalities.Thepresentreviewarticleprovidesthedataontheuseofmedicinal plantsparticularly againstcardiac diseasesand to explorethe molecules/phytoconstituentsasplant secondary metabolites for their cardioprotective potential. KEYWORDS: Cardioprotective, Phytoconstituents, Pharmacological, Phytochemical, Secondary Metabolites, Bionutrients

SYNTHESISANDPHARMACOLOGICALEVALUATIONOFSOMENEWSCHIFF BASE SULPHONAMIDE DERIVATIVES

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Schiff-base sulphonamide derivatives are known for their diverse pharmacological properties, includingantimicrobial,anticancer,andanti-inflammatoryactivities.Thisstudyaimstosynthesise novel Schiff base derivatives of sulphonamides and evaluate their pharmacological potential. The synthesis involved the condensation of primary amines with sulphonamides, forming imine (-CN) linkages characteristic of Schiff bases. Structural elucidation of the synthesised compounds was achieved using spectroscopic methods such as FT-IR, NMR, and mass spectrometry. The compounds were subjected to in vitro pharmacological evaluation to assess their antimicrobial efficacyagainstselectedbacterialandfungalstrains,usingstandardassaysforminimuminhibitory concentration(MIC).Furthermore,cytotoxicitystudieswereperformedonhumancancercelllines to determine potential anticancer activity, while anti-inflammatory activity was evaluated using enzymatic and cell-based assays. Results revealed that several synthesised Schiff base derivatives exhibited promising antimicrobial and anticancer activities, with some derivatives showing significant selectivity and potency. These findings suggest that Schiff base sulphonamide derivatives may serve as potential leads for developing new therapeutic agents. Further studies, includinginvivoevaluationsandmechanismelucidation,arerecommendedtovalidatethese

findings and comprehensively explore these derivatives' pharmacological applications. Keywords: Schiff base sulphonamide, anti-inflammatory activity, anticancer, minimum inhibitory concentration.

ROBOTICSINPHARMACEUTICALLABORATORIESANDMANUFACTURING

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The integration of robotics in pharmaceutical laboratories and manufacturing represents a pivotal shift towardautomationandefficiency,addressingcriticaldemandsforprecision,productivity,andregulatory compliance. As the pharmaceutical industry faces increasing pressures to accelerate drug development, ensure quality, and reduce costs, robotics offers transformative solutions across the value chain. In laboratories, robotic systems are enhancing routine processes, such as sample handling, compounding, and analysis, enabling researchers to focus on higher-value tasks. These automated systems not only improve accuracy and repeatability but also reduce human error and contamination risks, crucial in maintaining stringent quality standards. In manufacturing, robotics is driving advancements in production line efficiency, supporting tasks like aseptic filling, packaging, inspection, and inventory management. By deploying robotic systems capable of operating in controlled environments, pharmaceutical companies can maintain consistent production cycles while adhering to Good Manufacturing Practice (GMP) standards. Moreover, the incorporation of collaborative robots, or cobots,isallowingforsaferandmoreefficienthuman-robotinteraction,enhancingproductivitywithout compromisingsafety.Thisintegrationisfurthersupportedbyadvancesinmachinelearningandartificial intelligence, which optimize robotic operations and predictive maintenance. Despite these benefits, the implementationofroboticsinthepharmaceuticalindustryposeschallenges,includinghighinitialcosts, the need for skilled personnel, and regulatory complexities. This presentation will explore the current applications, emerging technologies, and potential future developments in robotics within pharmaceutical laboratories and manufacturing. Through case studies and industry examples, it will provideacomprehensiveanalysisofhowroboticsisreshapingthepharmaceuticallandscapeanddiscuss strategies for overcoming the challenges of adopting this technology.

DIGITALHEALTHINPHARMA:ENHANCINGDRUGDISCOVERY,CLINICAL TRIALS, AND PATIENT OUTCOMES

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The pharmaceutical industry is undergoing a transformative shift driven by digital health innovations,reshapinghowdrugsarediscovered,clinicaltrialsareconducted,andpatientoutcomes are enhanced. This presentation explores the multifaceted role of digital health technologies in modernizing pharmaceutical processes, with a focus on accelerating drug discovery, improving clinical trial efficiency, and enabling patient-centric care. In drug discovery, artificial intelligence (AI) and big data analytics are shortening timelines by identifying potential compounds more effectivelyandpredictingoutcomes.Digitalhealthtoolsarealsorevolutionizingclinicaltrials,with decentralized and virtual trial models increasing patient accessibility, and remote monitoring improving data accuracy. This approach not only enhances the patient experience but also streamlines trial processes and boosts efficiency. Furthermore, patient-centric digital health solutions, such as mobile health apps, telemedicine, and personalized treatment pathways, are empowering patients to take an active role in their health, improving adherence and overall outcomes. Through real-time patient feedback and data-driven decision-making, pharmaceutical companies can better meet patient needs and deliver more targeted therapies. Despite challenges, including data privacy concernsand regulatory complexities, the ongoing digitaltransformation in pharmaholdsimmensepromise.Thissessionwilldelveintocasestudies,benefits,andfuturetrends, underscoringhowdigitalhealthissettoredefinepatientcareanddrivetheindustrytowardamore

efficient,accessible,andpatient-focusedfuture.

DIGITALTRANSFORMATIONINPHARMACEUTICALS:ANEWERA

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Thepharmaceuticalindustryisundergoingasignificanttransformationdrivenbyadvancementsindigital technology, marking a new era in healthcare. This presentation explores the impact of digital transformationonpharmaceuticals,highlightinghowinnovationssuchasartificialintelligence(AI),big data analytics, Internet of Things (IoT), blockchain, and cloud computing are reshaping drug development,manufacturing,andpatientcare.Thesetechnologiesenablefasterdrugdiscovery,enhance quality control, and foster a patient-centric approach through personalized medicine and remote monitoring. The presentation delves into key drivers of this transformation, including the need for efficient manufacturing, regulatory compliance, and improved patient engagement. Case studies illustrate successful applications of digital solutions, such as AI in drug discovery and blockchain for supply chain transparency.However,thepathtodigitaltransformationisnotwithoutchallenges.Issues like data security, regulatory compliance, implementation costs, and the cultural shift required within organizationsposesignificantobstacles.Looking ahead,trendslikeprecisionmedicine,augmented and virtualreality,robotics,andtelemedicinearesettoshapethefutureofdigitalpharmaceuticals.Through these technologies, the pharmaceutical industry can achieve greater efficiency, reduced costs, and improved patient outcomes, ultimately creating a sustainable and patient-focused healthcare system.

FORMULATIONANDCHARACTERIZATIONOFGASTRORETENTIVE MICROSPHERES OF ANTIHYPERTENSIVE DRUG COMBINATION.

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Epidemiological studies demonstrate that more than two-fifth of the Indian adult population has hypertension.Amlodipine is dihydropyridine calciumantagonistthat inhibits flux of calcium ions across cell membranes selectively. Valsartan competes with Angiotensin II for binding at AT_1receptorsubtype.TheACEIsleadtotighteningofbloodvesselsandretentionofsodiumandwater. Calcium channel blockers relax the smooth muscle in blood vessels. A common side effect is leg swelling which can be lessened in combination with ACEIs. Amlodipine besylate and valsartan showpoorbioavailabilityduetolimitedsolubilityandextensivefirstpassmetabolism.Thereforea gastroretentivesystemofthecombinationwaspreparedtoprolongthegastricresidencetime.Angle ofreposewasfoundas49.2^{0}and45.8^{0}respectivelyindicatingpoorflow.Microspherewithinternal hollowstructurewerepreparedemulsionsolventevaporationmethodwithslightmodification.Drug polymer ratio was optimised ro the range 1:11:1.5 and 1:2. The mean particle size increased with increasing polymer concentration. Particle size range was 45.21±2.13 to 93.41±3.29 micrometers.Percent drug entrapment for Amlodipine besylate was 55.8±1.73 to 78.31±1.57 and for valsartan 59.78±1.29 to 77.48±2.21.Boyancy was 77.89±1.82% and 92.30±1.25 % respectively.TheSEMmorphologyshowedadentedsurfacestructurebutagoodfloatingabilityon the surface of medium was observed. FT-IR and DSC revealed no interaction with adiitive ethyl cellulose.InvitrodrugreleaseinSGF1.2pHforAmlodipinebesylatemicrosphereswas62.37to 79.43%andforvalsartan56.07to1.57attheendof24hrs.Stabilitystudyfora30daysperiodin terms of change in particle size and percent residual drug content showed that microspheres were stable at 15 – 30^0 C. The X ray photographic studies after oral administration of microspheres to Wistarrabbitsshowslocalizationinthestomachfor5.5hourswhileafter8hrssomeparticlesmoved to the proximal part of the intestine indicating the gastroretentive property of the combined microspheres for better management of hypertension. Key Words : Gastroretentive , Valsartan, Amlodipine, calcium channel blockers.

RECENTADVANCEMENTINBIOELECTRONICDEVICES:AReview

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Over the past 20 years, there have been substantial advancements in the field of bioelectronic medicine. The ability to precisely regulate cell functions, however, continues to be a significant barrier to turning research findings into implanted bioelectronic devices. Numerous biophysical indicators, including mechanical stresses, matrix stiffness, In order to modify cellular functioning, stratetopographyandexternalelectricalstimulationarebeingstudied.Accordingtothisviewpoint, the bioengineering technique of combining biomaterial scaffolds with electronic systems can be modified to track the cellular physiology inside the manufactured tissue. We have thoroughly examinedtheusesofelectroactivebiomaterialstoconveybioelectricalcuesforregulatingcellfate pathways in this critical review. In addition to the basic physical processes at the tissue-electrode interface, pre-clinical and clinical developments in nanoelectronic devices.Soft and flexible electronics, on the other hand, have emerged as next-generation bioelectronic devices with a more stable and reliable electrical performance, while stiff and rigid electronics provide obstacles in biointegration.biointerfacethatiscompatible.Wehavedescribedseveralcutting-edgemethodsfor creating bioresorbable electronics that the body can get rid of on its own after a predetermined amount of time. Additionally, it has been highlighted that clinically-led bioelectronics therapy can control electrical signals at the brain interface. In conclusion, this paper imagines the use of biomaterials-based biophysical stimulation techniques in advanced tissue engineering approaches based on bioelectronics, which could eventually enable the creation of bioartificial organs.
Keywords: Bioelectronics devices, Nanoelectronic devices, Bioengineering, Biointegration.

CGRPRECEPTORANTAGONISTS–GEPANTS

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The present review is therefore devoted to discussing the putative role of CGRP in migraine pathogenesisandtodescribingthevarioustreatmentmodalitiesthatarecurrentlyavailabletotarget thisneuropeptide.Acutemigraineepisodescanbetreatedwithavarietyofmethods,includingsome innovativedrugtherapies.Migrainetherapyiscomplicatedandrequiresbothpreventativemeasures andimmediatecare.Themostadvancedclinicaldevelopmentprogramfortreatingmigraineattacks isthatforCGRPreceptorantagonists,orGepants.Themajorityofthetime,theDuramaterreleases calcitonin gene-related peptide (CGRP), which causes vasodilation and neurogenic inflammation. Ultimately, a more ideal course of therapy and care results from preciseevaluation, diagnosis, and cooperation. Since 2018, a number of CGRP-targeting migraine drugs have been released. It includes both injectable monoclonal antibodies (e.g. eptinezumab, erenumab, fremanezumab etc) and oral small-molecule CGRP receptor antagonists (e.g. ubrogepant, rimegepant, atogepant, and zavegepant), Since 2018, a number of CGRP-targeting migraine drugs have been released. It includes both injectable monoclonal antibodies (e.g. eptinezumab, erenumab, fremanezumab etc) and oral small-molecule CGRP receptor antagonists (e.g. ubrogepant, rimegepant, atogepant, and zavegepant).Key words: CGRP, migraine, Gepants, monoclonal antibodies, neuropeptide

ANOVELINSIGHTOFTIRZEPATIDEFORDIABETESMELLITUSAND OVERWEIGHT

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The chronic metabolic disease known as type 2 diabetes mellitus (DM) has been becoming more common worldwide. This trend is causing the disease to spread swiftly to additional parts of worldwide, and it is estimated that an ageing population will cause the disease to impact twice as manyindividualsinthetenyearstocome.Overweightandobesityaredangerousillnessesthathave been linked to heart disease, stroke, diabetes, and other major causes of death. Healthcare workers willhaveanevengreaterworkloadasaresultofthis,particularlyindevelopingnations.Tirzepatide isanewmedicationthattheFDAhasapprovedtotreattype2diabetesmellitus.DuetoTirzepatide's potent weight-loss effects, it is utilised as an off-label treatment for obesity. By functioning as a dual GLP-1 and GIP agonist, it optimises benefits akin to those of GLP-1 medications like semaglutide. Similar to GLP-1 medications, it is currently given as a once-weekly subcutaneous injection as a second-line diabetic medication. The FDA approved tirizepatide in May 2022. The most commonly reported side effects are gastrointestinal problems i.e diarrhea and nausea. Tirzepatidelowersbloodsugarlevelsinpeoplewithtype2diabetesbyslowingthepassageoffood through the intestines, limiting the amount of sugar the liver produces, and assisting in the release ofinsulinwhenbloodsugarlevelsarehigh.Theintroduction,mechanismofaction,adverseeffects, contraindications, and important takeaways of Tirzepatide are covered in this article.Keywords: Tizepatide, Diabetic, Type2 DM, Clinical outcome, Cell action.

ARESEARCHARTICLEONTHEDEVELOPMENTOFNOVELDRUGSAND EVALUATION OF ANTICOAGULATION.

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The development of new anticoagulant drugs is a crucial area of research aimed at improving the treatment of thromboembolic diseases, such as deep vein thrombosis, pulmonary embolism, and ischemic stroke. Traditional anticoagulants, like warfarin and heparin, are effective but come with challenges, includinga narrow therapeutic index, theneed forfrequentmonitoring, and a high risk of bleeding complications. This study investigates novel anticoagulant compounds that aim to overcome these limitations by enhancing safety, efficacy, and ease of use. We employed a combination of high-throughput screening, chemical synthesis, and advanced molecular modeling techniquesto identify and design newdrug candidatestargeting criticalproteinsin the coagulation cascade,suchasfactorXa,thrombin,andantithrombin.Theselectedcompoundswereassessedfor their anticoagulant activity through in vitro assays and pharmacodynamic studies, evaluating potency, selectivity, and reversibility factors. Additionally, we analyzed the pharmacokinetics of these drugs, including their absorption, distribution, metabolism, and excretion profiles, to predict their behavior in clinical settings. The findings demonstrate that several new compounds exhibit stronganticoagulanteffectswithalowerriskofbleedingthanexistingtherapies.Thesedrugsshow promise regarding reduced dose variability and less frequent monitoring requirements, effectively addressing significant limitations of current anticoagulant treatments. The study also emphasizes the importance of minimizing adverse effects, such as bleeding and optimizing drug formulations to improve patient compliance. The discovery and evaluation of these new anticoagulants provide valuableinsightsintothefutureofmanagingthrombosis.Furtherclinicaltestingandrefinementof these drug candidates are necessary to confirm their safety and efficacy, with the potential to revolutionize anticoagulation therapy and enhance patient outcomes. Keywords: anticoagulants, drug discovery, thromboembolic disorders, bleeding risk, pharmacokinetics, molecular modeling, drug evaluation.

UNREVEALINGTHEPLAUSIBLEMOLECULARMECHANISMSOFCINNAMON IN AMELIORATION OF DYSMENORRHEA AND MENORRHAGIA: A COMPREHENSIVE REVIEW

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Theprevalenceofdysmenorrheaandmenorrhagiainyoungwomenwereincreasingdrastically ranging from16%to91%. Theseconditionsaretriggeredby numerous factors like stress, food habit etc, results inincreaseproductionofprostaglandins(PGs), especially PGI_2. However, recent findingwitnessthatToll-likereceptor(TLR2andTLR4)alsoplayscrucialrolein dysmenorrheaandmenorrhagia. Usually, women take some marketed available drugslike NSAID such as ibuprofen and hormonal product such as medroxyprogesterone acetate tablets to get relief from abnormal menstrual pain. But their long-term use may cause unfavourable effects including nephrotoxicity,hepatotoxicity,fluidretention,oedema,GITdisorderlikenausea,dyspepsia,peptic ulcer, diarrhoea. Numerous reports showed that *Cinnamomum zeylanicum* from lauraceae family playsan importantrole in relieving the symptomsassociated with dysmenorrheaandmenorrhagia. Studies delineated that cinnamaldehyde and eugenol, a predominant component of cinnamon acts asanantispasmodicandcaninhibittheprostaglandinsandthusreduceinflammation.Interestingly, recent study displayed cinnamon has an inhibitory effect on TLR2 & TLR4 signalling, a crucial mediator in the pathogenesis of dysmenorrhea & menorrhagia. This review was first to present a plausible molecular mechanism how cinnamon may alleviate dysmenorrhea andmenorrhagiaby analyzing the current clinical and preclinical research.Keywords-prostaglandin, menstruation, nephrotoxicity, hepatotoxicity, NSAID.

AREVIEWONPHARMACOLOGICALEFFECTSOFSP(SAWPALMETTO)IN THE TREATMENT OF PATIENTS WITH BPH (BENIGN PROSTATIC HYPERPLASIA)

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The Southeast region of the United States is home to the medicinally useful herbal plant saw palmetto.Peopleallaroundtheworldusesaw palmettoextracts,whicharetakenfromthefruitsof theSerenoa*repens*,asadietarysupplement.Ithelpswithurinarytractinfections,enlargedprostate drums, and better hair growth. It also lessens inflammation. Other uses include increased fertility and sex desire. In Europe, a common treatment for urinary dysfunction brought on by benign prostatichyperplasia(BPH)issawpalmettoextract(SPE),whichisanextractfromtheripeberries of the American dwarf palm. SPE is thought to work by a variety of mechanisms, one of which is the inhibition of 5α-reductase. Due to its alleged benefits for hair regeneration, saw palmetto (SP), aplantextractwithantiandrogenicqualities,hasbecomemoreandmorepopularinthemarketplace. In patients with alopecia, SP was well tolerated and did not cause any significant side effects. In patientswithBPHandanoveractivebladder,SPEmaydirectlyaffectthepharmacologicalreceptors in the lower urinary tract at clinically appropriate dosages, reducing urinary dysfunction. SupplementscontainingSPmaybeatherapyoptionforpatientswithAGA,telogeneffluvium,and self-perceivedhairthinning,despitetheabsenceofstrong,high-qualityresearch.Thereviewstudy's conclusions indicate that extracts from the Saw Palmetto plants, help male patients with benign prostatichyperplasiaimprovetheirurineincontinenceandflowmetrics.Additionally,sawpalmetto has a favorable safety profile and is a safe medication. The pharmacological effects of SPE in treating patients with BPH and related lower urinary tract symptoms (LUTS) should be better understood thanks to this review.Keywords: Benign Prostatic Hyperplasia, Supplement, Lower Urinary Tract Symptom, Saw palmetto extract, Hair loss

INNOVATIVEINSIGHTS:DECODINGCUTTING-EDGETECHNOLOGICALADVANCEMENTS INPHARMA SECTOR.

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Pharmaceutical Discovery and Development: Technology advancements have sped up the identificationofnewcompoundsandimprovedtheeffectivenessofdrugdevelopment.Examplesof these advancements include high-throughput screening, computational modeling, and AI-driven drug design.Biopharmaceuticals and Personalized Medicine: Gene therapies, cell- based pharmaceuticals, and monoclonal antibodies have all been made possible by the development of personalizedtherapybasedonuniquegeneticprofiles.Methodsofproductionanddeliveryhavealso improvedas a result of these developments.This abstract looks at the amazing developments in several areas, including Advanced Drug Delivery Systems. Delivering sustained-release medications,whichboostefficacyandlessensideeffects,isnowpossiblethankstocutting-edgeuses of nanotechnology, microneedles, and implantable technology.Additionally, the traditional pharmaceutical manufacturing industry hasbeen disrupted by additive manufacturing techniques, whichallow forcustomizeddosageformsandon-demandmedicationproduction.Regulationshave evolved to keepupwith technology, which encouragesinnovation and upholds safety standards in themechanismofdrugdelivery.Betterpatientmonitoringanddiseasemanagementhavebeenmade possibleby theintegrationofdigital tool like wearables and telemedicine in healthcare, which has improved treatment outcomes.When patient-centred healthcare is prioritized along with the potentialformoreindividualizedandeffectivetreatments,thepharmaceuticalindustryhasabright future. The abstract outlines the ways in which a range of innovations are revolutionizing the pharmaceuticalindustryandcanimprovepatientoutcomeswhilealsoraisingthebarforthequality andaccessibilityofhealthcare.Keywords:RAS,Integration,Biomathbacteriaalivingcalculator, AI Domination in Research Field.

COMPOSITIONINMULTICOMPONENTSYSTEMS:FUNDAMENTALSAND TERNARY EUTECTIC APPLICATIONS

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Ternary eutectic systems are multicomponent mixtures with unique thermodynamic and structural properties, characterized by a eutectic point where three components coexist in equilibrium at a specific temperature and composition, resulting in the lowest melting point of the mixture. These systems are critical in applications such as a drug delivery system, offering advantages like enhanced thermal efficiency, mechanical strength, and controlled solidification processes.Their studyinvolvesanalyzingphasediagramstounderstandphaseequilibria,solidificationbehavior,and microstructure evolution, with factors such as component interactions, thermal properties, and cooling rates influencing their stability. In pharmaceuticals, ternary eutectic mixtures improve the solubility, dissolution, and bioavailability of poorly water-soluble drugs. The study incorporates advanced analytical techniques such as differential scanning calorimetry (DSC), X-ray diffraction (XRD), and Fourier-transform infrared spectroscopy (FTIR) to characterize eutectic formations in selected drug-excipient systems.This paper reviews their fundamental principles, experimental methodologies,andapplications,highlightingtheirimportanceinaddressingchallengesinmodern material science and engineering. Keywords:Ternary eutectic systems, multicomponent formulations, phase diagrams, thermodynamics, drug solubility, eutectic point.

TELEMEDICINEAND REMOTE PATIENTMONITORING

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Telemedicine refers to the use of technology to provide medical care at a distance, while remote patient monitoring (RPM) involves using digital tools to collect health data from patients outside traditionalhealthcaresettings.Telemedicineandremotepatientmonitoring(RPM)haveessentially altered the provision of healthcare by markedly enhancing both accessibility and operational efficiency. These technological advancements empowerhealthcare practitioners to provide remote services, facilitating timely medical intervention for patients, particularly those residing in underserved regions. RPM harnesses the capabilities of wearable technology and mobile applicationstogatherreal-timehealthmetrics,thusenablinghealthcareprofessionalstoproactively manage chronic illnesses and tailor treatment regimens according to individual patient needs. This methodology not only enhances patient involvement but also mitigates the incidence of hospital readmissionsandcontributestoareductioninoverallhealthcareexpenditures.Theswiftintegration oftelemedicinehasbeenpropelledbytechnologicalinnovations,notablytheexpansiveavailability of internet connectivity and the proliferation of smartphone usage. Nevertheless, obstacles such as concerns regarding data privacy and the necessity forcomprehensive provider education persist as significant challenges. In spite of these impediments, telemedicine and RPM symbolize a pivotal transitiontowardsamorepatient-centrichealthcareparadigm,effectivelyaddressingcontemporary healthcare demands while promoting improved health outcomes. Ongoing innovation research are imperativetofullyharnesstheirpotentialadvantagesacrossvarieddemographicgroups.Leveraging artificial intelligence for better data analysis and personalized care. To explore the benefits of telemedicine and Remote patient monitoring (RPM). To discuss the technologies used in RPM**.** Keywords: Telemedicine, Remote patient monitoring, technological innovations, healthcare paradigm, artificial intelligence

THE METHANOLIC EXTRACT OF ALBIZIA ODORATISSIMA (AO) BARK ATTENUATEDTHEDEVELOPMENTOFDIABETICNEPHROPATHYINRATS.

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Methods:HealthyWistarratsofeithersexweighing180-200gwereemployedinthepresentstudy. ExperimentaldiabeteswasinducedinratsbyinjectingSTZatadoseof45mg/kg(i.p.).Assessment of DN was done by estimating glucose level in blood and urine sample. Moreover, different antioxidant parameters like Catalase, superoxide dismutase (SOD) and thiobarbituric acid reactive substances(TBARS)inkidneytissuesamplewereassessed.Additionally,inflammatorycytokines likeinterleukin-1(IL-1),transforminggrowthfactorbeta(TGF-β)andtumournecrosisfactoralpha (TNF-α) were assessed in renal tissue.Results Methanolic extract of AO bark (AOB) has shown significantpreventionagainstdiabetesassociatednephropathy.Thebarkextractdecreasedglucose level both in urine and blood sample. The AO extracteither alone or in combination with standard drug (glibenclamide) showed significant reduction in oxidative stress in renal tissue, as demonstrated by increased catalase and SOD levels, or decreased TBARS levels compared to diabeticrats.Additionally,methanolicextractofAOBaloneorincombinationwithglibenclamide significantly reduced inflammatory cytokines like IL-1, TGF-β and TNF-α in diabetic rats.ConclusionOur studies suggest that methanolic extract of AOB might be beneficial for the treatmentofDN.TheabilityofAOtoattenuateDNmaybemediatedbytheinhibitionofoxidative stress and inflammatory cytokines by AOB extract. Keywords: *Albizia odoratissima*, Nephropathy,STZ,Glibenclamide.

PHARMACEUTICALPERSPECTIVESONGLYCYRRHIZAGLABRA:A NATURAL APPROACH TO WOUND HEALING

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Nature provides a compelling source of novel therapeutic molecules. The demand for pharmaceuticals, food supplements, cosmetics, health goods, and plant-based medications is growing. According to reports, Glycyrrhiza glabra has numerous advantages in the treatment of differenthumanillnesses.Itssafetyincuringcutaneouswounddiseases,however,needsattention. Licorice improved the healing of cutaneous wounds. Strong anti-inflammatory and antioxidant properties. The extract was discovered to be rich in phenolic compounds, flavonoids, chalcones, coumarins, and saponins (mostly glycyrrhizic acid). Licorice may be utilized as a substitute treatment for wound healing that gets around the drawbacks of contemporary pharmaceuticals. Possessingmanyformulations,suchascream,ointment,andhydroalcoholicextract.Thisplanthas avarietyofphytocompounds,includingisoflavones,glabrinAandB,18β-glycyrrhetinicacid,and glycyrrhizin. Numerous target proteins, such as FGFR1 and α-SMA positive myofibroblasts, have been shown to be useful for tracking wound healing. Macrophages and monocytes are important cells of the inflammatory phase in wound healing. Licorice was far more effective at speeding up thehealingofwounds.VitaminE,Bcomplex,pantothenicacid,lecithin,biotin,niacin,manganese, calcium, calcium salts, proteins, and nucleic acids are all found in licorice and may help promote wound healing. Impaired wound healing can significantly lower quality of life and lead to social and economic issues. Keywords: Wound Healing, Anti-inflammatory, Phytocompounds, Glycyrrhizin, Formulations

FUNCTIONAL ELECTROSPUN NANOFIBERS: PRODUCTION, CHARACTERISTICS,ANDAPPLICATIONSINWOUNDHEALING.

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Electrostatic spinning, a method for producing nanoscale fibers, has recently acquired prominence duetoitssimplicity,versatility,andscalability.Duetotheirelevatedspecificsurfacearea,porosity, easeofdimensionalregulation,andsurfacefunctionalization,electrostaticallyspunnanofibershave garnered significant interest, particularly in biomedical field. The treatment options for managing painandpromotingrapidwoundhealinginchronicwoundsremainsignificantlylimited.Therefore, it is essential to develop alternative therapeutic techniques. Current treatments do not effectively address delayed healing due to the complex nature of the wound healing process. Nanomaterials, due to their versatile and alterable properties, have lately emerged as viable novel therapies for several biological disorders. Electrospinning polymers with a high electric field generates a responsivemeshworkknownasananofibrousnetwork,whichcanfunctionasamedicinaldressing. The constraints of traditional dressings can be overcomewith the use ofa nanofibrousdevice.The present work aims to provide a comprehensive analysis of the literature about the application of electrostaticallyspunnanofibersinwoundhealing,toencapsulatethevastpotentialforresearchers to explore their biological applications, and to suggest avenues and perspectives for further investigation. Keywords: electrospinning; nanofibers; wound healing; tissue regeneration; multifunctionality

EFFECTOFHERBALPLANTSONNICOTINEINDUCEDGASTRICULCER

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Nicotine, a primary constituent of tobacco, is a well-known inducer of gastric ulcers due to its adverseeffectsonthegastricmucosa.Itpromotesoxidativestress,reducesmucosalbloodflow,and

inhibitsthesecretionofprotectivesubstanceslikemucusandbicarbonate,leadingtoulcer

formation. While conventional treatments such as proton pump inhibitors and H2 receptor antagonists are effective, their prolonged use often results in side effects, necessitating alternative therapeutic approaches. Medicinal plants and herbal formulations have gained attention for their gastroprotective properties, attributed to theirrich contentofbioactivecompoundslikeflavonoids, alkaloids, saponins, and tannins. This explores the efficacy of various herbal and medicinal plants in preventing and managing nicotine-induced gastric ulcers. Notable plants such as *Glycyrrhiza glabra*(licorice),*Curcumalonga* (turmeric),and*Camelliasinensis*(greentea)exhibitanti-inflammatory, antioxidant, and mucosal-protective properties. These phytochemicals counteract oxidativedamage,enhancegastricmucussecretion,andmodulateinflammatorypathways,thereby promoting ulcer healing. Additionally, the synergistic effects of plant-based compounds with existing pharmacological treatments are discussed, emphasizing their potential to enhance therapeutic outcomes while minimizing adverse effects. Experimental and clinical studies suggest thatherbalremediesofferapromising,cost-effective,andsaferalternativeforaddressingnicotine-induced gastric ulcers.However, further investigations into their mechanisms of action, bioavailability,andlong-termsafetyarecrucialtovalidatetheirefficacyandestablishstandardized protocols for clinical use. This research underscores the importance of integrating traditional medicine with modern therapeutics for improved gastrointestinal health.

REVOLUTIONIZINGHEALTHCARE:LEVERAGINGDIGITALHEALTHAND PHARMACEUTICAL RESEARCH FOR PERSONALIZED MEDICINE

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Thehealthcare industry isundergoing afundamentalupheavaldueto thegrowing incorporation of new technology. Advances in big data analytics, machine learning, and artificial intelligence (AI) have revolutionised patient diagnosis, care, and treatment. Through their remarkable abilities in predictive analytics, early disease detection, and personalised medicine, AI-powered technologies are improving the effectiveness and precision of healthcare delivery. Additionally, geographic limitations have been solved via telemedicine and remote patient monitoring technologies, which provide convenient and easily accessible healthcare services, especially in underprivileged areas. Peoplearenowabletoactivelymonitorandmanagetheirhealththankstowearabletechnology,the InternetofMedicalThings,andsensortechnologies.Thesegadgetsmakeiteasierto gatherdatain real time, allowing for more individualised and preventative care. Furthermore, the creation of personalisedimplants,prosthetics,andanatomicalmodelsmadepossibleby3Dprintingtechnology has transformed the medical industry and had a big influence on treatment plans and surgery planning.Acceptingthesedevelopmentscouldleadtothedevelopmentofamoreeffective,patient-centered healthcare system that prioritises preventive care, individualised treatment, and improved general health outcomes. Digital technology and advanced data analysis have the potential to revolutionise translational research, despite scientific and legal barriers to its clearance and usage. Thesetechnologieshavethepotentialtodrasticallychangethehealthcarelandscapeastheydevelop further, providing a more accessible, effective, and sustainable healthcare ecosystem for coming generations.Thefutureofadvancedhealthcaretechnologywillbeshapedbyinnovationonseveral fronts, which will transform healthcare delivery, improve patient outcomes, and give patients and healthcareprofessionalstheresourcestheyneedtomakebetterdecisionsandreceiveindividualised care.Thefutureofhealthcareislikelytobemoreaccessible,effective,andefficientthaneverbefore as these technologies advance and are incorporated into routine medical procedures. Key Words – Artificial Intelligence (AI), Healthcare, Digital Health, Telemedicine, Pharmaceutical Research.

PHARMATECHDIGITALTRANSFORMATIONINPHARMACEUTICALS:A NEW ERA

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Technologyhasbeenamajorcontributortosocialandenvironmentalchangesaswellasthedriving forceofeconomicgrowthandprogresssincethefirstIndustrialRevolution.Asignificantchangeis occurring in the pharmaceutical industry as a result of the digital transformation spearheaded by PharmaTech.Thisphraseencapsulateshowadvancedtechnologyandpharmaceuticalresearchare combiningtoopenupnewpossibilitiesfordrugdevelopment,manufacturing,patientinvolvement, and discovery.
The pharmaceutical drug discovery process, which is mostly focused on finding new medications, new drug targets, and lead optimization through high-throughput screening methods, has been completelytransformedbyartificialintelligenceandmachinelearningandtheirapplications.Early biologicalactivity,ADME,andtoxicityparameterpredictionhasdecreasedthelikelihoodoffailure and related expenses in later clinical phases.Additionally, block chain revolution's impact on pharmaceuticals, focusing on its potential to enhance security, transparency, and efficiency throughoutthewholesupplychainfromdrugmanufacturingtodistributionandpatientoutcomesIt mitigatescounterfeit drugs, streamlines regulatory compliance, and makes tracing easier. Additionally, through remote monitoring and real-time data gathering, virtual and decentralized clinical trials increase patient access and enhance data quality. By enabling patients to actively participate in their health PharmaTech is revolutionizing the pharmaceutical industry, fostering innovation, and improving healthoutcomes. PharmaTech pledges to set newstandards for patient-centered care, efficiency, and innovation in healthcare. Despite these developments, the use of PharmaTech presents major challenges with data security, regulatory compliance, andAI and data usage ethics that need to be resolved to ensure equitable access and privacy. Keywords: PharmaTech,Technology,Innovation,PharmaceuticalIndustry,Artificialintelligence,3Dprinting, Block chain technology

ACOMPREHENSIVETOTREATAPEPTICULCERTOUSEDONHERBAL DRUGS

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To study have down that peptic ulcer disease [PUD] occurs because of an imbalance between aggressive injurious and defensive mucosa – protective factors as mucus bicarbonate and adequateblood flow.all ulcersofthe upper gastrointestinaltract were originallythoughttobe caused by the aggressive action of pepsin and gastric acid on mucosa . However , the denominationpeptic ulcerhas lately pointed to helicobacterpylori infection , where the chronic use of non- steroidal anti-inflammatory drugs [NSAIDs] and acetylsalicylic acid are some ofthe disease causing factors . An ulcer is a condition characterized by inflammation , irritation. Themucosal lining of the stomach or duodenum. An effort has been made to gather knowledge about a few plants that might be utilized to cure or prevent peptic ulcers in this review. Reducing pain, curing ulcers and preventing recurrence are the ultimate goals of treatingpepticulcerdisease.thestudy'sobjectiveweretolearnmoreabouttheseveralpopular medicinal plant used in Ayurveda and modern science to treat or prevent peptic ulcer ,as well as some easy to find ,all naturals methods for curing ulcers with widely available herbs. The extensiveliteratureresearchshowednaturalsherbstohavepotentialanti-ulceractivity,including cabbage, bananas, Liquorice, fenugreek, garlic,t erminalia chebula, acacia arabica ,aloe- vera alliumsativan .this study concluded several medicinal plants to effectively prevent orcure peptic ulcers caused by a variety of factors. Key words: H.pylori, Herbal medicine, duodenal

Ulcer,liquorice,pepticulcer

ARTIFICIALINTELLIGENCEINPHARMACEUTICALTECHNOLOGYAND DRUG DELIVERY DESIGN

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Artificial Intelligence (AI) is transforming pharmaceutical technology and drug delivery design, enabling more accurate, efficient, and personalized therapeutic solutions. This review explores the applications of AI in drug discovery, formulation development, and targeted drug delivery, examininghowmachinelearning,deeplearning,andotherAIdrivenmethodologiesoptimizedrug designandenhancetherapeuticoutcomes.AIpoweredpredictivemodelscananalysevastdatasets, aiding in identifying active compounds, predicting drug behaviour, and optimizing dosage forms. Indrugdelivery,AIfacilitatesthedevelopmentofnoveldeliverysystemssuchasnano-carriersand smart drug delivery devices, improving bioavailability and minimizing adverse effects. Additionally, AI contributes to personalized medicine byenabling the customization of treatments based on patient-specific data, thus advancing precision healthcare. This paper highlights recent advancements, challenges, and future prospects of AI in pharmaceutical technology, aiming to provideacomprehensiveunderstandingofitstransformativeroleindrugdevelopmentanddelivery.
Keywords: Artificial Intelligence, Drug Machine Learning, Personalized Medicine, nano carriers, Smart Drug Delivery, Precision Healthcare

PHARMATECHDIGITALTRANSFORMATIONINPHARMACEUTICAL:ANEW ERA

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Pharmatech:DigitalTransformationinPharmaceuticals–ANewEraThepharmaceuticalindustry isattheforefrontofadigitalrevolution,heraldingtheintegrationofadvancedtechnologiesintoall aspects of its ecosystem. This transformation, often referred to as Pharmatech, leverages cutting- edge tools such as artificial intelligence (AI), big data analytics, blockchain, the Internet of Things (IoT), and cloud computing to redefine how drugs are discovered, developed, manufactured, distributed, and prescribed.Innovations in Manufacturing and Supply Chain In the manufacturing sector, digital transformation is enabling precision and efficiency through automation and IoT. SmartfactoriesequippedwithIoTsensorsmonitorproductioninrealtime,ensuringqualitycontrol and minimizing waste. Blockchain technology is revolutionizing the pharmaceutical supply chain by enhancing traceability and combating counterfeit drugs. This secure and transparent digital ledger enables stakeholders to verify the authenticity of products at every stage, ensuring that patients receive safe and effective medications.Future Prospects and Conclusion The Pharmatech revolutionisnotmerelyatechnologicalupgradebutacompleteoverhaulofhowthepharmaceutical industry operates. By embracing digital transformation, companies can achieve unprecedented levels of efficiency, transparency, and innovation. Collaboration among industry stakeholders, regulatory bodies, and technology providers will be critical in realizing the full potential of Pharmatech.Aswestandonthebrinkofanew era,Pharmatechpromisestomakehealthcaremore accessible,affordable,andpatient-centric.Keywords:Pharmatech,digitaltransformation,

personalized medicine, blockchain, innovation, Artificial Intelligence, Revolutionizing Drug Development

FORMULATIONANDCHARACTERIZATIONSOFMULTIPARTICULATE SYSTEM FOR THE TREATMENT OF COLORECTAL CANCER

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Colorectal cancer (CRC) remains one of the most prevalent and lethal malignancies worldwide, necessitating novel therapeutic strategies for improved clinical outcomes. Many researches focus oncolontargetingbecauseofitslesshostileenvironment,lessdegradationofstomachacid-sensitive drugs,and longertransittime (>20hours),resulting in prolongeddrug absorption.Thisstudy aims to develop a stable, biodegradable multiparticulate system of some anticancer drugs, utilizing chitosanandsodiumalginatewithdualioniccross-linking,fortargetedcolondeliveryandsustained drug release in the treatment of colorectal cancer, while assessing its targeting efficacy via in vivo gamma scintigraphy imaging. The formulated multiparticulate system demonstrated improved sustainedreleasecharacteristicsandinvivoefficacyintargetingthecolonfordrugadministration. Consequently, the formulated multiparticulate system may serve as an effective mechanism for enhanced site-specific targeting to the colon. Keywords: Targeted treatment; Colorectal cancer; Multiparticulate system; Gamma scintigraphy imaging

REVIEWOFNANOPARTICLES

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Nanoparticles(NPs)haveemergedasversatiletoolsinplanttissueculture,transgenics,andgenome editing, offering innovative approaches to enhance plant growth and development. We discuss the efficacy of nanoparticles as sterilizing agents, highlighting their ability to effectively disinfect explants while minimizing damage. The potential of nanoparticles as callus inducers is also examined,showcasingtheirimpactoncallogenesisandsubsequentplantregeneration.Furthermore, wedelveintotheroleofnanoparticlesaselicitors,whichcanstimulatetheproductionofsecondary metabolites, thereby enhancing the therapeutic potential of medicinal plants. The use of nanoparticles as inducers of somatic embryogenesis, emphasizing their influence on embryogenic tissue development. The impact of nanoparticles on organogenesis and shoot regeneration is criticallyassessed,providinginsightsinto theireffectsonshootandrootdevelopment.Inaddition, we explore the application of nanoparticles in plant genetic transformation and genome editing, detailingtheiradvantagesovertraditionalmethodsandtheirpotentialtoovercomeexistingbarriers in plant biotechnology. We also address the drawbacks associated with the use of nanoparticles in micropropagationstudies,includingpotentialtoxicityandadverseeffectsonplantgrowth.Finally, we conclude with future perspectives, suggesting avenues for research to optimize the use of nanoparticles in plant biotechnology while ensuring eco-friendliness and cost-effectiveness. Keywords-Biotechnology,Toxicity,Micropropagation,Genome

MEDICINALCHEMISTRYOFNATURALPRODUCTS:UNLOCKINGNATURE'S POTENTIAL FOR DRUG DISCOVERY

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Natural products have long been a cornerstone of drug discovery, serving as a rich source of structurallydiverseandbiologicallyactivecompounds.Derivedfromplants,microorganisms,and

marine organisms, these compounds exhibit unique chemical scaffolds that inspire the design of innovative therapeutics. The field of medicinal chemistry leverages this diversity to modify and optimize natural products, improving their pharmacokinetic properties, bioavailability, and therapeuticefficacy.Notableexamplesincludeantibioticslikepenicillin,anticanceragentssuchas paclitaxel, and immunosuppressants like cyclosporine, all of which originated from natural sources.Theintegrationofadvancedtechniqueslikehigh-throughputscreening,bioinformatics,and molecular docking has further expanded the potential of natural products in drug discovery. However, challenges remain, including the complexity of isolating active compounds, low yields, and scalability for clinical applications. Medicinal chemists are addressing these hurdles through synthetic modifications and biotechnological innovations, such as microbial engineering and combinatorial biosynthesis.This review explores the medicinal chemistry of natural products, highlighting their pivotal role in addressing global health challenges, including antimicrobial resistance and emerging diseases. It emphasizes the synergy between traditional knowledge and modern scientific advancements, underscoring the need for multidisciplinary approaches to fully harnessnature'spharmacologicalpotential.Byunlockingthechemicalsecretsofnature,medicinal chemistry continues to provide groundbreaking solutions for drug discovery and development. Keywords: Natural Product, Drug discovery, Medicinal chemistry, Therapeutic agent, Pharmacological potential.

NANO-TECHNOLOGYINCOSMETICPRODUCTDEVELOPMENT

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Nanotechnology is transforming cosmetic product development by enhancing the formulation, efficacy, and safety of skincare products. By manipulating materials at the nanoscale (1-100 nm), nanotechnology enables the creation of advanced delivery systems that improve the penetration, stability, and controlled release of active ingredients. Nanoparticles, such as liposomes, nanostructured lipid carriers, and dendrimers, can encapsulate sensitive compounds like antioxidants, vitamins, and sunscreens, enhancing their bioavailability and effectiveness.
Nanotechnology also addresses formulation challenges, such as improving the solubility of hydrophobic ingredients and extending product shelf life. Furthermore, it allows for targeted delivery, directing active ingredients precisely to specific layers of the skin, maximizing their impact. This technology also supports the development of multifunctional products that offer multiple skincare benefits—such as anti-aging, moisturizing, and UV protection—within a single formulation, meeting diverse consumer needs. Despite its promising potential, concerns about the safety and toxicity of nanoparticles in cosmetics have prompted increased regulatory scrutiny and research into their long-term effects. As research continues, nanotechnology holds the potential to revolutionize the cosmetic industry, offering more effective, personalized, and innovative skincare solutions for consumers. Keywords: Skincare, Formulation. UV protection, anti-aging

AREVIEWON-THEPHARMACOLOGYANDTOXICOLOGYOF PHYTOCHEMICALS: BENEFITS AND RISK

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Phytochemicals, the bioactive compoundsfound in plants, have gained significant attention due to their therapeutic potential and role in disease prevention. These natural compounds, including flavonoids, alkaloids, terpenoids, and polyphenols, exhibit diverse pharmacological activities such asanti-inflammatory,antioxidant,antimicrobial,andanticancereffects.Theyhavebeenextensively used in traditional medicine and are increasingly being integrated into modern pharmacology for developingnoveldrugsandnutraceuticals.However,thepharmacologicalefficacyof

phytochemicals often depends on factors like bioavailability, metabolic stability, and dosage.Despite their numerous benefits, phytochemicals are not devoid of risks. Excessive or improper use can lead to toxicological effects, such as hepatotoxicity, nephrotoxicity, or gastrointestinaldisturbances.Forexample,pyrrolizidinealkaloidsareassociatedwithlivertoxicity, while overconsumption ofcertain polyphenols may lead to pro-oxidative effects.Additionally, the interaction of phytochemicals with conventional drugs can result in adverse effects or reduced therapeutic efficacy. These challenges necessitate comprehensive pharmacokinetic and toxicologicalstudiestodeterminesafeandeffectivetherapeuticdoses.Thisreviewaimstoprovide a balanced overview of the pharmacological benefits and toxicological risks of phytochemicals. It highlights recent advancements in their therapeutic applications, challenges related to their safety, and strategies for mitigating toxicity, such as improved extraction techniques, bioavailability enhancers, and targeted drug delivery systems. By addressing the dual nature of phytochemicals, thisreviewunderscorestheimportanceofevidence-basedapproachestomaximizetheirtherapeutic potential while minimizing risks. Keywords: Phytochemicals, Pharmacology, Toxicology, Therapeutic potential.

AREVIEWONPHYTOCHEMICALSOFCURCUMALONGA(TURMERIC): TRADITIONAL USES AND MODERN APPLICATION

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Curcuma longa (turmeric), a prominent herb in traditional medicine systems like Ayurveda and Traditional Chinese Medicine, has been celebrated for its therapeutic properties for centuries. The bioactive potential of turmeric stems from its diverse phytochemicals, particularly curcuminoids (curcumin,desmethoxycurcumin,andbisdemethoxycurcumin)andessentialoilssuchasturmerone and zingiberene. Traditionally, turmeric has been used to treat inflammation, wounds, digestive issues, and skin conditions, establishing its role as a natural remedy in various cultures. revealing that turmeric's phytochemicals possess anti-inflammatory, antioxidant, antimicrobial, anticancer, and neuroprotective properties. Among these, curcuminhas been extensively studiedfor its ability to modulate molecular pathways implicated in chronic diseases, including cancer, diabetes, cardiovascular disorders, and neurodegenerative conditions. However, challenges such as low bioavailabilityhavelimiteditsclinicalapplications.Recentadvancementsindrugdeliverysystems, suchasnanoparticles,liposomes,andphytosomalformulations,haveshownpromiseinovercoming theselimitations.Additionally,turmeric'sapplicationshaveexpandedintonutraceuticals,functional foods, and cosmetics, reflecting its versatility and global appeal. Beyond human health, its phytochemicalsarebeingexploredforsustainableagricultureandenvironmentalremediation.This review highlights the integration of traditional knowledge with modern scientific research, emphasizing the need for further studies to understand the synergistic effects of turmeric's phytochemicals and to optimize their therapeutic potential. By bridging ancient practices with contemporary innovations, *Curcuma longa* continues to be a valuable resource for healthcare and beyond. Keywords: *Curcuma Longa*, Phytochemical, Curcuminoid, anti-inflammatory, Nutraceuticals.

EXPLORATIONOFANTIDIABETICPOTENTIALOFAERIALPARTOF BLUMEA LACERA: A WILD SPECIES

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Highbloodsugarlevelsthatremainelevatedforanextendedperiodoftimearethemostcommon

sign of diabetes mellitus (DM), a metabolic disease that falls under this group. Since it affects a significantnumberofpeopleworldwide,itmightbecategorizedasoneofthemajordiseasesinthe world.Diabetesmellitusisadiseasethatistypifiedbythebody'sinabilitytoproduceoruseinsulin. The Asteraceae family includes the annual herbaceous plant Blumea lacera (Burm. f.) DC., which is valued for its substantial phytochemical variety and medicinal potential. Known by names like KarandaJangliMuliinHindiandKukkuradruinSanskrit,ithasseveraluses,suchasintraditional medicine, the manufacturing of essential oils, and nutritional applications. This adaptable plant growswellinavarietyofecologicalzones,particularlyinAfricaandSoutheastAsia.Itsextensive dissemination highlights its versatility and use in ethnomedicine. Anthelmintic, Antipyretic, antimicrobial, diuretic, anti-inflammatory, cytotoxic, antidiarrheal, astringent, sedative, hepatoprotective, hypothermic, analgesic, and antibacterial properties are just a few of the many beneficial phytochemical components found in B. lacera. But nothing is known about B. lacera's antidiabetic properties. A well-known herb among the locals, B. lacera is said to help lower blood glucose levels and is used in traditional medicine to treat a variety of illnesses. This study aims to explore the antidiabetic potential of B. Lacera plant's aerial parts. Keywords: Antidiabetic, Hepatoprotective, sedative, astringent

AREVIEWONADVANCESINTHEHERBALTREATMENTOFMOUTH ULCER

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A sizable percentage of people have mouth ulcers. An unpleasant ailment that affects the oral mucosa is a mouth ulcer. Because of how terrible these ulcers are, there is often a need for an effective herbal remedy. Although they are not fatal, they may interfere with everyday tasks like speaking and eating. Despite the effectiveness of conventional therapies, herbal remedies are becoming more popular since they are safer and easier to obtain. Effective herbal alternatives are essential given the possible adverse effects of synthetic medications. Stress, malnutrition, and microbial infections are frequently implicated, while the precise etiology is still unknown. A potential remedy with few adverse effects is provided by herbal substitutes. Certain herbal formulationshavebeenproveninrecentresearchtohaveantiulcereffectsthroughmechanismssuch improving mucosal healing, regulating the immune system, and supplying anti-inflammatory and antibacterial activities. This review emphasizes the efficacy of plant-based therapies as natural substitutes for synthetic medications by examining the investigation of herbal remedies for mouth ulcers. It highlights their ability to promote mucosal healing, antioxidant effect, their anti-inflammatory and antimicrobial qualities, and their reduced adverse effects.. Herbal medications present an appealing strategy for treating oral ulcers, with an emphasis on effectiveness, patient safety, and simplicity of use, as interest in natural remedies develops. Keywords: Mouth ulcers, herbal treatment, antioxidant effect, anti-inflammatory activity, antimicrobial activity.

EGCGTRANSFEROSOMES:ANOVELSTRATEGYINTHEFIGHTAGAINST NON-MELANOMA CARCINOMA

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Epigallocatechin gallate (EGCG), a key polyphenolic compound found in green tea, has garnered

considerable attention for its potential anti-cancer properties. As a powerful antioxidant, EGCG exhibits a range of biological activities, including anti-inflammatory, anti-proliferative, and pro-apoptoticeffectsonvariouscancercelllines.Ithasbeenshowntoinhibitthegrowthofskincancer cells by modulating multiple signaling pathways, including the inhibition of the epidermal growth factor receptor (EGFR), the downregulation of cyclooxygenase-2 (COX-2), and the induction of apoptosis. Despite these promising properties, the clinical application of EGCG in treating NMSC is hampered by its poor skin penetration, limited bioavailability, and susceptibility to degradation uponexposuretoenvironmentalconditionssuchaslightandoxygen.Toovercomethesechallenges, advanced drug deliverysystemshaveemergedasapromising solution to enhance thedelivery and efficacy of EGCG for topical applications. One such system is the transferosome, a novel type of vesicular carrier characterized by its unique composition of phospholipids and edge activators, whichgrantsitexceptionaldeformability.Thisflexibilityallowstransferosomestopenetratedeeper layers of the skin, facilitating the effective delivery of therapeutic agents like EGCG to targeted sites. Transferosomes can significantly improve the bioavailability and efficacy of lipophilic and hydrophilic drugs while providing controlled release profiles. The incorporation of EGCG into a transferosomal gel formulation offers numerous advantages for the targeted treatment of NMSC. Transferosomalgelscannotonly enhancethestability and solubility ofEGCGbutalso provide an optimal environment for sustained and localized drug release, improving patient compliance and therapeuticoutcomes.Moreover,theabilityoftransferosomestotraversethestratum corneumand reach deeper skin layers can potentially augment the anti-cancer effects of EGCG, thereby enhancing its efficacy against NMSC. The outcomes of this research are expected to contribute valuable insights into the potential of plant-derived bioactive compounds in cancer therapy, promoting the development of safer and more effective non-invasive treatment options for non-melanomaskincarcinomas.Ultimately,thisworkstrivestopavethewayforfurtherinvestigations intotheclinicalapplicationoftransferosomalformulations,expandingthetherapeuticlandscapefor skin cancer management.

AREVIEWARTICLEONFORMULATIONOFANTIACNELOTIONAND EVALUATION OF SCREENING TEST OF PREPARED LOTION.

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Acne vulgaris is a common dermatological condition affecting a significant portion of the global population, especially adolescents and young adults. Its management often requires topical interventions, among which anti-acne lotions play a pivotal role. This review article explores the formulation strategies, ingredients, and evaluation methods for anti-acne lotions. It provides an in-depth analysis ofvariousactive ingredients such asbenzoyl peroxide, salicylic acid, retinoids, and plant-basedextracts,emphasizingtheirmechanismsofaction,effectiveness,andcompatibilitywith different skin types. The formulation of anti-acne lotions involves optimizing factors like pH, viscosity, stability, and bioavailability to ensure therapeutic efficacy and minimize skin irritation. Furthermore,thearticlefocusesontheevaluationofscreeningtestsusedtoassesstheeffectiveness and safety of these lotions. Common screening methods include in vitro studies, ex vivo skin permeabilitytests,andclinicaltrialstodeterminethelotion'sabilitytoreduceacnelesions,control sebum production, and prevent bacterial proliferation. Dermatological testing, including irritation patch tests and sensitivity tests, is also crucial in ensuring that the formulations are safe for use on acne-prone skin. The review also addresses recent advances in formulation technologies, such as nanotechnology and the incorporation of novel delivery systems like liposomes and microspheres, which aim to improve the stability and penetration of active ingredients. In conclusion, the development of effective anti-acne lotions requires a multidisciplinary approach, balancing therapeuticefficacywithpatientcomfortandsafety.Thisreviewprovidesanextensiveoverviewof

current practices in anti-acnelotion formulation and the screening tests employed to evaluate their performance, offering valuable insights for future research and development in acne treatment products. Keywords: Acne vulgaris, benzoyl peroxide, nanotechnology, liposomes and microspheres

ARESEARCHPAPERONPHARMACEUTICALEVALUATIONOFTHE DUCKWEED PLANT

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Objective: The study aims toevaluate the pharmaceuticalpotential of the Duckweed plant (*Lemna minor*) through a comprehensive investigation of its phytochemical constituents, pharmacological activities,andpossibleapplicationsindrugdevelopment.Theresearchseekstoestablishascientific basisforthetraditionalmedicinalusesofDuckweedandexploreitsviabilityasasustainablesource of bioactive compounds.
Methods: Duckweed plants were collected from freshwater ecosystems and authenticated. Phytochemical screening was performed to detect secondary metabolites such as flavonoids, alkaloids, saponins, and phenolic compounds. Extracts were prepared using solvents of varying polarity (e.g., aqueous, ethanol, and methanol). Pharmacological evaluations included in vitro antioxidantassays(DPPHandFRAP),antimicrobialactivityusingagardiffusionmethods,andanti-inflammatory activity assessed via protein denaturation inhibition tests. Toxicity studies were conducted using brine shrimp lethality assays. The findings were compared againststandard drugs for validation. Results: Preliminary phytochemical analysis revealed the presence of significant amounts of flavonoids, phenols, and alkaloids, which contribute to Duckweed's pharmacological activities. The ethanol extract exhibited the highest antioxidant activity with IC50 values comparable to ascorbic acid. Antimicrobial activity showed promising inhibition zones against Gram-positive and Gram-negative bacteria, particularly *E. coli* and *S. aureus*. The anti-inflammatory evaluation demonstrated moderate activity comparable to diclofenac sodium at equivalentconcentrations.Toxicitystudiesindicatedtheplant'sextractstobesafewithinthetested dose ranges, supporting its potential for pharmaceutical applications. Conclusion: Duckweed (*Lemna minor*)holds promising pharmaceutical potentialdue to its rich phytochemicalprofile and significant pharmacological activities. These findings support the plant's traditional medicinal use and highlight its potential as a sustainable source of bioactive compounds. Future studies should focus on isolating and characterizing specific compounds, along with in vivo studies, to further validate their therapeutic applications. Keywords: Duckweed (*Lemna minor*), Antimicrobial activity, anti-inflammation.

AREVIEWONHEPATOPROTECTIVEACTIVITYOFMEDICINALPLANTS

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The liver is an essential organ that plays a crucial role in metabolism and the elimination of xenobiotics from the body.Research has extensively documented liver cell damage resulting from various toxic substances, including certain antibiotics, chemotherapeutic agents, carbon tetrachloride,andthioacetamide,aswellasfromexcessivealcoholintakeandmicrobialinfections.
Furthermore, the synthetic medications available for treating liver disorders often exacerbate liver damage. Consequently, there has been a growing interest in herbal medicines, which have a long history of use in the management of liver diseases. Maintaining a healthy liver is vital for an individual'soverallhealth.Theincidenceoftoxin-inducedliverinjuryisincreasinglyprevalent

today, prompting the pharmaceutical industry to focusonherbalremediesasasaferalternative for addressing liver disorders. This review highlights hepatoprotective natural products such as Boerhaaviadiffusa,Baliospermummontanum,Tridaxprocumbens,Glycyrrhizaglabra,Phyllanthus niruri, Cochlospermum planchoni, Cordia macleodii, Piper chaba, Acacia catechu, Ginkgo biloba, Scopariadulcis,Vitextrifolia,Trianthemadecandra,Tylophoraindica,andHoslundiaopposite.The objective of this review is to compile information on promising phytochemicals derived from medicinal plants that have been evaluated in hepatotoxicity models using contemporary scientific methodologies. Keywords: Liver diseases, Hepatoprotection, Hepatotoxicity, Herbal drugs

3DPRINTINGTECHNOLOGYIN PHARMACEUTICALS

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3D printing technology, first introduced in 1984, is a revolutionary method of additive manufacturing that creates three-dimensional objects layer by layer from digital files. It is rapidly transformingpharmaceuticalscience,enablingthedevelopmentofpersonalizedmedicinestailored toindividualpatientneeds,bodyweight,andlifestyle.Alandmarkinthisfieldwastheapprovalof Spritam (levetiracetam), the first FDA-approved 3D-printed drug, by Aprecia Pharmaceuticals in 2016. Several methods such as fused deposition modeling (FDM), electron beam manufacturing (EBM), binder jetting, and selective laser sintering are employed in the 3D printing of pharmaceuticals. This technology provides significant advantages over traditional manufacturing, including costefficiency, reduced production time, andminimalwastage.Applicationsrange from theproductionofsophisticateddrugdeliverysystemstopersonalizedmedicineandmultifunctional devices with accelerated release characteristics. Despite its benefits, challenges such as regulatory hurdlesandscalabilityremain.However,3Dprintingholdsthepotentialtoredefinepharmaceutical manufacturing, focusing on patient-centric solutions and innovative drug delivery systems.
Keywords-3Dprinting,additivemanufacturing,personalizedmedicine,drugdelivery,pharmaceutical innovation.

ARESEARCHPAPERONTHEFORMULATIONOFHARBALSHAMPOO& EVALUATION OF ANTI-DANDRUFF ACTIVITY

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Objective:Theobjectiveofthisresearchistoformulateanatural,effective,andsafeherbalshampoo withanti-dandruffpropertiesbycombiningselectedmedicinalplantsknownfortheirantifungaland scalp-nourishing effects. The study aims to evaluate the formulated shampoo's physicochemical properties, anti-dandruff efficacy, and user safety.Methods: Herbal ingredients were chosen based on their traditional uses and scientific literature supporting anti-dandruff activity, including *Azadirachta indica* (Neem), *Emblica officinalis* (Amla), *Musa acuminata Colla* (Banana), *Aloe barbadensis miller* (Aloe vera), *Sapindus trifoliatus Linn* (Reetha). Plant materials were extracted using appropriate solvents, and the shampoo was formulated with a blend of natural surfactants, thickeners,andpreservatives.Theformulationunderwentstandardphysicochemicalevaluationsfor pH, viscosity, foam stability, and spreadability. Anti-dandruff efficacy was assessed using an in vitromethodagainst*Malasseziafurfur*(acommondandruff-causingfungus),andanexvivostudy was conducted on hair samples. Safety and dermatological compatibility were tested using patch tests on human volunteers.Results: The formulated herbal shampoo exhibited a stable pH in the rangeof5.5to6.5,makingitsuitableforscalpapplication.Viscosityandfoamstabilitywerewithin

acceptable limits, contributing to ease of application and rinsing. The in vitro antifungal assay showed that the shampoo formulation significantly inhibited *Malassezia furfur* growth, with inhibition zones comparable to standard anti-dandruff treatments. Ex vivo studies confirmed the shampoo's anti-dandruff efficacy, with a visible reduction in dandruff flakes after regular application. Patch tests demonstrated no adverse skin reactions, indicating its safety for human use.Conclusion: The formulated herbal shampoo exhibits effective anti-dandruff activity, stable physicochemical properties, and good skin compatibility. These results suggest that the herbal shampoo could serve as a natural and effective alternative to synthetic anti-dandruff products. Further, in vivo studies and long-term assessments are recommended to validate its efficacy and stability for commercial applications. Keywords: Shampoo, Anti- dandruff, physicochemical evaluations, *Malassezia furfur*.

SYNTHESISOFNEWNOBELSULFONICDRUGSANDEVALUATIONOF ANTIHYPERTENSIVE

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The developmentofnovelsulfonic drugswith antihypertensive propertieshasgarnered significant attentionduetotherisingglobalprevalenceofhypertensionanditsassociatedcardiovascularrisks. Thisstudyfocusesonthesynthesisofnewsulfoniccompounds,specificallydesignedtotargetkey pathways involved in blood pressure regulation. A series of novel sulfonic derivatives were synthesizedusingacombinationoforganicsynthesistechniquesandcharacterizedbyspectroscopic methods including NMR, IR, and mass spectrometry. The synthesized compoundswere evaluated for their antihypertensive activity using standard in vitro and in vivo models. The biological evaluationinvolvedassessingbloodpressuremodulationinhypertensiverats,alongwithassessing renal function, vascular reactivity, and safety profiles. Results indicate that several of the synthesized sulfonic compounds exhibit promising antihypertensive effects, with one compound demonstrating a significant reduction in systolic and diastolic blood pressure without adverse side effects.Themechanismofaction ishypothesizedto involve inhibition ofkeyenzymesinvolvedin the renin-angiotensin-aldosterone system (RAAS) or enhanced nitric oxide availability. These findings suggest that the newly synthesized sulfonic drugs hold potential as therapeutic agents for the treatment of hypertension and warrant further clinical investigation.
Keywords: Sulfonic drugs, antihypertensive,blood pressure regulation, renin-angiotensin-aldosterone system (RAAS), in vitro evaluation, in vivo evaluation, nitric oxide, hypertension treatment.

ANOVERVIEWON:FLOATINGTABLETS

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Floatingtablets,alsoknownasgastro-retentivetabletsorbuoyanttablets,areanoveldrugdelivery system designed to remain in the stomach for extended periods, enhancing the bioavailability of drugsthatareabsorbedintheuppergastrointestinal(GI)tract.Thesetabletsareengineeredtofloat onthegastricfluidsafteringestion,offeringprolongeddrugreleaseandbettertherapeuticoutcomes. The key principle behind floating tablets is their ability to remain buoyant in the stomach. This is achieved by incorporating substances that swell or produce gas when exposed to stomach fluids, making the tablet less dense than the gastric contents. These tablets typically contain hydrophilic polymers like hydroxypropyl methylcellulose (HPMC) or sodium bicarbonate, which help in maintainingtheirbuoyancyandcontrolleddrugrelease.Oneoftheprimaryadvantagesof floating

tablets is their ability to enhance the absorption of drugs that undergo absorption inthe stomach or upperGItract.Bystayinglongerinthestomach,thesetabletsprovideasteadyreleaseoftheactive pharmaceutical ingredient (API), which improves drug bioavailability, reduces side effects, and minimizesthefrequencyofdosing.Applicationsoffloatingtabletsareparticularlybeneficialinthe treatmentofconditionslikepepticulcers,chronicgastritis,andinfectionsrequiringprolongeddrug presence in the stomach, such as Helicobacter pylori eradication. Furthermore, they are ideal for drugs with a short half-life, as they ensure constant therapeutic levels for extended periods. In summary, floating tablets offer a promising approach to improve drug efficacy by enhancing the gastric retention time, ultimately leading to better patient compliance and therapeutic results.
Keywords: Floating tablets, polymer, bioavailability, and sustained release

FORMULATIONDEVELOPMENTANDEVALUATIONOFETHOSOMALGELOF *NYCTANTHESARBOR-TRISTIS*HERBALPLANT

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Ethosomesarenoninvasiveflexiblevesicularcarriersthatenablethedrugstopermeatethroughthe deeper layers of skin and systemic circulation. They are mainly composed of phospholipids, high concentration of ethanol and water. As ethanol is known for its disturbance of skin lipid bilayer arrangement; therefore, inclusion of ethanol into a vesicular membrane provides the ability of vesicletopermeatethroughthestratumcorneum.Thehighflexibilityofethosomalcarrierfromthe added ethanol allows the elastic carrier to squeeze through the skin pores. Phytomedicines are becoming more popular in the world for their ability to cure diseases with less toxicity and better therapeuticefficacy.Herbalmedicinesmayalsohavedisadvantagesofpoorbioavailability,stability issues and patient compliance. In order to minimize these problems various drug delivery systems such as liposomes, phytosomes, niosomes, ethosomes and trasferosomes etc are being developed forphytomedicines.Noveldrug delivery systemscan improve bioavailability ofdrugthatrefersto the existence of drugs in the body part where they are actually needed. *Nyctanthes arbor tristis is* one of the most useful traditional plants in India. It is native to India and distributed wild in Sub-Himalayan regions. Its different parts are known to possess different pharmacological activities in Indian system of medicine. The plant contains various Phytochemical like flavonol, glycosides, oleanic acid, essential oil, tannic acid, carotene, friedline, lupeol, glucose, benzoic acid present in various parts of plants which have significant hepatoprotective, antiviral, antifungal, antipyretic, antimalarial, antibacterial, anti-inflammatory, antioxidant activities. The article reviews on is an attempt to compile and documented information on different aspect of *Nyctanthes Arbor tristis* pharmacological properties and highlights the need for research and their potential development.
keyword: ethosome, phospholipid, phytomedicine, vesicular carriers, *nyctanthes arbor tristis.*

IMPACTOFCLIMATECHANGEONBIODIVERSITY

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Intheduration forthereasonthatIndustrialRevolution,humanemissionsofgreenhousegasesfrom fossil gas combustion, deforestation, and agricultural practices have led to international warming and weather trade. Observed and predicted modifications inside the weather consist of higher temperatures, changes in rainfall patterns, modifications within the frequency and distribution of weather occasions along with droughts, storms, floods and heatwaves, sea stage upward push and consequent influences on human and natural structures. Many scientists argue that the affects of weather alternate might be devastating for herbal and human systems, and that climate alternate posesanexistentialhazardtohumancivilization.However,actiontoreplytoweatherexchangehas

beenslow.Climatealternatedrawsinteresttotherelationshipamongtechnologicalknow-howand society,challengesworldwidegovernanceinstitutions,andtriggersnewsocialactions.Engagement with climate change with the aid of social scientists is prompting conceptual renewal in regions inclusiveofsocialexerciseconcept,andtransitionandtransformationresearchKeywords:Climate change, greenhouse gas emissions, renewable energy, global warming, impact, causes, mitigation strategies, sustainability.

ENVIRONMENTALPOLLUTION:ITSEFFECTSONLIFE&ITSREMEDIES

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Environmentalpollutionisawidespreadproblemanditsimpactonhumanhealthisprofound.This paperprovidesinsightsintotheimpactofenvironmentalpollutiononhumansthroughdiseasesand disorders, animals and trees/plants in the perspective of air pollution, water and soil/soil waste pollution. Studies show that such pollution not only severely affects people with diseases and disorders, but also severely affects animals and trees/plants. According to the author, there is still timeinthehandsofglobalinstitutions,governmentsandlocalinstitutionsiftheyusepriormeasures to balance life in the environment and force intelligent, they relax to live friendly with the environment.Becausetheeffectiveresponsetopollutionishighlydependentonhumanassessment of the problem from any age and the pollution control program is designed as a nationwide profit-sharing effort with a deliberate, they rely on voluntary participation (Sharp & Bromley,1979) Keywords: Environment Pollution, Air Pollution, Water Pollution Soil Pollution, Remedies.

CONCERNINGNOVELDRUGDELIVERYSYSTEM

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Nowaday'sinthelightoftherecentadvancesonpharmacokinetic&pharmacodynamicbehaviour of drugs, an approach towards the development of an optimum drug delivery system is more rational. Now it is appreciable that future success in the drug delivery research will largely be a resultofmultidisciplinaryefforts.Ifanytherapeuticagentthatcanbeusedwiththemoreefficacious andsaferdrugdeliverysystemrepresentsbothlucrativemarketingopportunitiesforpharmaceutical companyandadvancementinthetreatmentofdiseasesofmindkind.Anidealdrugdeliverysystem delivers a specific quantity of drug to the target particular site at the appropriate time and rate as dictated or desired by the etiological and physiological needs of the body. Conventional pharmaceuticaldosageformsareunabletocontroltherateofdrugdeliverytothetargetsite.Thus, thedistributionofdruginnon-targettissueandbodyfluidsrequirethetherapeuticdosesthatcould far exceed the amount needed in target cells-the higher doses often cause serious adverse effects duringtreatment;hence,thenoveldrugdeliverysystems(NDDS)arecarriersthatmaintainthedrug concentration in therapeutic range for a longer duration of time and also, in addition, may deliver the content to the site of action if desired accordingly as per the requirements.
keywords:drugdeliverysystems,therapeuticagent,diseases,targetsite,bodyfluids,non-targeting tissues, drug etc.

PHYTOCHEMICALSCREENINGBARKOF*CORDIA-MYXA*AND*CURCUMA LONGA* RHIZOME

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Peptic ulcers (PU) are sores or lesions in the gastrointestinal mucosa extending throughout the muscularis mucosae, typically characterized by different stages of necrosis, neutrophil infiltration bloodflowreduction,increasedoxidativestressandinflammation.*Cordiamyxa*isoneofthe

traditional medicinally important deciduous plants present in tropical and subtropical region in all over india. It is belong to family Boraginaceae. It is common name Indian cherry. its shows anti-ulcerative property due to antioxidant. Curcuma longa is a perennial herb, leafy, belongs to the Zingiberaceae family, that measures up to 1 m high with a short stem,pointed leaves and funnel-shaped yellow flowers.it is use as anti-uler, antioxidant, anti-inflamatory etc. Both are extracted using soxhlet apparauts with aquoues and methanolic solvent and subjected to make concentrated using a rotatory evaporator at 30*c and to obtain crude drug and the both (rhizome and bark) of *cordia-myxa* and *curcuma longa* extracts respectively. Used for its phytochemical screening and find out presence of Alkaloids, Flavonoids, glycoside and steroid. Both extracts use for further antiulcer activity. Keyword- Antiulcer, Cordia myxa, Curcuma longa, Phytochemical screening.

PHYTOCHEMICALSCREENINGOF*PHYLLANTHUSAMARUS*LEAVESAND ROOT EXTRACTS

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Hepatotoxicity-Allaroundworldhepatotoxicityarecauseduethe Druginducedlivertoxicity.They leadtodamageoflivercellandnecrosisduetointerruptionmetabolitesofdrugenzymesP450and decreasethelevelofantioxidantfromthelivercell.*Phyllanthusamarus*isaperennialherbgrowing asaweedthroughoutIndia.ItiscommonlyknownasBhumiamlabelongingFamilyEuphorbiaceae. It shows hepatoprotective activity due anti-oxidant activity. It is also prevent such as diabetes, hepatitis,andcancerandvitiligo.ItisExtractedbyusingSoxhletapparatuswiththeaquouessolvent and subjected to make concentrated using a rotary evaporator at 30 °C and to obtain the crude extract. The both (leaves and root) extract used for its phytochemical screening and find out the presence of Alkaloids, flavonoids, saponins, glycosides, and steroids. The both extracts used for further hepatoprotective activity. The Both extract was determine for the statistical evaluation in triplicate manner (n=3).

Keyword-Hepatotoxicity,*Phyllanthusamarus*,PhytochemicalScreening**.**

ROLEOFNATURALCOMPOUNDINPHARMACY

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Natural products continue to amaze drug discovery scientists by their amazing bioactivity profiles coupled with their highly complex molecular architecture. For the last decades, these compounds have been the principal source of anticancer chemotherapeutic agents. Around 60-70% of the anticancerdrugswhichareclinicallyusedhavebeeneitherpurenaturalproducts,theirsyntheticor semi-syntheticderivatives.Amongallthenaturalproducts,plant-derivedcompoundsareplayinga pivotal role in anticancer drug discovery programme. These plant-derived compounds include vincristine, vinblastine, camptothecin and its derivatives, etoposide, topotecan, irinotecan, paclitaxel, etc. Several novel and promising anticancer drugs are now under various pharses of clinical trails. Natural products have seen many ups and downs viz-a-viz their role in cancer chemotherapy.During90'sthesecompoundsexperiencedadeclineinthetop-classpharmaceutical companies mainly because of the high throughput screening programmes that involve targeted therapies using small molecules. However, barring few cancers, these therapies were confronted with the ineffectiveness with respect to several solid tumors. This has hugely revitalized their importanceinanticancerdrugdiscovery.Thereviewhighlightsplant-basednaturalcompoundsand herbal extracts that specifically induce anticancer effects through the induction of apoptosis. This review also deals with their mode of action along with their botanical origin.

Keywords:Tumor,Apoptosis,anticancer,Botanicalorigin

ANTICANCERAGENTS:STRATEGIESUSEDTOIMPROVESTABILITYAND PHARMACOLOGICAL PROPERTIES

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Inpastmanyyears,anticancerstudieshavecausedsupereffectsdespitethevariousapproveddrugs nonethelessbeingcharacterisedthroughexcessivesystemictoxicityspeciallyduetotheshortageof tumor selectivity and gift pharmacokinetic drawbacks, along with low water solubility, that negatively affect the drug movement time and bioavailability. The stability studies, executed in slight situations for the duration of their development or beneath stressing publicity to high temperature,hydrolyticmediumormildsupply,haveconfirmedthesensitivityofanticancerdrugs to many parameters. For this cause, the formation of decay products is classed both in pharmaceuticalformulationsandwithinthesurroundingsashealthfacilitywaste.Todate,numerous formulations had been developed for achieving tissue-specific drug focused on and reducing toxic aspect effects, The development of prodrugs represents a promising approach in centered cancer remedy for improving the selectivity, efficacy and balance of active compounds. Recent studies display that the incorporation of anticancer capsules into vesicular structures, consisting of polymeric micelles or cyclodextrins, or using nanocarriers containing chemotherapeutics that conjugate to monoclonal antibodies can enhance solubility, pharmacokinetics, cellular absorption and balance. In this examine, we summarize the brand-new advances in information regarding the improvementofeffectivefairlystronganticancertabletsformulatedasstableprodrugsorentrapped
Keywords: cancer therapy, drug balance, prodrugs, vesicular systems, nanoparticles, trastuzumab

PHYTOCHEMICALPROFILE,PHYTOSOME,HERBALFORMULATIONAND ANTI AGING ACTIVITY

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Aging is a natural process influenced by oxidative stress, environmental factors, and declining cellular function. Phytochemicals, bioactive compounds derived from plants, offer a promising avenue for anti-aging therapies due to their potent antioxidant and anti-inflammatory properties. Key phytochemicals such as flavonoids, polyphenols, alkaloids, and terpenoids play vital roles in mitigating oxidative damage, improving collagen synthesis, and promoting skinelasticity. Despite theirbenefits,the limited bioavailability ofphytochemicalsposesa challenge in achieving optimal therapeutic efficacy. Phytosome technology, an advanced drug delivery system, addresses this limitation by enhancing the solubility, absorption, and stability of phytochemicals. Phytosomes combineplant-derivedbioactivecompoundswithphospholipids,facilitatingbetterinteractionwith biological membranes. This innovative approach ensures that active compounds reach target sites more effectively, thereby improving their anti-aging potential.Herbal formulations incorporating phytosomes have gained attention for their ability to deliver natural anti-aging benefits. Such formulations can reduce wrinkles, hydrate the skin, and combat age-related damage while minimizing the side effects often associated with synthetic products. Synergistic combinations of phytochemicalsandphytosomesinherbalformulationsamplifytheirtherapeuticeffects,offeringa sustainable, safe, and holistic solution for age-related concerns.This study explores the phytochemical profile, phytosome technology, and herbal formulation strategies for anti-aging applications, highlighting their combined potential to revolutionize the cosmeceutical industry. Further research and clinical trials are necessary to optimize formulations, ensure efficacy, and enhance consumer acceptance of these innovative products. Keywords: Phytochemical profile, Phytosome technology, Herbal formulation, Anti-aging activity, Antioxidant properties, Skin rejuvenation.

CURRENTSTATEOFGENETHERAPYINTHETREATMENTOFSICKLECELL DISEASES

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Sickle cell disease (SCD) is a type of hemoglobinopathy due to an autosomal recessive genetic defect, causing significantred cell sickling, multi-organ damage and long term severe morbidities. Sicklecellanaemiaisoneamongstthesicklecelldiseases,whichischaracterisedbythechangein shapeandsizeoftheredbloodcells,whichcarriesoxygentoallthepartsofthebody.Insicklecell anaemia RBCs became sickle shaped or like crescent moon. The Current approach ofits treatment includes the medication to relieve pain and helps to prevent the complications like infections etc. Blood transfusion, stem cell transplantation and bone marrow transplantation are other procedures for the treatment of sickle cell disease. In recent times cell-based Gene Therapy is termed as the best approach to treat SCD. It has various steps, firstly collection of autologous Hematopoietic Progenitor Cells (HPCs) from the bone marrow with the help of mobilising agents such as granulocytecolonystimulatingfactor(G-CSF),butduetovariousadverseeffectsPlerixaforisused. After collection, Conditioning is the next step, myeloablative conditioning is the mostly used process and lentiviral are used as vectors. After conditioning the last step is engraftment, one requires transfusion and irradiated blood product due to risk of Graft versus host disease (GVHT). Study showed that mostadverse effects likeStomatitis, Cytopenia,gonadaltoxicitywhichleads to infertility in post- pubertal patients are due to myeloablative conditioning. This review is mainly focuses on the current state of treatment by gene therapy for sickle cell diseases**.** Keywords- Hemoglobinopathy, Hematopoietic Progenitor cells, Granulocyte colony-stimulating factor, Graft versus Host disease.

NANOPARTICLES-BASED DRUG DELIVERY AND GENE THERAPY FOR BREASTCANCER:RECENTADVANCEMENTSANDFUTURECHALLENGES

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Nanoparticle-based drug delivery and gene therapy have revolutionized breastcancertreatmentby enhancing therapeutic efficacy and reducing systemic toxicity. Recent advancements include the development of multifunctional nanoparticles for targeted drug delivery, improved drug bioavailability, and enhanced tumor specificity. Innovations in nanocarriers such as liposomes, dendrimers, and polymeric nanoparticles enable precise drug release and gene editing. Integration of gene therapy tools, including CRISPR-Cas9 and RNA interference (RNAi), into nanoparticle systems has demonstrated success in silencing oncogenes and overcoming drug resistance. Emerging trends focus on stimuli-responsive and biodegradable nanoparticles to minimize side effectsandimprovepatientoutcomes.Futuredirectionsincludeleveragingartificialintelligencefor personalized nanoparticle design and scaling manufacturing for clinical translation. These advancementsholdimmensepotentialtoreshapebreastcancertherapy,offeringtargeted,safe,and effective treatments. Keywords: Nanoparticles, Drug delivery, Breast cancer, Gene therapy, CRISPR-Cas9,RNA interference (RNAi),Tumor targeting,Stimuli-responsive nanoparticles, Personalized medicine,Biodegradable nanoparticles

PHARMACOLOGICAL AND THERAPEUTIC POTENTIAL OF*HARPAGOPHYTUMPROCUMBENS*(DEVIL'SCLAW)INTHEMANAGEMENTOF INFLAMMATORY DISEASES WITH IN-SILICO STUDY

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Devil'sclaw,or*Harpagophytumprocumbenssubsp.procumbens*,isaprominentmedicinalplantof thePedaliaceaefamily(sesameseedfamily).MostofitisdispersedthroughoutsouthernAfrica.Its remarkablereputationstemsfromitshistoricuseasanindigenousherbalremedyforsyphilis,bitter tonic, inflammatory febrifuge, menstruation issues, and even appetite loss. Many bioactive substanceshavebeenidentified,includingterpenoids,glycosides,iridoidglycosides,andacetylated phenolic compounds. Numerous phytochemical investigations have indicated the bioactive chemicalsharpagosideandharpagide,iridoidglycosides,aspossibleanalgesics,andpainrelievers. Numerous ailments, including Alzheimer's disease, obesity, rheumatoid arthritis, type 2 diabetes, cancer, cardiovascular, and pulmonary disorders have been linked in-depth research to chronic inflammation. Furthermore, chronic inflammatory disorders account for 60% of chronic disorder-relateddeathsglobally.Significantattentionhasbeenpaidtoinflammationanddiseasesassociated topainastheprimarydriversofglobalhealthissues.Itis alsoclearthatinvivoclinicalresearchis stillrequiredtoconfirmtheanti-inflammatoryandanalgesiceffectsof*H.procumbens*compounds. The pharmacological properties and therapeutic potential of *Harpagophytum procumbens* will be thoroughly reviewed in this session, with a focus on how it may be used to treat inflammatory disorders like arthritis. The findings underscore the relevance of natural products as viable choices incurrentpharmacotherapy.Keywords:*Harpagophytumprocumbens*,Devil'sClaw,inflammation, arthritis.

FORMULATIONANDINVITRO-EVALUATIONOFOLMESARTANLOADED IMMEDIATE RELEASE TABLET

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Formulate and evaluate immediate-release tablets of Olmesartan, an antihypertensive drug, to ensurerapidonsetofactionforeffectivemanagementofhypertension.Olmesartanwasloadedinto tablets using direct compression, employing various excipients like microcrystalline cellulose (MCC), lactose, and croscarmellose sodium as the primary binding and disintegrating agents. The tablets were prepared by optimizing the concentration of these excipients to ensure optimal drug releaseandtabletstability.Thephysicochemicalpropertiesoftheformulatedtablets,suchasweight variation, hardness, friability, and drug content, were evaluated in accordance with standard pharmacopeialmethods.Invitrodissolutionstudieswereconductedinsimulatedgastricfluid(SGF) to assess the drug release profile. The formulation showed rapid drug release, with over 80% of Olmesartan being released within 30 minutes, which is desirable for immediate-release dosage forms.Theresultsindicatedthattheoptimizedformulationsuccessfullyachievedthedesiredrelease characteristics and complied with the pharmacopoeial limits for tablet quality. Stability studies showed that the formulation was stable under accelerated conditions. In conclusion, the developed immediate-release Olmesartan tablets demonstrated promising potential for effective hypertension management, offering rapid therapeutic effects with high patient compliance. Keywords: Olmesartan, Immediate Release, Tablet Formulation, Drug Release, Hypertension.

COMPUTATIONALSTUDIES,SYNTHESISANDBIOLOGICALACTIVITYOF NEWER QUINAZOLINONE COMPOUNDS

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Quinazolinonearethespecialtypeofazoandoxocontainingnucleus,abenzeneandpyrimidine

ring. Quinazolinone based compounds possess versatile biological activities such as antifungal, antibacterial, antimalarial, anticancer and antimicrobial etc. quinazolinones motifs are used for designing and development of numerous bioactive lead compounds.Aim & Objective: The objective of newer quinazolinone compounds is to explore and enhance their biological properties for potential therapeutic applications in bacterial and fungal. Our targeted and study, we have synthesis newer quinazolinone compounds and evaluate for their computational studies and biologicalpotential.Methods:Thenewquinazolinones(7a-e)werepreparedbyreactionof2-amino benzoicacid(1)reactswithbenzoylchloride(2)inthepresenceofpyridinetogivebenzoxazinone (3) which on reaction with substituted aniline (4) afforded 4-acetyl-2-phenyl quinazolinone (5), furtheronreactionwithsubstitutedbenzaldehyde(6)toaffordnewquinazolinones(7a-e).Results: The target compounds were characterized by TLC, melting points, and by spectroscopic methods. The computational properties of target compounds were also determined through software and compared with standard drugs. Summary & Conclusion: The synthesis and biological activity of newer quinazolinone compounds remain a significant area of research due to their diverse antibacterialandantifungalactivity.Computationalstudiesprovidevaluableinsightsintothedesign andoptimizationofthesecompounds.Thetargetcompoundswereevaluatedfortheirantimicrobial activity. The new quinazolinones showed promising results.

ANTIMICROBIALRESISTANCE-AGROWINGGLOBALTHREAT

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Theoveruseandabuseofantibioticsinhumanmedicine,agriculture,andanimalhusbandryhasled totheemergenceofantimicrobialresistance(AMR)asaseriousthreattoworldhealth.Despitethe existence of medications intended to eradicate them, this phenomenon permits microbes such as bacteria, viruses, fungus, and parasites to flourish. Bacteria have evolved complex defense mechanisms against antibiotics, including the development of outer membrane vesicles, target alteration, drug degradation, and drug uptake limitation. These processes aid in the quick dissemination of genes resistant to antibiotics among various bacterial strains. AMR is predicted to cause up to 10 million fatalities yearly by 2050 and cost the economy more than $100 trillion, making it a threat on par with climate change and the COVID-19 pandemic. AMR calls for a multipronged strategy that includes the creation of novel antibiotics, complementary and alternative medicine, and a dramatic change in the way antibiotics are used and regulated. Crucial actions include strengthening international surveillance networks, raising public awareness, and giving research, diagnostics, and vaccination stop priority. One of the main causes of AMR arises from the misuse of antibiotics in humans as well as animals. Antibiotics are easily available in many areas, which encourages misuse and overuse. Antibiotics are frequently used in agriculture to encourage the growth of healthy animals, which greatly aids in the emergence of resistant strains. By acknowledging the seriousness of the AMR danger and resolving to work together, we can lessen its effects and safeguard world health for coming generations. The appropriate and limited use of antibiotics in all fields (diseased patient care, crop cultivation, patients not taking antibiotics as prescribed, etc.) might prevent this resistance. Keywords: Antimicrobial resistance, Antibiotic, Genes resistant, international surveillance,

A RESEARCH PAPER ON EVALUATION OF PHARMACOGNOSTIC, PHYTOCHMICALANDANTICANCERPROPERTIESOFRUDRAKSHAPLANT

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The study aims to evaluate the anticancer potential of the rudraksha plant (*Eleocarpous ganitrus*) through a comprehensive investigation of its Pharmacognostic and phytochemical studies. Cancer isoneofthemostseriousdiseasesintheworldincludingbothdevelopedanddevelopingcountries withahighrateofmorbidityandmortality.Itiswellknownthatallovertheworldcancerisoneof themostserioushealthproblemsthataffectthedurationandquality oftheindividual's life.Asthe conventional therapeutic strategies fail to fulfill the major requirements for a successful cancer therapy, the use of naturally developed anticancer agents has evolved as an alternative safe, low cost, and convenient one. Morphological evaluation was carried out and organoleptic characters were evaluated. Microscopy in the form of transverse section of fresh sample and powder sample was carried out. Extract of selected plants were studied on cancer cell lines. It was found that selectedmedicinalplantsareresponsibleforthemanagementofcancerviavariousmechanismslike free radicle scavenging activity, antioxidant, DNA replication inhibitor, blockage of mitosis, polymerizationoftubulinproteinetc.Medicinalplantsmaybeusedformanagementofcancerdue to their easy availability, affordable price, minimum side effects etc. Cell lines are having great importance&promisingfutureinmanagementofCancer,therebypreventingexperimentalanimals from undergoing unnecessary trauma. It was found that secondary metabolites of medicinal plants used for treatment of cancer. Intervention with phytochemicals, either when used alone oras synergistically, they exert positive effects on cancer chemoprevention. Keywords: Rudraksha, *Eleocarpous ganitrus*, Phytochemical, Pharmacognostic, Anticancer activity.

EXPLORINGTHEDIFFERENTPHARMACOLOGICALANDTHERAPEUTIC EFFECT OF HERB *SALIX ALBA*

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For thousands of years, willow bark extract (*Salix alba)* has been utilized as an analgesic, antipyretic, and anti-inflammatory drug. Despite its extensive history of use, only a small number ofpublishedhumanandanimalresearchsupportinganecdotalreportshavebeenmade.Willowbark extracts have been used to treat osteoarthritis, persistent lower back pain, joint pain and have numerous pharmacological activities. Because of their potential anti-inflammatory and analgesic properties, willow bark extracts are also frequently utilized in weight reduction and sports performance goods. willow, at far lower doses, is just as good as aspirin at alleviating pain and inflammation (but not fever).However, no published human trials have directly and precisely shown these benefits. Recent research on animals and in vitro systems has shown the downregulation of some mediators like nuclear factor-kappa B and tumor necrosis factor-α, two inflammatorymediators,islinkedtotheanti-inflammatorypropertiesofwillowbarkextract.While salicin is the main component of willow bark extracts, additional substances such as flavonoids, polyphenols,andothersalicylates,whichhaveantiseptic,fever-reducing,antioxidant,andimmune-boostingqualitiesetc.Researchersbelievethatcouldbebecauseofothersubstancesintheherb.In- vivo studies found that the side effects of salicin, seems to be minors as compared with the non-steroidal anti-inflammatory medicines, such as aspirin. The only reason to be concerned can be allergic reactions in people who are sensitive to salicylate. Keywords:Salix alba, Willow bark extract, analgesic, anti-inflammatory, lower back pain, osteoarthritis, antiseptic, fever-reducing, antioxidant, immune-boosting qualities.

QBDBASEDFORMULATIONOPTIMISATIONANDCHARACTERIZATIONOF FINASTERIDE LOADED NANOGEL FOR ALOPECIA

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Alopecia,particularlyandrogeneticalopecia,isaprogressivehairlossconditioncausedbyelevated dihydrotestosterone (DHT) levels. Finasteride, a 5-alpha reductase inhibitor, is a widely used therapeutic agent for this condition. Aim:To develop, optimize, and characterize a finasteride-loadednanogelusingaQbDapproachfortheeffectivetreatmentofalopecia.Objectives:Todesign and optimize the formulation using QbD principles, identifying critical factors affecting product quality.To characterize the nanogel for its physicochemical properties, drug release profile, and dermal penetration potential.To evaluate the stability and suitability of the formulation for topical application. Methodology Quality by Design (QbD) Implementation: Defined the Quality Target ProductProfile(QTPP)foreffectivetopicaldelivery.IdentifiedCriticalQualityAttributes(CQAs): Particle size, encapsulation efficiency, drug release, viscosity, and pH. Applied Design of Experiments (DoE): A Box-Behnken design was employed to optimize polymer concentration, crosslinker amount, and pH. Formulation Development Nanoparticles were prepared using ionic gelation with chitosan as the polymer and calcium chloride as the crosslinker.The nanoparticles wereincorporatedintoa carbopol-basedgelmatrix containing penetration enhancers.Results-The optimized finasteride-loaded nanogel demonstrated desirable attributes, including enhanced penetration, sustained release, excellent stability, and patient-friendly properties.Summary Finasteride-loaded nanogel resulted in a stable and effective formulation with enhanced dermal penetration, controlled release, and excellent stability. The nanogel demonstrated promising potential as a patient-friendly alternative to oral finasteride for alopecia treatment.

IMPACTOFGLUCOCORTICOIDSONDIABETES:MECHANISMS,RISKS,AND THERAPEUTIC STRATEGIES

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Glucocorticoids, widely used for their anti-inflammatory and immunosuppressive properties, are known to influence glucose metabolism and insulin resistance, contributing to the development of diabetes, particularly in patients receiving long-term steroid therapy. This abstract explores the complex role of glucocorticoids in diabetes, focusing on their molecular mechanisms, such as increased hepatic glucose production, impaired peripheral glucose uptake, and the promotion of centraladiposity.Chronicglucocorticoidexposuredisruptsinsulinsignaling,enhanceslipogenesis, and triggers systemic inflammation, all of which play key roles in the development of insulin resistanceandtype2diabetes.Furthermore,glucocorticoidsmayaltergutmicrobiotacomposition, further complicating metabolic dysregulation. Therapeutic strategies to mitigate glucocorticoid-induceddiabetes(GID)includedoseadjustment,alternativeanti-inflammatorymedications,andthe useofinsulin-sensitizingagents.Lifestyleinterventions,suchasexerciseanddietarymodifications, haveshownpromiseincounteractingthemetaboliceffectsofglucocorticoids.Understandingthese pathways and therapeutic options is critical for managing glucocorticoid-related metabolic disturbances, particularly in patients with pre-existing diabetes or those at high risk. This abstract aims to provide insights into glucocorticoid-induced diabetes, emphasizing the need for integrated approaches in prevention and treatment. Keywords: Glucocorticoids, diabetes, Insulin resistance, metabolic disruption, therapeutic strategies.

EUTECTICFORMATIONINMULTICOMPONENTPHARMACEUTICAL

SYSTEMS:ASYSTEMATICEXPLORATIONOFTHERMODYNAMICAND PRACTICAL IMPLICATIONS

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Eutectic systems play a critical role in the development of multicomponent pharmaceutical formulations, offering enhanced solubility, stability, and bioavailability of poorly water-soluble drugs. In this study, we systematically investigate the eutectic behavior within multicomponent pharmaceutical systems, focusing on the thermodynamic principles that govern their formation, phasebehavior,andpracticalapplications.Ourresearchexploresthephasediagramsofbinaryand ternary systems, emphasizing the interplay of molecular interactions that lead to the formation of eutectic mixtures. The eutectic point is identified as the composition where two or more solid components crystallize simultaneously at a lower melting point than any of the individual components.Thisphenomenoncanbeharnessedtoimprovetheprocessabilityanddissolutionrates of drug formulations, especially for active pharmaceutical ingredients (APIs) with poor aqueous solubility. The study incorporates advanced analytical techniques such as differential scanning calorimetry (DSC), X-ray diffraction (XRD), and Fourier-transform infrared spectroscopy (FTIR) to characterize eutectic formations in selected drug-excipient systems. We provide an in-depth analysis of the physicochemical properties of these eutectic mixtures and explore theirpotential to actassoliddispersionsthatenhancedrugreleaseprofiles.Additionally,theinfluenceoffactorssuch as particle size, crystal morphology, and the ratio of components on eutectic formation is systematically assessed. The systematic approach outlined in this study serves as a foundation for furtherexplorationofeutecticmixturesinthepharmaceuticalindustry.Keywords:Eutecticsystems, multicomponent formulations, phase diagrams, thermodynamics, pharmaceutical excipients, drug solubility, eutectic point, solid dispersions.

QUALITATIVEANALYSISOFGENOMICDNAANDPHYTOCHEMICALSOF ANTISTRESS PLANTMORUS ALBA L.

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ThepresentstudyexploresthequalitativeanalysisofgenomicDNAandphytochemicalsofMorus albL. (white mulberry), a plant known for its anti-stress properties. Methanolic extracts of Morus albawerepreparedusingrotaryshakingtoisolatebioactivecompoundseffectively.Phytochemical screeningrevealedthepresenceofessentialsecondarymetabolites,includingflavonoids,alkaloids, phenolics,andsaponins,whichcontributetotheplant'sadaptogenicandantioxidantpotential.Thin Layer Chromatography (TLC) analysis was performed to further identify and separate the active compounds. Additionally, microscopic studies were conducted to examine the plant's cellular structures.Finally,high-qualitygenomicDNAwassuccessfullyextractedandanalyzed,providing a basis for molecular characterization. These findings underscore the therapeutic value of Morus albaanditspotentialapplicationsinstressmanagementtherapies.Keywords:Phytochemicalstudy, Antistress effect, Analysis of Genomic DNA.

EVALUATIONOFANTIDEPRESSANTACTIVITYOF*NYCTANTHESARBOR-TRISTIS* STEM EXTRACTS IN EXPERIMENTAL MODELS

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Background:Nyctanthesarbor-tristis(Night-floweringJasmine)hasbeenusedintraditional

medicine for its purported antidepressant properties. This study aimed to investigate the antidepressant activity of Nyctanthes arbor-tristis stem extracts. Methods: Stem extracts were prepared using methanol, ethanol, and aqueous solvents. The extracts were evaluated for antidepressantactivityusinginvitro(monoamineoxidaseinhibitionassay)andinvivo(forcedswim test, tail suspension test, and locomotor activity test) models. Results: The methanolic extract exhibited significant monoamine oxidase inhibition (IC50 = 23.4 µg/mL). In vivo studies revealed dose-dependent reductions in immobility time in the forced swim test (50-200 mg/kg) and tail suspension test (25-100 mg/kg). Locomotor activity was increased at 50-100 mg/kg.Conclusion: Nyctanthes arbor-tristis stem extracts demonstrated significant antidepressant activity, supporting its traditional use. The methanolic extract's potent monoamine oxidase inhibition and in vivo efficacy suggest a potential mechanism of action. Further studies are warranted to isolate active compounds and explore clinical applications.

ADVANCEMENTSINDIGITALSOXHLETTECHNOLOGY:AUTOMATIONAND CONTROL

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The Soxhlet apparatus has been a cornerstone of laboratory solvent extraction methods, mainly becauseofitseffectivenessandeaseofuse.Itsconventionaldesign,however,isessentiallymanual and necessitates a considerable dealof human supervision. Digital technology has transformed the modernity and functionality of this equipment. Digital Soxhlet equipment employs cutting-edge automationandcontroltechnologytosolvetheissuesfacedbytraditionalSoxhletsystems,suchas extensive time investment, high solvent usage, demand of manual operation, and temperature management, which limits their applicability in modern, fast-paced laboratory environments. The elements of digital soxhlet equipment include real-time monitoring, automated solvent recovery, and programmable temperature and timing controls, which allow accurate and repeatable extractions with little assistance from humans. These devices are perfect for high-throughput environments because they improve workflow efficiency by lowering the manpower needed and improving extraction times. Optimized solvent management also drastically lowers solvent use, which complies with legal standards and green chemistry principles. By utilizing automation systems and data analytics, the digital transformation of the Soxhlet apparatus enables remote monitoring and control, thereby improving accuracy, effectiveness, and safety.Despite their many benefits, digital soxhlets have some significant drawbacks; their high initial cost is their main disadvantage,whichmakesthemunaffordableforsmallerlabsoruniversitieswithtighterresources. Additionally,theregularmaintenanceandcalibrationofthesesystems'digitalcomponentsincreases operatingcostsandrequirestheinvolvementofspecializedworkers.Thisposterdemonstrateshow thedigitizationofclassicallaboratoryequipmentcanaddresstheincreasingdemandforsustainable, efficient, and reproducible extraction processes across industries such as pharmaceuticals, food science, and environmental analysis. Keywords: Digital Soxhlet Equipment, Pharmaceuticals, Automation, Sensors

TRITERPENOIDSBASEDNANOCARRIERSDRUGDELIVERYSYSTEM

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Triterpenoids are a diverse class of natural compounds found in various plants, fungi, and marine organisms. They are characterized by their molecular structure composed of six isoprene units, which give rise to a wide array of chemical structures and biological activities. Triterpenoids have gained significant attention due to their numerous pharmacological properties, including anti-inflammatory, anticancer, antioxidant, andantimicrobial effects. However, despite their promising

therapeuticpotential,triterpenoidsfaceseverallimitationsthathindertheirwidespreadapplication. These limitations include poor aqueous solubility, low bioavailability, instability under physiological conditions, and non-specific distribution within the body. Nanoparticles offer a promising solution to overcome the limitations associated with triterpenoids. By encapsulating or conjugating triterpenoids within nanoparticle formulations, researchers can enhance their pharmacokineticproperties,improvetheirstability,andachievetargeteddeliverytospecifictissues or cells. Keywords: triterpenoids, nanocarriers drug delivery system, limitations, pharmacological activities.

AREVIEWONMEDICINALPLANTSWITHANTIDIABETICACTIVITY

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Inrecentyears,therehasbeensignificantgrowthinthedomainofherbalmedicine,gainingtraction in both developing and developed nations due to their natural origins and reduced side effects. A thorough review was undertaken to compile information regarding medicinal plants utilized in the management of diabetes mellitus, a metabolic disorder of the endocrine system that affects nearly 10% of the global population, with this number steadily increasing. The profiles included in the review provide details on the scientific and family names, the specific plant parts and test models employed,theextentofhypoglycaemicactivity,andtheactivechemicalconstituents.Theextensive array of plants discussed in this review, comprising 108 species from 56 families, underscores the significanceofherbalremediesindiabetestreatment.Theeffectsoftheseplantsmaynotonlydelay the onset of diabetic complications but also rectify metabolic irregularities. This study encourages further exploration into the potential applications of medicinal plants with antidiabetic properties. Keywords: Comprehensive review, medicinal plant, antidiabetic potential.

BIOLOGICALANDHYPOGLYCEMICEFFECTOFPOLYHERBALEXTRACT COMPARISON OF MARKETED FORMULATION

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Introduction: Diabetes remain as one the chronic disease worldwide, due to the unhealthy lifestyle ofthepeople.Hereweexplorebiologicalandhypoglycemiceffectsofsomeextractlike‘shami ,giloy,baboolandbel,sowhichwecanregaintheirmedicinalimportancethathadbeenunderrated forseveralyearsaftermodernization.BAim:Toanalysethehypoglycemiceffectofpolyherbaldrug such as shami, giloy,babool and bel , and then compare it to the marketed formulationto improve it’seffect.Objective:Tofindthatdoesshami,giloy,baboolandbelhaveantidiabeticpropertiesor not. Method: firstthe extract of the following plants are taken .During the following investigation phytochemical composition such as saponin , tannin, glycoside etcwere investigated and also the physiochemicalcompositionsuchasashvalue,estervalue,acidvaluealsoexaminedandallthese aregetcomparedasthatofthemarketedformulations.Result:Duringthisprocessithadbeenfound that all these extracts have anti-diabetic properties which can help in controlling blood sugar level in the blood , and as a result we have got that these extract can be used as active pharmaceutical ingredients under efficacy, consistency and safety.Summary: We had investigated the hypoglycemic effect of shami,giloy,babool,and bel by analyzing the phytochemical and physiologicalpropertiesofit andcomparetheeffectoftheseabstractstothemarketed formulation for diabetes .Conclusion: the following polyherbal extract can be used as good API (active pharmaceutical ingredient) pharmaceutical preprations for the diebetic patients. Keywords:Hypoglycemic activity, Pharmacognostic studyt, TLC,Vascular bundle calcium oxylate crystals

DEVELOPMENTANDEVALUATIONOFLOSARTANLOADEDIMMEDIATE RELEASE TABLET

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The development and evaluation of losartan-loaded immediate release tablets were undertaken to optimize the formulation forrapid and efficient drug delivery. Losartan, an angiotensin II receptor antagonist used in the treatment of hypertension, requires precise formulation strategies to ensure swift onset of action. The immediate-release tablet formulation was designed to deliver losartan effectively and rapidly after oral administration, ensuring timely therapeutic efficacy.The formulation involved the selection of suitable excipients, including disintegrants, binders, and fillers, to ensure quick disintegration and dissolution. The tablets were prepared using direct compression, a cost-effective and scalable manufacturing process. Several formulations were developed with varying concentrations of excipients, and their characteristics, such as hardness, friability, weight variation, and drug content, were assessed.
In-vitro dissolution studies were conducted to evaluate the release profile of losartan, and the formulations were optimized to achieve rapid drug release, complying with pharmacopoeial standards. The tablets were also evaluated for stability, ensuring that the formulation-maintained drug potency and integrity under accelerated storage conditions. Keywords: Losartan, Immediate Release, Tablet Formulation, Drug Release, Hypertension.

PHYTOCHEMICALSASECO-FRIENDLYPESTICIDES:MECHANISMAND APPLICATION

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The increasing demand for sustainable agricultural practices has brought phytochemicals to the forefront as eco-friendly alternatives to synthetic pesticides. Derived from natural sources like plants, these bioactive compounds, including alkaloids, terpenoids, flavonoids, and essential oils, exhibit potent pesticidal properties against a wide range of pests. Their mechanisms of action involve disrupting pest metabolism, interfering with reproduction, and targeting specific biochemical pathways, often with minimal impact on non-target organisms and the environment.Phytochemicals offer several advantages over conventional pesticides. They are biodegradable, reduce the risk of chemical residues in crops, and exhibit a lower propensity for developingpestresistance.Forinstance,neem-basedproducts(azadirachtin)haveproveneffective as insect growth regulators, while pyrethrins from chrysanthemum flowers act as neurotoxins against insects. Essential oils like citronella and eucalyptus also serve as natural repellents. These attributes align with global efforts to reduce the ecological footprint of agriculture.However, challengessuchaslimitedstability,highextractioncosts,andvariabilityinefficacyunderdifferent environmental conditions hinder their widespread adoption. Recent advancements in formulation technologies, including nanoencapsulation and microemulsions, have enhanced the stability and bioavailability of phytochemicals, improving their field applicability.This review highlights the potential of phytochemicals as eco-friendly pesticides, discussing their mechanisms of action, practical applications, and challenges. By integrating these natural compounds into pest management strategies, agriculture can transition towards more sustainable and environmentally responsible practices. Further research is essential to optimize their use and explore synergistic combinationsforenhancedefficacy. Keywords:Phytochemical,Eco-friendlyPesticides,

SustainableAgriculture,NaturalPestControl.

DIGITALSOLUTIONSINPHARMACEUTICALS:REVOLUTIONARY PERSPECTIVES IN INDUSTRY, ACADEMICS, AND HEALTHCARE

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The rapid advancement of digital technology has catalyzed transformative changes across the pharmaceutical sector, reshaping industry practices, academic pursuits, and healthcare delivery. This revolutionary role of digital solutions has an impactin these three interconnecteddomains. In thepharmaceuticalindustry,theintegrationofartificialintelligence(AI),machinelearning,andbig data analytics has expedited drug discovery, reduced costs, and improved efficiency. Industries integratingtoolssuchasPAS-XMESandAspentechwhichaidinproductioncycle,buildingsupply chain, and managing optimal schedules for continuous and batch operations to drive overall productivity and profitability. Academia has embraced digital tools for education and research, utilizing virtual labs, e-learning platforms, and simulation technologies to deliver cutting-edge knowledge and practical training. In healthcare, digital health solutions such as wearable devices, telemedicine platforms, and personalized medicine are transforming patient care. Real-time health monitoring and data-driven insights empower both clinicians and patients, promoting proactive disease management (E.g. RESET). The integration of electronic health records (EHRs) with AI- driven diagnostics has streamlined decision-making and improved outcomes. Despite these advancements, challenges such as data security, digital literacy gaps, and ethical concerns persist. Addressingthese issues through robust regulations, multidisciplinary collaborations, and inclusive policiesisessentialforsustainablebybridgingindustry,academia,andhealthcare,digitalsolutions are paving the way for a smarter, more efficient, and patient-centric pharmaceutical future. Digital solutions, pharmaceuticals, artificial intelligence, healthcare innovation, academic advancements.

DIFFERENTSCREENINGMETHODSFORCONVULSIONSINRATSORMICE

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A common neurological condition that affects about 1% of people worldwide, epilepsy causes frequent seizures that can seriously interfere with day-to-day functioning. Epilepsy frequently causes convulsions, which provide significant health issues and emphasize the need for efficient screening techniques in both research and therapy. The applications, mechanisms, and usefulness of several in vivo and in vitro methods for researching convulsions in rats and mice are examined in this review. Pentylenetetrazol (PTZ), kainic acid, and picrotoxin are examples of chemical induction approaches used in vivo that work by interacting with neurotransmitter systems to cause seizures. Methods of electrical stimulation, such as maximum electroshock (MES), are also dependable models for evaluating antiepileptic medications (AEDs) and comprehending the fundamental causes of seizures. However, in vitro models, such as GABA uptake assays and hippocampus slice preparations, provide high-throughput screening and enable researchers to examine the cellular mechanisms underlying convulsive responses. Because to their durability and ease of use, PTZ and MES are popular models. Furthermore, emerging methods such as optogenetics and chemogenetics offer fine-grained control over brain activity, opening up new avenuesforthestudyofepilepsy.Itisessentialtocomprehendthesemethodsinordertoencourage

the development of new AEDs and improve therapeutic result. Keywords: Epilepsy, convulsions, and in vivo, in vitro, PTZ, MES, Antiepileptic medication, Screening model

QBDBASEDAPPROACHTORP-HPLCMETHODDEVELOPMENTAND VALIDATION FOR ESTIMATION OF RIVAROXABAN IN DEVELOPED NANOSTRUCTURED FORMULATION

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The this study describe the principles of systematicQualitybydesign(QbD)approachforthe development of RP-HPLC method for the estimation of Rivaroxaban in newly developed nanostructuredformulation.Initiallyanalyticaltargetprofile(ATP),andcriticalanalyticalattributes (CAAs) were identified. Optimization studies were performed by applying Box-Behnken design. The Shimadzu C-18 column (150mm x 3mm, 3.5µm particle size) was utilized for reversed-phase chromatographic separation with a mobile phase comprising a mixture of acetonitrile and water (70:30 v/v).Theflowratewas 1.2mL/minataλmaxof252nmandaninjectionvolumeof10µL.Theresultsof%RSDwere0.096and0.542r espectivelyforsystemandmethodprecision. As per the developed method the LOD and LOQ is 25 ppm and 76 ppm, respectively. The studies demonstrated that the newly developed method is simple, rapid, robust and reproducible for the estimation of rivaroxaban in developed nanoscale formulation. Keywords: Quality by design, RP- HPLC, Nanoscale, Critical analytical attributes.

ATHOROUGHANALYSISOFTHEPHARMACOLOGICAL,PHYTOCHEMICAL, AND ANTITUMOR PROPERTIES OF *ASPARAGUS RACEMOSUS* LEAVES

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Asparagus racemosus (Shatavari) is a valuable customary therapeutic plant, viewed as developed all through the tropical and subtropical pieces of India. Today it is a broad conviction on the level of the overall population that normal substances are intrinsically better than synthetic substances and has run a standard job in the wellbeing up keep framework for the counteractionof infections. The major bioactive constituents which give the restorative worth of the spice are a gathering of steroidal saponins, sarsasapogenins, flavonoids, kaempferol, quercetin, rutinand polyphenols. The tuberous underlyingfoundations ofthis herbaceousplantare broadly applied inthedrug aswell as onbiotechnologicalscale,inarrangementofdifferentnaturalarrangementssinceithasremarkable potential, and guard framework. It is utilized in very nearly 67 Ayurvedic arrangements and regularly alluded as Rasayana' in Ayurveda because of its therapeutic purposes. Key Words: Asparagus racemosus, Rasayana, Ayurvedic, Sponins, Flavonoids.

DISCOVERING THE COMBINED THERAPEUTIC POTENTIAL OF *SWERTIA CHIRATAANDALLIUMSATIVUM*:ATHOROUGHANALYSISOFITSSYNERGISTIC ANTI-OXIDANT AND ANTI-DIABETIC QUALITIES

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ThisthoroughanalysisinvestigatesthesynergisticmedicinalpotentialofSwertiachirataandAllium sativum (garlic) in treating oxidative stress and diabetic mellitus. Although both herbs have historically been used for medical purposes, new research indicates that using them together may havesynergisticbenefits.Weprovideanoverviewofthetwoplants'botanicaldescriptionsand

phytochemicalcompositions,emphasisingimportantsubstanceslikeflavonoidsandallicin.Allium sativumandSwertiachirataarestudiedfortheirseparateantioxidantandantidiabeticqualities,and thentheirsynergisticbenefitsareexamined.Discussionisheldaboutthemechanismsthatunderlie synergy, such as improved bioavailability and complimentary routes. The review includes recommendations for future research areas and an evaluation of the clinical data supporting the combineduseoftheseplants.Thepotentialofsynergisticplantcombinationsinthedevelopmentof new antioxidant and antidiabetic medicines is highlighted in this study.Key Words: Allium sativum, Swertia chirata, synergistic effects, antioxidant, antidiabetic, phytochemicals, oxidative stress, diabetes mellitus.

ARESEARCHPAPERONDEVELOPMENTANDEVALUATIONOFNANOFIBER PATCH

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The study aims to evaluate the Nanofiber-based technologies which represent a transformative advancement in drug delivery and wound care, addressing critical challenges in pharmaceutical development and enhancing healing outcomes. The research highlights the unique properties of nanofibers,suchastheirhighsurfacearea-to-volumeratio,interconnectedporosity,andability tomimic the extracellular matrix, which collectively enhance drug bioavailability and facilitate tissue regeneration. Studies have shown that nanofiber composites significantly improve the dissolution and bioavailability of poorly water-soluble drugs, a persistent obstacle in the pharmaceutical industry. These composites are characterized by optimal nanofiber size and morphology, which contribute to enhanced thermal stability and aprolonged drug releaseprofile exceeding 14 days. In the realm of wound healing, nanofiber-based systems exhibit remarkable efficacy, promotingwound closure,skin regeneration, andcollagen deposition. They also effectively reduce inflammatory markers while increasing levels ofvascular endothelial growth factor(VEGF),therebysupportingangiogenesis.Themultifunctionalattributesofthesenanofibrous dressings—encompassing anti-inflammatory, antioxidant, pro-angiogenic, andhaemostaticproperties—positionthemaspromisingcandidatesforadvancedwoundtreatment. Moreover, the structural advantages of nanofibers, including high porosityandsmall pore sizes, ensure excellent microbial barrier performance while maintaining essential moisture and air permeability, both critical for optimal wound healing. As research progresses, the integration of nanofiber technology with other advanced materials and techniques is poised to further enhance therapeutic outcomes and tackle complex medical challenges in drug delivery and wound care. Keywords: Nanofiber; Wound healing; Tissue regeneration; Antimicrobial activity; Anti-inflammatory; endothelial growth factor

SULFASALAZINE:ANEXAMINATIONOFITSAPPLICATIONINRHEUMATOID ARTHRITIS TREATMENT

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Sulfasalazine(salazosulfapyridine),awell-knowndisease-modifyingantirheumaticmedication (DMARD)usedtotreatrheumatoidarthritis,ismarketedunderbrandnameslikeAzulfidineand

Salazopyrin. Several indicators of disease activity, such as the Ritchie articular index (RAI), erythrocytesedimentationrate(ESR),andthenumberofswollenandsorejoints,havebeenusedin clinicaltrials to evaluate its effectiveness. Treatmentwith sulfasalazine hasbeenshown toprovide statistically significant improvements in several markers in randomized, double-blind, placebo-controlledtrialsandmeta-analyses.Comparativestudieshaveshownthatsulfasalazineisgenerally as effective as many other DMARDs. Additionally, its use in combination with other DMARDs, such asmethotrexate and hydroxychloroquine, hasyielded promising results, particularly in early-stagerheumatoidarthritis.Duetoitsrelativelyshorthalf-life,sulfasalazineisoftenconsideredone ofthemoreefficientconventionalDMARDs.Treatmentpreferencesvaryglobally,butsulfasalazine is frequently chosen as an initial therapy outside the United States because of its favorable safety profile, affordability, and ease of use. Furthermore, it may offer a faster onset of action and help slow the radiographic progression of rheumatoid arthritis. However, monotherapy with a single DMARD like sulfasalazine is typically less effective than combination therapy, particularly when used alongside methotrexate. Sulfasalazine is frequently regarded as one of the more effective conventionalDMARDsduetoitscomparativelyshorthalf-life.Whilepreferredfirst-linetreatment options differ by country. Keywords: Azulfidine and Salazopyrin, Rheumatoid arthritis, ESR, Methotrexate, Radiographic progression.

HARNESSINGNATURE'SBOUNTY:ACRITICALEXAMINATIONOFNATURAL PRODUCTS AS NEUROPROTECTIVE AGENTS

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Humankind has been endowed with numerous natural resources, or natural goods, both terrestrial and marine. Medicinal plants(*Lactuca sativa*,*Cassia fistula*) play a significantrole inmaintaining the health of humans and animals, as well as preventing disease. These natural compounds have demonstrated,throughexperimentalstudies,adiverserangeofbiologicalproperties,includinganti-inflammatory, hepatoprotective, antidiabetic, analgesic, purgative, antimicrobial, anti-cancer, anxiolytic, antidepressant, hypolipidemic, anti-spermatogenic, anti-tussive, anti-pyretic, anti-leishmanial, anti-fungal, anti-parasitic, anti-pruritic, anti-ulcer, larvicidal and ovicidal activities as well as antioxidant effects. Both *in-vitro* and *in-vivo* studies have further elucidated the value of natural products in various preclinical models of neurodegenerative diseases. Phytoconstituents, such as polyphenolic antioxidants, are present in terrestrial and marine flora, as well as in fruits, vegetables,nuts,andherbs.Thesephytoconstituentsmayenhancethebrain'smemoryandcognitive processeswhilealsoinhibitingneurodegeneration.Furthermore,theyarerecognizedasessentialin the prevention and treatment of various neurodegenerative disorders, including epilepsy, Parkinson's disease,Alzheimer's disease, and otherneurological conditions.Natural products have been demonstrated to exhibit extensive neuro-pharmacological effects as a result of either up-regulating various cell survival proteins, inhibiting inflammatory processes, or a combination of these mechanisms. This abstractfocuses on the diverse established activities of natural products in *in-vitro* and *in-vivo* preclinical models, as well as their potential neuro-therapeutic applications, utilizing the information available in the literature, due to the paucity of human studies on the neuroprotective effects of natural products.

Keywords: Neurological disorders; Neuroprotective effect; Plant products; Neurodegenerative diseases.

COW URINE AS A HOLISTIC SOLVENT FOR EXTRACTION OF PLANT SECONDARYMETABOLITESRESPONSIBLEFORANTIDIABETICEFFECT

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In, Ayurveda cow urine (Gomutra), occupies a unique place and has been recognized as water or Amrita.CowurineorGomutraisanon-toxicliquidwastedischargedfromthecow.Cowurineor its distillate is known to have several health benefits to improve the quality of life and prolong survivalratesinpatientswithseverediseases.Cowurineissaidtohaveaspiritualcleansingeffect aswell.Thetraditionalliterature claimsthe antidiabetic potentialofcow urineanditsdistillatesas well. Similarly, various plant secondary metabolites (PSMs) extracted from various solvents are also reported for their antidiabetic potential. Literature indicated that Cow urine alone enhances sensitivityofinsulinreceptoranddecreaseinsulinresistance.Somestudiesalsoreportedthatclaims the antidiabetic potential of the PSMs that are extracted out by cow urine. This holistic approach could be more effective because cow urine itself has antidiabetic potentials and if cow urine employed asa solventforthoseplantswhichare alreadyhasantidiabetic efficiency,the resultsare may be more appreciable without any further severe side effects because chemically synthesized antidiabetic drugs have mild to moderate side effects. However, PSMs extracted fromplants using cowurinefurtherneedstobestandardizedbyenhancingitstherapeuticpotentialanditstoxiceffects if any. Keywords: Cow urine, Plant Secondary Metabolites, Diabetes mellitus

EMERGINGTHERAPIESINPHARMACOLOGY:TOXICOLOGYCHALLENGES AND OPPORTUNITIES

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Theevolutionofpharmacologyhasledtothedevelopmentofinnovativetherapiessuchasbiologics, gene therapies, immunotherapies, and nanomedicines, which offer groundbreaking solutions for treating complex diseases like cancer, genetic disorders, and autoimmune conditions. These therapies, characterized by their precision and targeted mechanisms of action, are redefining the possibilities of modern medicine. However, their implementation is accompanied by significant toxicological challenges that necessitate comprehensive evaluation.Adverse effects such as immune-related toxicities, off-target reactions, and long-term safety concernsarecommon hurdles in these emerging therapies. For example, immunotherapies can cause cytokine release syndrome, while nanoparticles may pose risks of bioaccumulation and unexpected tissue interactions. Addressing these challenges requires advanced toxicological models, improved biomarkers for earlydetectionofadverseeffects,andinnovativedrugdeliverystrategiestominimizetoxicity.This review examinesthe dual nature of emerging therapies, focusing on theirtherapeutic potential and the toxicological risks they pose. It also discusses strategies for mitigating these risks, including predictive toxicology models and enhanced safety assessment protocols. By tackling these challenges, pharmacology can maximize the benefits of these therapies, ensuring safer and more effective treatment options for patients. Keywords: Emerging Therapies, Pharmacology, Toxicology, Safety assessment.

IONICCONDUCTIVITYANDPH-METRYTECHNIQUESUSEDTOASSESSA NOVELDIISOPROPYLAMMONIUMHYDROGENMALEATECRYSTALLINE MOLECULE'S AQUEOUS SOLUBILITY

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Knowingthedissociationconstant,solubility,andthermodynamicdata—allcrucial

physicochemicalproperties for biological substances—isessential for drug validation. For a novel synthetic diisopropylammonium hydrogenmaleate (iPr2NH2-MA) crystalline molecule, these characteristicswereestablished.Forthischaracterisation,conductometricandpH-metrictechniques were employed. The conductometric approach allowed for the determination of two pKa values, pKa1 =3.5andpKa3=7.8,butthepH-metricmethodyieldedpKa1=3.6,pKa2=6.7,andpKa3 =7.5.TheiPr2NH2-MAacidicdissociationreaction'senthalpychange(ΔrH0)andentropychange (ΔS)havethermodynamiccharacteristicsoftheorderofΔH=25.36±0.06kJ.mol-1andΔS=6.08 ± 0.18 kJ.mol-1.K-1. Furthermore, the molecule's Gibbs free energy change (ΔG) decreased with temperature. For pH values ranging from 3.5 to 8.5, the solubility ranged from 1 to 84 mg mL-1, reaching its highest Smax =84 mg mL-1 at pH 5.6. It was discovered that the dissociation process was entropically favourable, endothermic, and non-spontaneous. Keywords: Diisopropylammonium hydrogenmaleate, pH-metric method, conductometric method, physicochemical parameters

BAUHINIAVARIEGATE,ATRADITIONALMEDICAMENTASANTIOXIDANT, ANTI-INFLAMMATORY & ANTIMICROBIAL

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Bauhinia variegata, also known as the orchid tree or butterfly tree, is a flowering plant from the Fabaceaefamily,nativetoSoutheastAsiaandpopularforitsornamentalbeauty.Theplantfeatures large, showy flowers in shades of white, pink, purple, and red, and distinctive leaves resembling butterfly wings. It thrives in tropical and subtropical climates, preferring well-drained soil and full sunlight, though it can tolerate partial shade and dry conditions. Besides its aesthetic appeal, *Bauhinia variegata* has various uses. Its flowers are employed in traditional medicine for their antioxidant, antimicrobial, and anti-inflammatory properties. The durable wood is used in construction and furniture making, while the seeds are used in traditional cooking and as animal fodder.Duetoitsbeautyandversatility,itiswidelyplantedingardens,parks,andalongroadsides. This remarkable plant combines beauty with practical and medicinal benefits, making it a favorite among gardeners and herbalists.

Keywpords:Anti-inflammatory,Anti-oxidant,tropical,Ornamental

IMPLEMENTATION OF A PHARMACEUTICAL MANUFACTURING EXECUTIONSYSTEM(MES)FORIMPROVEDEFFICIENCY,QUALITY,AND COMPLIANCE

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The pharmaceutical industry is increasingly adopting digital technologies to optimize manufacturing operations, improve product quality, and ensure regulatory compliance. A Manufacturing Execution System (MES) is a software-based system that plays a critical role in achievingthesegoals.Thisabstractpresentsacasestudyontheimplementationofa Pharmaceutical MES, highlighting its key features, benefits, and challenges.The MES system integrates with existing enterpriseresource planning (ERP),laboratory information managementsystems(LIMS), andautomationsystemstoprovidereal-timevisibilityintomanufacturingoperations.Itenablesthe electronicbatchrecording(EBR),automateddatacollection,andreal-timequalitycontrol,reducing the risk of human error and improving product quality.The implementation of the MES system resultedinsignificantimprovementsinmanufacturingefficiency,productquality,andcompliance. Key benefits include:- 30% reduction in batch production time- 25% reduction in quality control sampling-90%reductionindeviationsandcomplaints-Improvedcompliancewithregulatory

requirements .
Keywords:MES,ERP,EBR,LIBS

MODULATORY EFFECT OF ALANTOLACTONE ON ISCHEMIC PRECONDITIONING-MEDIATEDCARDIOPROTECTIONINDISEASEDRATS

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This study examines the role of alantolactone (AL) in the enhancement of the cardioprotective effects of ischaemic preconditioning (IPC) in hyperlipidaemic (HL) rat myocardium by inhibiting the mitochondrial permeability transition pore (MPTP). In contrast to normal rodent hearts, the efficacy of IPC was diminished in HL's. The infarct size of HL rodents that were subjected to ischemia-reperfusion (IR) injury was not reduced by AL alone. Nevertheless, the addition of atractyloside (Atr) during reperfusion rendered IPC's reduction of infarct size in AL-treated HL hearts null and void, suggesting that its efficacy in hyperlipidaemia influenced by Atr is compromised.Thebiomarkersofmyocardialinjury,CK-MBandLDH,weresubstantiallyelevated following an IR injury. In normal hearts, IPC reduced markers; however, it was less efficacious in HLhearts.ThesebiomarkerswerereducedinHLheartsbyIPC,butALrestoredtheirlevels,while Atr negated this effect.IPC alleviated decreases in endogenous antioxidants (GSH, SOD, catalase) innormalheartsfollowingIRinjury,butnotinHLhearts.TheantioxidantlevelsinHLheartswere restored by AL; however, this benefit was negated by Atr. The histopathologicalanalysis revealed thatIPCreducedinflammationandmyonecrosisinnormalhearts,whileALenhancedthesebenefits inHLhearts.Theseenhancementswererenderednullandvoidby Atr.ALpromotedtheattenuation of PI3K expression in HL myocardium that was induced by IPC. These results underscore the significance of comprehending cardioprotective molecular pathways in order to create effective therapies for ischaemic heart disease in hyperlipidaemic conditions. Keywords: Mitochondrial permeability transition pore (MPTP), Alantolactone, Hyperlipidaemia, Ischemic preconditioning (IPC), cardioprotection

THEROLEOFBACTERIALULTRASTRUCTUREINDRUGDEVELOPMENT STRATEGIES

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Bacterial ultrastructure, including the cell wall, membrane, and surface appendages, offers critical targetsforantimicrobialdrugdevelopment.Byunderstandingtheintricatedetailsofthesestructures and their roles in bacterial survival and pathogenesis, researchers can identify potential vulnerabilities and design innovative therapeutic strategies.The cell wall, a complex structure essential for maintaining cell shape and protecting against osmotic stress, is a prime target. Disrupting its synthesis or integrity can lead to cell death. The cytoplasmic membrane is another critical target. Targeting membrane proteins ordisrupting membrane integrity can impair bacterial growth and survival. Surface appendages, such as pili and flagella, are involved in adhesion, motility,andbiofilmformation.Inhibitingtheirfunctioncanreducebacterialvirulenceandbiofilm development.Furthermore, studying sstructural modifications associated with antibiotic resistance can provide insightsinto mechanisms of resistance and guide the development ofnovel drugs.For instance,alterationsinporinproteins,whichformchannelsintheoutermembraneofGram-negative bacteria, can reduce drug uptake. By understanding these resistance mechanisms, researchers can designdrugsthatcanbypassthesebarriersordevelopcombinationtherapiestoovercomeresistance.

Keywords: Bacterial Ultrastructure, Drug Development, Antimicrobial Agents, Cell Wall, Cytoplasmic Membrane, Surface Appendages, Antibiotic Resistance, Drug Targets.

HERBO-ALLOPATHICAPPROACHAGAINSTDRUGINDUCEDLIVERINJURY

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Druginducedliverinjury(DILI)isresponsiblefor50%ofacuteliverfailureindevelopedcountries. Naproxen sodium is one of the most commonly applied NSAIDs pain relievers and anti-inflammatories drug; however, prolonged usage of this medication reported for liver injury. This adverse effect on the liver may be linked to oxidative stress, inflammation, and mitochondrial dysfunction which causes high levels of ALT and AST due to increased levels of oxidative stress and causes histopathological changes in the liver. A novel and effective combination of naproxen withplantsecondarymetabolites(PSMs),thatareprovedashepatoprotectiveisbeingexploredthat may reduce DILI caused by naproxen.sodium. These PSMs possess Flavonoids polyphenols and Alkaloidsthatsupplementaryreversedthenaproxenmediatedtoxicityindicatingtheir antioxidant, anti-inflammatory, and cyto-protective potentials. Quercetin and curcumin containing compounds appear to be most effective since they act as free radical scavengers as well as an inhibitor of proinflammatory cytokines and enhance liver cell regeneration. Milk thistle, silymarin is also an effectiveagentenhancingdetoxification,mitochondrialstabilizationandprovidesprotectiontothe enzymes of the liver. We propose that future studies further investigate the combination of PSMs andnaproxen,usingoptimizeddosesandroutes.CombinedtherapeuticapproachofNaproxenalong with PSMs like resveratrol, berberine, and EGCG may help relieve pain and inflammation systemically with reduced DILI.Keywords: DILI, Naproxen sodium, Hepatotoxicity, Plant secondary metabolites (PSMs), Oxidative stress, Antioxidants.

REVITALIZINGANCIENTWISDOM:THERESURGENCEOFAYURVEDICAND TRADITIONAL MEDICINE IN MODERN HEALTHCARE

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Ayurvedicandtraditionalmedicinehavebeenanintegralpartofhumanhealthcareforthousandsof years, offering a holistic approach to wellness and disease management. Despite the advent of modernmedicine,theseancientpracticeshavecontinuedtoevolveandthrive,withagrowingbody of research validating their efficacy and safety.This presentation explores the principles and practices of Ayurvedic and traditional medicine, highlighting their unique contributions to modern healthcare. We examine the scientific basis of these systems, including their understanding of human physiology, pathology, and pharmacology. We also discuss the role of traditional medicine in addressing global health challenges, such as antimicrobial resistance, chronic diseases, and mental health disorders.Furthermore, we review the current state of research on Ayurvedic and traditionalmedicine,includingclinicaltrials,pharmacologicalstudies,andethnobotanicalsurveys. We also discuss the challenges and opportunities for integrating these systems into modern healthcare, including issues of standardization, regulation, and cultural sensitivity.Ultimately, this presentation aims to inspire a new appreciation for the wisdom and relevance of Ayurvedic and traditionalmedicine,andtoexploretheirpotentialforcontributingtoamoreholistic,equitable,and sustainable healthcare system for all. Keywords:Ayurvedic medicine, traditional medicine, complementary and alternative medicine, integrative healthcare, holistic medicine.

RECENTPROGRESSOF3DPRINTEDVASCULARIZEDTISSUESANDORGANS

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The article discusses the latest advancements in the development of 3D printing techniques for vascularizedtissuesandorganswhilepointingtothedefinitepointofcreatingartificialtissuesthat are capable of sustaining life. For instance, an important role for vascular networks is providing nutrientsandoxygenwhileeliminatingwasteproducts-animportantconditionforcellsurvival.The article reviews the development of constructing vascularized models of vital organs, including the heart,liver,kidney,lungs,andevenpeniletissue,using3Dprinting.Theseadvancesareinthehopes of overcoming the short supply of donor organs and the continually increasing demand for transplantation. The review covers various 3D printing technologies, including extrusion-based, droplet-based, and laser-assisted methods, with bioinks tailored for replicating complex tissue structures. While notable advancements include the production of drug testing models and bioengineeredtissuesforpossibleimplantation,challengesremain.Theseincludeobtainingprecise vascularization, high-resolution printing, and biocompatibility. The authors highlight the exciting promiseofthesynergyof3Dprintingwithemergingtechnologies,suchasorgan-on-a-chipsystems, for simulating organ functions and enhancing vascularization. Future prospects include improving bioinks, refining printing strategies for intricate structures, and developing regulatory standards to help achieve clinical application. The article sees 3D printing as an important transformative approach within regenerative medicine, bringing closer the possibility of functional, implantable tissues and organs. Keywords: 3D printing, Vascularized tissues, Tissue engineering, Artificial organs

3DPRINTINGINPERSONALIZEDMEDICINE

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Personalized medicine possesses the capability to fundamentally transform the healthcare domain, with its primary objective being the customization of pharmacological treatment to suit a specific individual by thoroughly considering their physiological characteristics, pharmacogenomic response, and genetic makeup. A multitude of technologies is evolving to facilitate this example move from the traditionalone size fits allapproach to a more individualized medicinal practice, with three-dimensional (3D) printing being a significant contributor. Creating three-dimensional substances through 3D printing uses a layering method that happens in sequence and leverages multiple advanced computer software tools. This innovative technology can be employed to fabricate a diverse array of pharmaceutical dosage forms, which can vary in their geometric configurations, release kinetics, and combinations of active pharmaceutical ingredients. The main 3D printing technologies being studied in the corporates and pharma big companies are binder jetting, stereolithography, pressure-assisted micro syringe methods, etc. This plausible upcoming utilizationcouldmanifestinscientificenvironments,whereinprescriptionswouldbetailoredgiving to the specific requirements of individual patients. This topic elucidates the various 3D printing methodologiesandtheircorrespondingrequestsintheinvestigateanddevelopmentofmedicinal

products, along by a critical evaluation of their advantages and disadvantages. Furthermore, it outlinesthepromiseofthistechnologyinbespokemedicinebytailoringdosagepatterns,adjusting releaseprofiles,andunitingdiversepharmacologicalagentsinonecomprehensivepolypillsolution.
Keywords: 3D printing, Personalized medicine, Innovative technology, Polypill.

HIV/AIDS:ANOVERVIEWOFTHEEPIDEMIC,TRANSMISSION,AND TREATMENTOPTION

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Acquired Immunodeficiency Syndrome(AIDS) isa chronicandlife-threateningconditioncausedby theHumanImmunodeficiency Virus (HIV). HIV attacksand weakensthebody'simmune system, making it vulnerable to opportunistic infectionsand cancers. Thevirusisprimarilytransmittedthrough unprotectedsexualcontact,sharingofcontaminatedneedles,andmother-to-child transmissionduring pregnancy,childbirth,orbreastfeeding.TheprogressionofHIVtoAIDSischaracterizedbyadeclinein CD4+Tcells,atypeofwhitebloodcellthatplaysacrucialroleintheimmunesystem.AstheCD4+T cellcountdecreases, thebody becomesincreasingly susceptibletoopportunisticinfectionssuchas Pneumocystispneumonia,tuberculosis,andtoxoplasmosis.Antiretroviraltherapy (ART) istheprimary treatmentforHIV/AIDS,whichinvolvesacombinationofmedicationsthatsuppressviralreplication,slow diseaseprogression,and prevent transmission. Early diagnosisand treatmentarecriticalinmanaging HIV/AIDS and preventing complications. Keywords: Additionally, preventive measures such as condomuse,safeinjectionpractices,andpre-exposureprophylaxis(PrEP)cansignificantlyreducetherisk ofHIV transmissions.

ALZHEIMER'SDISEASE:AREVIEWOFTHEPATHOPHYSIOLOGY, SYMPTOMS, AND TREATMENT OPTIONS

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Alzheimer's disease is a progressive and irreversible neurodegenerative disorder characterized by cognitive decline,memoryloss, andbehavioralchanges.Thedisease isthe mostcommon causeof dementia,accountingfor60-80%ofcases.TheexactcauseofAlzheimer'sdiseaseisunknown,but it is believed to result from a combination of genetic, environmental, and lifestyle factors.The diseaseischaracterizedbytheaccumulationofbeta-amyloidplaquesandtauproteintanglesinthe brain,leadingtoneuronaldamageanddeath.ThesymptomsofAlzheimer'sdiseaseincludememory loss, language difficulties, disorientation, and mood changes. As the disease progresses, patients may experience difficulty with daily activities, such as bathing, dressing, and managing finances.Currently, there is no cure for Alzheimer's disease, but various treatments areavailable to manageitssymptoms.Cholinesteraseinhibitors,suchasdonepezilandrivastigmine,arecommonly used to improve cognitive function. Memantine, an N-methyl-D-aspartate (NMDA) receptor antagonist, isalsoused toslowdisease progression.Early diagnosisand interventionare criticalin managing Alzheimer's disease and improving patient outcomes. Keywords:Dementia , neurodegeneration, cognitive decline, Amyloid plaques.

INTRANASALCUBOSOMEANDCUBOSOMALGELSYSTEMS:ANOVEL THERAPEUTIC APPROACH FOR NEURODEGENERATIVE DISORDERS

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Neurodegenerative disorders (NDs) are mainly caused by the gradual loss of neurons and synaptic deregulation, where these NDs are considered the major cause of disability among elderlies affecting48.6millionpeoplegloballyandrankingasthesecondleadingcauseofdeathworldwide. Conventional treatment strategies for ND need to cross the rigid blood-brain barrier (BBB), however, those are primarily involved in alleviating symptoms rather than curing the progression of the disease. Thus, to overcome such limitations, target-specific drug delivery systems are used for developing medications that focus on disease-modifying therapies. Considering the properties ofdifferentadvanceddrugdeliverysystems,cubosomesarefoundtobeuniquewithlyotropicliquid crystalline, thermodynamically stable nanoparticles, composedof amphiphilic polarlipids that has the ability to load both hydrophobic and hydrophilic active medicinal components which provides versatility in drug encapsulation and ease of formulation. These properties of cubosomes facilitate their use for intranasal drug delivery, which effectively bypasses the BBB and effectively delivers the entrapped therapeuticsvia olfactory and trigeminalpathways, enabling targeted brain delivery. Inaddition,transformingcubosomesto*insitu*cubosomalgelsfacilitatesprolongedretentionatthe site of application and enhances efficacy, ensuring precise targeting and sustained therapeutic effects for brain-related disorders. The focus of this is to evaluate the use of cubosomal gel as an advanceddeliverysystemforintranasalapplicationforthetreatmentofneurodegenerativediseases dwelling into the opportunities and challenges associated with the conventional delivery systems. Futurestudiesshouldfocusonoptimizingcubosomalformulationsforintranasaldelivery,exploring their long-term safety, scalability, and efficacy in clinical settings for neurodegenerative diseases. Keywords: Cubosomes, Cubosomal gels, Neurodegenerative disorders, Intranasal delivery

PHRMACOGNOSTICALPROFILEANDIN-VITROANTIDIABETICACTIVITY OF ETHANOLIC EXTRACTS OF *DICHANTHIUM ANNULATUM* AND *SACCHARUM BENGHALENSE*

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Diabetes mellitus is a group of metabolic diseases that involve inadequate glucose utilization and excessiveglucoseproduction,whichleadstohyperglycemia.Beforeaccomplishinginvivostudies, itiscrucialtothoroughlyinvestigatetheimpactoftheexperimentaldrugsutilizinginvitromodels. Thus,thetestchemicalswilllikelyundergoinvitroantidiabeticinvestigation,suchasalphaamylase inhibitoryaction.*Dichanthiumannulatum*and*Saccharumbenghalense*belongstoPoaceaefamily. Poaceaeplantshavebeenutilizedinfolkmedicineforavarietyofailments,includinghypertension, diabetes, inflammation, anthelmintic, astringent, ulcerative, diuretic, & antioxidant effects. The assayresultssuggestthattheexistenceofbioactivecompoundscouldberesponsiblefortheversatile medicinal properties of this plant including diabetes, the extract exhibit the IC50 values of alpha amylase inhibitory activity of ethanolic extracts of *Dichanthium annulatum* and *Saccharum benghalense* were 110 and 189.655 µg/mL respectively, when compared with Acarbose (IC50 65.454 µg/mL). The current study proves that the antidiabetic activity of ethanolic extract of *Dichanthium annulatum* and *Saccharum benghalense* leaves by in vitro studies.Thus, objective of the present study is to investigate the Phrmacognistical screening and in-vitro antidiabetic activity of ethanolic extract of *Dichanthium annulatum*, *Saccharum benghalense* leaves**.** **Keywords:** *Dichanthium annulatum*, *Saccharum benghalense*, Poaceae, Phytochemicals, Cytotoxic effect.

PHARMACOGNOSTICSTANDARDIZATIONANDPHYTOCHEMISTRYOF *MUCUNAPRURIENS*SEEDS

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Introduction: - One of the most promising wild, underused medicinal legumes in the Fabaceae familyis*Mucunapruriens*(L)iscommonlyknownasvalvetbean.AccordingtoancientAyurvedic literature*Mucunapruriens*isusedaspotentAphrodisiac,Antiparkinson's,Antidepressant,nervine tonic. In addition, it is anticholestrolemic, antidiabetic, anti-inflammatory and antimicrobial, antioxidant, Antivenom, Antianxiety. The chemical components, biological activity, and quality assurance of Ayurvedic formulations are the main reasons for standardization in the manufacture and production of traditional herbal medicines.
Aim&Objective:-ToassessthePharmacognosticstandardizationandPhytochemistryof*mucuna pruriens* seeds. Method: - *Mucuna pruriens* (L.) seeds were studied using various standardization parameterslikemacroscopical,microscopical,physicochemicalandthepreliminaryphytochemical screeningwasperformedbyusingtesttubemethod.Result:-Macroscopicallyseedblackincolour, reniform in shape, 15-20 mm long, 7 -15 mm broad, funicular hilum, seed coat hard, made up of two cotyledons. Microscopically transverse section of the seed shows testa with palisade like cell. Hypodermis comprises of T shaped bearer cells. Cotyledons comprise of epidermis and paraenchymatouscellcontainoilglobulesandovalstarchgrains.PhysiochemicalAnalysisrevealed thattheforeignmatter(0.82%),Lossondrying(1.33%)andtotalashvalue(2.15%),acidin-soluble ash(1.83%),watersolubleextractivevalue(28.45%),andalcoholsolubleextractivevalue(9.16%). Preliminary phytochemical screening showed the presence alkaloids, flavonoids, glycosides, reducing sugars, tannins, saponins, terpenes, steroids and phenolic compounds respectively. SummeryandConclusion:-Theinformationcollectedthroughthecurrentresearchisimportantfor ensuring accurate plant material identification, standardization, and confirmation. Keywords: *Mucuna pruriens*, standardization, Phytochemistry

HERBALDRUGSANDEPILEPSY

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Epilepsyisaneurologicaldisordercharacterizedbyrecurrent,unprovokedseizuresduetoabnormal electrical activity in the brain. Traditional treatment of epilepsy often relies on synthetic anti-epileptic drugs (AEDs), which can effectively control seizures but are associated with a range of sideeffectsandsometimeslimitedefficacy.Inrecentyears,therehasbeenagrowinginterestinthe use of herbal medicines as alternative or adjunct therapies for epilepsy. This interest is driven by the perception that herbal drugs may offer a safer and more holistic approach, along with their historicaluseintraditionalmedicinesystems.Herbalremediessuchas***Bacopamonnieri***,***Valeriana officinalis***, ***Passiflora incarnata***, and ***Cannabis sativa*** have shown anticonvulsant properties in preclinicaland,insomecases,clinicalstudies.Theseherbsarebelievedtoexerttheireffectsthrough avarietyofmechanisms,includingmodulationofneurotransmitterslikegamma-aminobutyricacid (GABA),antioxidantactivity,andanti-inflammatoryeffects.Somecompoundsderivedfromplants, likecannabidiol(CBD)fromCannabis,havegainedsignificantattentionfortheirpotentialtoreduce seizurefrequencyandseverity,especiallyintreatment-resistantepilepsycases.However,theuseof herbal drugs in epilepsy is not without challenges. The efficacy, safety, and consistency of herbal preparations can vary due to differences in plant species, growing conditions, extraction methods, and dosages. Moreover, potential interactions between herbal medicines and conventional AEDs require careful consideration, as they can either enhance or inhibit the effects of pharmaceutical treatments,leadingtounforeseensideeffectsorreducedseizurecontrol.Inconclusion,whileherbal medicinespresentapromisingcomplementaryapproachtomanagingepilepsy,morerobustclinical trials and standardized formulations are needed to establish their efficacy and safety. Nonetheless, cautionisnecessarytoensurethebenefitsoutweighttherisks,makinginterdisciplinarycollaboration betweenherbalists,neurologists,andpharmacologistsessentialforadvancingresearchinthisfield. Keywords: Epilepsy, GABA, Anti-oxidant, AEDs

MAURITIANGRASS:UNVEILINGITSETHNOMEDICALUSESAND PHARMACOLOGICAL PROPERTIES

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Apluda Mutica Linn (Apluda grass), A plant native to Southeast Asia's dry dipterocarp forests, highlighting its traditional medicinal uses and pharmacological potential. Historically, it has been utilized for treating mouth infections, dysentery, fever, diabetes, and as a diuretic. Despite its rich ethnobotanical significance, the plant's pharmacognostic and morphological aspects remain underexplored.Scientificstudieshaveprimarilyfocusedonitsantioxidant,anti-inflammatory,and anti-diabeticproperties.Documentingitsphytochemistry,ecology,andtherapeuticapplicationscan promote its integration into modern medicine. This review compiles data from reputable scientific sources to bridge gaps in knowledge and encourage further research into its utility. Keywords: Apluda Linn, *Apluda mutica L*, Mauritian Grass, Phytochemistry, Pharmacological activity

AREVIEWONERYTHROCYTEDISORDERS

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Erythrocytes, or red blood cells (RBCs), are critical components of the blood responsible for the transport of oxygen from the lungs to the tissues and the return of carbon dioxide to the lungs for exhalation. Disorders of erythrocytes can lead to a variety of pathological conditions that significantly affect an individual's health and quality of life. These disorders can be classified into several categories, including anaemia, polycythemia, and inherited or acquired abnormalities in erythrocytestructureorfunction.Erythrocytedisorderspresentasignificantchallengetohealthcare systems worldwide, particularly in regions with limited access to medical care. Advances in molecular biology, genetics, and hematology have greatly improved the understanding, diagnosis, and treatment of these disorders, offering hope for better outcomes and quality of life for affected individuals. Further research into the pathophysiology of these conditions holds promise for developing more targeted and effective therapies in the future. Keywords**:** Erythrocytes, anemia, polycythaemia, haematology, pathophysiology

INNOVATIVEAPPROACHESINNANOEMULSIONFORMULATIONSFOR EFFECTIVE MANAGEMENT OF HERPES VIRUS INFECTIONS

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Herpesvirusinfection,includingherpessimplexvirus(HSV)types1and2areextremelycommon, recurrent,andclinicallychallenging.HSVtype1(HSV-1)istransmittedbyoralcontactsandcauses infection in or around the mouth (oral herpes or cold sores) but it can also cause genital herpes, sexually transmitted causes genital herpes called HSV type 2 (HSV-2). Varicella-zoster virus is responsible for causing contagious diseases, varicella orchickenpox and herpes zoster or shingles. Chickenpox results in a skin rash that forms small, itchy blisters that scab over. This activity describes the cause, presentation, and pathophysiology of chickenpox and highlights the interprofessionalteam'sroleintreatingandpreventingthisinfection.Highdosagesandfrequent

administrationarecommoninconventionaldrugdeliverysystem,whichcausesadverseeffectsand comes many precautions causing inconvenience patient adherence. In recent time period, nanoemulsion-based drug delivery systems have emerged as a promising strategy for the effective andtargeteddeliveryofantiviraldrugs.Nanoscaledropletsizewhichobtainslargesurfaceareaand enhancedsolubility,permeabilityandstability.Thisreviewexaminesthemostrecentdevelopments innanoemulsionformulationsforthetreatmentofherpesvirusinfections.Furthermore,wehopeto shed light on how antiviral medication might be transformed by nanoemulsion technology. All thingsconsidered,thisreviewemphasisesthenovelmethodsinnanoemulsionformulationandtheir potential to develop efficient, patient-friendly treatments for herpes virus infections.

Keywords:HSV-1&2,VZV,Nanoemulsion,Enhancedsolubilityandpermeability.

PLANTTISSUECULTURE

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Plant tissue culture techniques are the most frequently used biotechnological tools for basic and applied purposes ranging from investigation on plant developmental processes, functional gene studies,commercialplantmicropropagation,generationoftransgenicplantswithspecificindustrial and agronomical traits, plant breeding and crop improvement, virus climination from infected materialstorenderhigh-qualityhealthyplantmaterial,preservationandconservationofgermplasm of vegetative propagated plant crops, and rescue of threatened or endangered plant species. Additionally,plantcellandorganculturesareofinterestfortheproductionofsecondarymetabolites of industrial and pharmaceutical interest. New technologies, such as the genome editing ones combined with tissue culture and Agrobacterium tumefaciens infection, are currently promising alternatives for the highly specific genetic manipulation of interesting agronomical or industrial traits in crop plants. Application of omics (genomics, transcriptomics, and protcomics) to plant tissueculturewillcertainlyhelptounravelcomplexdevelopmentalprocessessuchasorganogenesis and somatic embryogenesis, whichwill probably enable to improve the efficiency of regen cration protocolsforrecalcitrantspecies.Additionally,metabolomicsappliedtotissueculturewillfacilitate the extraction and characterization of complex mistures of natural plant products of industrial interest. General and specific aspects and applications of plant tissue culture and the advances and perspectives are described in this edition. Keywords: Preservation,Biotechnology, Agronomical, Genomics

FORMULATIONANDEVALUATIONOF*ALSTONIASCHOLARISIS*LEAVES EXTRACT HERBAL GEL FOR TREATMENT OF BACTERIAL INFECTION

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Theincreasingprevalenceofbacterialinfectionsandtherisingresistancetoconventionalantibiotics necessitate the exploration of alternative therapeutic agents. This research proposal focuses on the formulation and evaluation of a herbal gel derived from the leaves of *Alstonia scholaris*, a plant knownforitsmedicinalproperties.Thestudyaimstoextractbioactivecompoundsfromtheleaves using various solvents, followed by the formulation of these extracts into a gel suitable for topical application. The gel's physicochemical properties, such as pH, viscosity, and spreadability, will be assessedtoensureoptimalperformanceandstability.Antibacterialactivitywillbeevaluatedusing standard microbiological methods against common pathogenic bacteria, including *Staphylococcus aureus* and *Escherichia coli*. The Minimum Inhibitory Concentration (MIC) and Minimum Bactericidal Concentration (MBC) will be determined to establish the efficacy of the herbal gel. Additionally, the gel's safety profile will be assessed through in vitro cytotoxicity studies. The anticipated outcome of this research is to develop an effective, safe, and natural alternative for the treatmentofbacterialinfections,contributingtothefieldofherbalmedicineandaddressingthe

urgent need for new antimicrobial agents. This study not only aims to validate the traditional uses of *Alstonia scholaris* but also seeks to provide a scientific basis for its application in modern therapeutics,promotingtheintegrationofherbalformulationsintomainstreamhealthcarepractices.
Keyword- Alstonia scholarisis, Herbal gel, *Escherichia coli*., Bacterial infection, Phytochemicals.

ROLEOFPHARMACISTINHEALTHCARESYSTEM

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Pharmacists play a crucial role in the healthcare system by ensuring that patients receive safe and effectivemedications.Theyareresponsiblefordispensingmedication,advisingpatientsondrug interactions andside effects,monitoring medication therapies, and collaborating with other healthcare professionals to optimize patient outcomes additionally, pharmacists providepatient educationondiseasemanagement,medicationcompliance,andlifestylemodifications.Theyalso serve as drug information experts, conducting drug utilization reviews and providing guidance on appropriate medication selectionanddosing. Therole ofpharmacists isbecoming increasingly importantashealthcare systemsstrive to improve patient safety, reduce medication errors, and controlhealthcarecosts.Asmedicationexperts,pharmacistsarewell-positionedtohelpaddress these challenges and improve the overall quality of careprovided to patients.Asasummarywe can say that Physician gives medicine to the patients but life to medicine given bypharmacist
Keywords:Healthcaresystem;Effectivemedications;Medicationcompliance;Pharmacists;Patient safety

ADVANCESINREGENERATIVEMEDICINEANDTISSUEENGINEERING: INNOVATION AND TRANSFORMATION OF MEDICINE

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Humans and animals lose tissues and organs due to congenital defects, trauma, and diseases. The human body has a low regenerative potential as opposed to the urodele amphibians commonly referred to as salamanders. Globally, millions of people would benefit immensely if tissues and organs can be replaced on demand. Traditionally, transplantation of intact tissues and organs has been the bedrock to replace damaged and diseased parts of the body. The sole reliance on transplantation has created a waiting list of people requiring donated tissues and organs, and generally, supply cannot meet the demand. The total cost to society in terms of caring for patients withfailingorgansanddebilitatingdiseasesisenormous.Scientistsandclinicians,motivatedbythe needtodevelopsafeandreliablesourcesoftissuesandorgans,havebeenimprovingtherapiesand technologies that can regenerate tissues and in some cases create new tissues altogether. Tissue engineeringand/orregenerativemedicinearefieldsoflifescienceemployingbothengineeringand biological principles to create new tissues and organs and to promote the regeneration of damaged ordiseasedtissuesandorgans.Majoradvancesandinnovationsarebeingmadeinthefieldsoftissue engineering and regenerative medicine and have a huge impact on three-dimensional bioprinting (3D bioprinting) of tissues and organs. 3D bioprinting holds great promise for artificial tissue and organ bioprinting, thereby revolutionizing the field of regenerative medicine. Keywords: 3D bioprinting, Debilitating, Failing organs, Regenerative

EXAMINATION OF HERBAL EXTRACT'S PHYTOCHEMICAL AND PHARMACOLOGICALPROPERTIESFORANTICONVULSANTPROPERTIES

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Betulautilis(BU)whichismainlyknownasbirchtreeandfoundingreathimalayas,atanaltitude of 4,500 m, possess broad therapeutic properties and is used in inflammation, cancer, microbial infection, oxidative stress, HIV etc. Pentacyclic triterpenoids, betulin, betulic acid, oleanolic acid, lupenone, acetyloleanolic acid, methyl betulate and karachic acid are jlresponsible for its medicinally important activities. Bark has shown different chemical constituents i.e., acetylo-heanolicacid,lupeol,oleanolicacid,lupenoneetc.Traditionaluseshowsthatbarkhasbeenusedin treating a wide range of conditions, including bronchitis, convulsions, leprosy, blood disorders, contraceptive, antibacterial, fragrant, carminative, ear infections etc. It has been shown to have potent anticancer effects. Because to its many beneficial pharmacological properties, including antibacterial,anticancer,anti-obesity,antihyperglycemic,anti-inflammatory,antioxidant,andanti-HIV properties. In conclusion, *Betula utilis* is a promising research-oriented plant that might be effective in the cure and management of numerous medical conditions/ ailments through incorporatingindifferentsuitabledosageforms.Themethodusedtoinducetheconvulsioninmice's was Maximal Electro-Shock (MES)-induced convulsions and the entire activity was recorded and analyzed properly to observe characteristic phases, i.e. Flexion, Extensor, Clonus, Stupor and Recovery/Death.So,itisconcludedthatplant(*Betulaautilis*)seemtobepromisingcandidateswith respect to its anticonvulsant activity and may be used for controlling epileptic seizures.

Keywords:Anticonvulsant,Epilepsy,Herbs,Phytochemicalscreening,MES

ABRIEFSTUDYONCARICAPAPAYA-AREVIEW

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Carica papaya belongs to caricaceae family and it is commonly known as‘papaya’. Carica papaya isusedinayurvedicmedicinesfromverylongtime.Itisusedasananti-inflammatory,antioxidant, diuretic, antibacterial, abortifacient, vermifuge, hypoglycemic, antifungal activity, antihelmenthic and immunomodulatory etc. Scientific evidences suggest their versatile biological function that supports its traditional use in different diseases. Phytochemical studies shows that plant carica papaya contains mainly alkaloids carpaine, pseudocarpaine, tannins, flavnoids, carcin, gamma terpine, glycoside carposides, sugars etc. The plant has effective pharmacological activity such as anti-inflammatory, antioxidant, diuretic, antibacterial, abortifacient, hypoglycemic, antifungal, antihelminthic and immunomodulatory, hepatoprotective and anticonvulsant activity. Keywords: Carica papaya, caricaceae, abortifacient, pharmacological activity.

NANOEMULSION-AREVIEW

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Nano emulsions are advanced colloidal systems that offer immense potential in pharmaceutical, cosmetic, and food industries due to their unique physicochemical properties. These thermodynamically stable systems consist of nanosized droplets (20–200 nm) of oil and water stabilized by surfactants and co-surfactants. Their nanoscale size ensures improved solubility, stability, and bioavailability of poorly water-soluble drugs, making them ideal for drug delivery applications.Nanoemulsionsexhibitahighsurfaceareaandsmalldropletsize,enablingenhanced absorption, targeted delivery, and controlled release of therapeutic agents. Additionally, their transparentappearance,non-irritatingnature,andeaseofpreparationmakethemapreferredchoice fortopicalandoralformulations.Thisarticleexplorestheformulationtechniques,characterization methods,andapplicationsofnanoemulsionswhileaddressingtheirlimitationsandfuturescopein pharmaceuticalinnovations. Keywords:Nanoemulsion,drugdelivery,bioavailability,nanoscale,

solubility,surfactants,colloidalsystems,targeteddelivery,pharmaceuticalformulations.

EXPLORINGBUCCALDELIVERYINNOVATIONSFORTHEREGULATIONOF SALIVARY FLOW AND CONTROL OF HYPERSALIVATION

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Excessivesalivation,orhypersalivation,cancauseanumberofproblemsforindividuals,including neurological condition such as Parkinson's disease, cerebral palsy, and stroke, as well as adverse drug reactions. While still available, conventional treatment including anticholinergic medication and surgery which have significantdrawbacks, such as constipation, urinary retention, and blurred vision and some limitations. In this study, we investigate the effectiveness of the buccal drug delivery system as a target strategy for managing hypersalivation. By utilizing the mucosal lining of buccal cavity, these systems enable site of action, thereby minimize adverse effects. Our study looked atnew developments in buccal delivery technologies, such as innovative formulations, and smart delivery systems specifically to control salivary flow. Using buccal delivery, we studied the process of medication absorption and salivary regulation via buccal administration, addressing challenges related to patient compliance and bioavailability. Additionally, our study investigated potential future directions for buccal therapeutic medicinal method, such as selective muscarinic antagoniststooffermoreefficientandminimallyinvasivetherapyalternativesforhypersalivation.
Overall, our research finds that buccal therapeutic systems as patient-friendly substitute for management hypersalivation, demonstrating potential improvements in clinical result and quality of life for those who are impacted. Keywords: Hypersalivation, Buccal delivery, salivary flow

DEVELOPMENTANDCHARACTERIZATIONOFBIFONAZOLELOADED ETHANOLIC LIPID VESICLES FOR DERMATOLOGICAL DISEASE

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Introduction: Bifonazole, a potent broad-spectrum antifungal agent, faces challenges in achieving effectivetopicaldeliveryduetoitspooraqueoussolubilityandlimitedskinpermeability.Ethosomal lipid vesicles, which utilize ethanol as a permeation enhancer, have emerged as a promising drug deliverysystemtoovercometheselimitations.Thesevesiclesimprovedrugsolubility,stability,and penetration, making them suitable for treating dermatological diseases like fungal infections. Aim andObjective: This study aims to develop bifonazole-loaded ethosomal formulations to enhance drug delivery through the skin, improve antifungal efficacy, and offer a novel therapeutic solution for dermatological conditions.Methods: Bifonazole-loaded ethanolic lipidvesicles were prepared byhotmethod.Variousformulationswereoptimizedbasedonethanolconcentration,phospholipid content, and hydration volume. Characterization included particle size analysis, zeta potential measurement,drugentrapmentefficiency,andinvitrodrugreleasestudies.Results:Theoptimized ethosomal formulation had a particle size of 310 ± 10 nm, high zeta potential for stability, and an entrapment efficiency of 75 ± 2%. In vitro drug release showed sustained release for 24 hours. Summary & Conclusion: The developed bifonazole-loaded ethanolic lipid vesicles successfully enhanced drug delivery. This approach provides an effective, stable, and patient-compliant treatmentforfungaldermatologicaldiseases,showcasingethosomesasapromisingdrugdelivery

carrierfortopicalapplication

NEUROPROTECTIVEEFFECTOFTHEDRUGONSCOPLAMNEINDUCED ALZHEIMER'S DISEASES IN ADULT ZEBRAFISH (*DANIO RERIO*)

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Alzheimer's disease (AD) is a chronic, age-dependent neurodegenerative condition that involves dementia and memory loss.That leading to mental decline, difficulty thinking and understanding This study aims to investigate the pathophysiological mechanisms of Alzheimer's Disease using a zebrafish model, focusing on memory loss and oxidative stress. Adult zebrafish are subject to scopolamine to induce alzheimer -like symptoms. Behavioral assessments, including y-maze and noveltankdivingtest,wereconductedtoevaluatememorydeficits.Histologicalanalysesrevealed significant neuronal loss and increased level of acetylcholine Additionally, we measured levels of oxidative stress markers and pro-inflammatory cytokines, finding a correlation between elevated oxidative stress and behavioral impairments. These findings highlight the critical role of memory impairment and oxidative damage in the progression of Alzheimer's disease, supporting the use of thezebrafishmodelforfurthertherapeuticexploration.Thisresearchprovidesinsightsintopotential intervention strategies aimed at mitigating neurodegeneration in Alzheimer's disease .

BIOSENSOR

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Biosensors are sophisticated analytical instruments that detect particular analytes by combining biological recognition components like enzymes, antibodies, or nucleic acids and transducers. Biosensors are essential to industrial operations, food safety, environmental monitoring, and healthcare because of their high sensitivity, specificity, and quick reaction times. Modern advancements in nanotechnology, microfabrication , and advanced materials have significantly enhanced biosensor performance, enabling mobility and real-time detection. These developments have also improved multiplexing capabilities, making biosensors more adaptable and effective. Applicationsincludewearablehealthsensors,foodpathogendetection,waterpollutionmonitoring, and glucose monitoring for diabetes management. Lab-on-a-chip systems and wireless biosensors areexamplesofdevelopmentsthatareovercomingobstaclesincludinglimitedstability,scalability, andcost-effectiveness.Asthedemandforaccurate,real-timediagnosticsincreases,biosensorshave the potential to improve customized treatment and sustainability initiatives. Future research will concentrate on improving biocompatibility, digital integration, and multi-analyte detection to suit rising worldwide demands. Keyword: Biosensors, nanotechnology, microfabrication, advanced materials,real-timedetection,mobility,multiplexing,healthcare,environmentalmonitoring,foodsafety, industrial processes, glucose monitoring, wearable health sensors, lab-on-a-chip, wireless biosensors, biocompatibility, digital integration, sustainability.

DRUGDEVELOPMENTINTHEERAOFARTIFICIALINTELLIGENCE

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The integration of artificial intelligence (AI) into drug development has revolutionized the pharmaceuticalindustry,acceleratingprocesses,reducingcosts,andenhancingtheprecisionofdrug discoveryanddevelopment.AI-driventechniques,includingmachinelearning,deeplearning,and

naturallanguageprocessing,enabletheanalysisofmassivedatasets,suchasgenomicinformation, chemical libraries, and clinical trial records, to identify promising drug candidates efficiently. Computationaltoolshave been pivotalin predictive modeling, virtualscreening, andde novo drug design, significantly reducing the timeline from target identification to lead optimization. Furthermore,AIfacilitatesthedesignofpersonalizedmedicinesbyleveragingpatient-specificdata topredicttreatmentresponses.Inclinicaltrials,monitorsadherence,andanalyzesoutcomesinreal time, improving trialefficiency and successrates. Despitethese advancements,challengesremain, including data privacy concerns, interpretability of AI models, and regulatory hurdles. Addressing these issues through collaboration among scientists, technologists, and policymakers is crucial to fullyharnessAI'spotentialindrugdevelopment.Thiseramarksaparadigmshifttowardssmarter, faster, and more cost-effective strategies, ultimately enhancing global healthcare outcome

NEXT-GENERATIONVACCINEPLATFORMS:DNA,VIRALVECTOR,AND NANOPARTICLE VACCINES:

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Vaccineshavebeenshowntobesuccessfulincuringandwardingoffmanyillnesses.Nevertheless, traditional attenuated and inactivated vaccines have some disadvantages like intricate preparation, efficacylimitations,potentialrisks,andmore.Theinitialvaccinesweredevelopedusingdeactivated pathogens, which could be whole cells or pieces. By examining both viral and non-viral DNA delivery systems, DNA vaccines are being studied for their essential contributions to the development of new DNA vaccines. DNA vaccines have become a very encouraging method for treating both inherited and acquired diseases. Viral vectored vaccines are secure and trigger both branches of innate and adaptive immune responses without the need for the entire dangerous pathogen. Furthermore, viral vectors possess natural adjuvant characteristics because they contain various pathogen-associated molecular patterns (PAMPs) and trigger innate immunity responses. On the other hand, next-generation nano/microparticle-based vaccines have various benefits compared to traditional ones as they can stimulate a stronger CD8+ T-cell reaction and also serve as excellent vehicles for proteins, adjuvants, and nucleic acids. These nanocarriers can carry molecules that can modify the immune response, making them perfect for inverse vaccination in autoimmune diseases, aiming to regulate immune responses. Engineered nanoparticles are a next phaseinvaccinedevelopment,servingasdeliverysystemsthatsafeguardthevaccine'santigenand provide new adjuvants to adjust the immune response effectively. Besides delivering substances, NPsalsohaveabuilt-inadjuvantfunction,makingthemidealforuseasvaccinebases. Key words: *(PAMPs), Nano/microparticle based vaccine, NPs*

LC-MS/MSANDMOLECULARDOCKINGANALYSISOF*TAGETESERECTA*AND *SIMILAXZEYLANICA*PLANTEXTRACT

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Several biological and pharmacological properties are present in the plants we eat on a daily basis and utilise as a risk preventer against several illnesses. The plant's leaf parts were crushed into powder for this investigation after being dried in an oven set at 35 °C.GC-MS and LC-MS/MS studieswereusedtodeterminetheprimarycomponentsofT.erectaandS.Zeylanica.Weexamined

the amounts of d-emethoxycurcumin, E-Resveratrol trimethyl ether, secoisolariciresinol, and rhamnoside in the extracts made using three distinct solvents. The extract's antifungal activity was examined using the in vitro zone of inhibition approach to determine its biological activity. Both plants' methanolic extracts demonstrate Fungal C. albicans is used in the Anti-Fungal-Zone Inhibition Test. The concentration of T. erecta is 6.25µg/ml. The inhibitory zone is 6.66 mm, whereas S. zeylanica exhibits 16.66 mm at the same dose. The molecular docking of both plants gives different result.The binding energies between the studied compounds were found to be between -10.1 kcal/mol and -9.1 kcal/mol for demethoxycurcumin, E-Resveratrol trimethyl ether, secoisolariciresinol, and rhamnoside, and between -3.7 kcal/mol and -5.7 kcal/mol for α-glucosidase.Studiesexaminingthephytochemicalcontentsofplantsarecrucialsincethebiological activities of T. erecta and S. zeylanica are intimately linked to the active chemicals they contain. Plant extracts that are safe and non-toxic can work as an alternative or supplement to existing pharmaceutical procedures and help lower the risk of a number of illnesses, including antifungal ones.Keywords- Anti-fugal, C.albican, Zone of inhibition, binding energies,Pharmaceuticals

POLYMERICNANOFIBERS:INNOVATIONSINGASTRO-RETENTIVEDRUG DELIVERY SYSTEMS

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Nanofibers have emerged as an option for targeted drug administration, especially for gastro-retentive applications. These ultrafine fibers with sizes under 500 nm in diameter, provide a substantial surface area-to-volume ratio, hence improving drug loading and release kinetics. The distinctivefeaturesofnanofibers,includingtheirvariablewettability,elasticity,anduniquesurface qualities,providethemexemplarycandidatesforgastro-retentivedrugdeliverysystems(GRDDS). Nanofiberscanmitigate theconstraintsofconventionaloraladministration strategiesby extending stomach residence time and enhancing medication absorption. This approach facilitates stomach-specific drug release for an extended duration, enhancing the local action of the drugs due to prolonged interaction with the gastric mucosa. Consequently, the nanofiber technology presents a promising method for gastric retention drug delivery.
Keywords: Nanofibers, gastro-retentive drug delivery systems, controlled drug delivery, electrospun nanofibers.

THENEWDIGITALERAINPHARMACEUTICALS:IMPROVINGRESULTSVIA COOPERATION AND TECHNOLOGY

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The increased use of technology and digital transformation are causing a major upheaval in the pharmaceutical sector. Business models across a range of industries have been transformed by digital transformation. However, the pharmaceutical industry's embrace of digital services has advanced at a comparatively modest rate. Artificial intelligence (AI) and machine learning have become essential tools for data analysis, and allows for more specialized methods to illness treatment. The foundation of the pharmaceutical business model has remained product-centric. Offering digital services in addition to traditional products is still in the experimental stage for pharmaceutical companies. Comprehensive cooperation and patient- centred servicesbeyond the pillin the form of anew digital businessare essential components of long-term, sustainable pharmaceutical business models. In addition to compensating for a lack of digital capabilities, partnerships with ICT businesses and healthcare payers can utilize the potential to improve patient

outcomes.ThewaythatDigitalhealthplatformsarealteringhowindividualsinteractwithphysicians and sign up forclinicaltrials isalsoemphasized. Regulatory compliance,waste reduction, product quality,andoperationalefficiencyhaveallimprovedasaresultofreal-timemonitoring,predictive maintenance, and streamlined procedures. Because they enable ongoing health metrics monitoring and promote patient interaction, wearable technology and smartphone apps have become essential components of personalized treatment. However, for smooth information interchange while maintainingpatientconfidentiality,issueslikeinteroperability,datasecurity,andprivacyconcerns need to be resolved. To guarantee patient safety and data integrity, regulatory frameworks must changetokeepupwithtechnologicaldevelopments.Keywords:E-Marketing,DigitalTechnology, Social Media Marketing, Digital Transformation, and Pharmaceutical Marketing.

PROFILEONTHEBIOACTIVITYOFMIRABILISJALAPA PHYTOCONSTITUENTS

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Mirabilis jalapa, commonly known as thefour o'clock flower,is a plant native to South America, and widely recognized for its ornamental and medicinal properties. This plant is rich in diverse phytoconstituents,includingalkaloids,flavonoids,tannins,terpenoids,andglycosides,contributing toitsbioactivity.Researchonthebioactivityof*M.jalapa*hasincreasinglyhighlighteditspotential asasourceofnaturalcompoundswithpharmacologicalbenefits.Thebioactivecompoundsisolated from *M. jalapa* have demonstrated various biological activities, including antioxidant, anti-inflammatory, antimicrobial, antidiabetic, and anticancer properties. Studies indicate that its alkaloids, such as jalapine, exhibit significant analgesic and anti-inflammatory effects, while flavonoids,suchasquercetinandkaempferol,contributetoitsantioxidativeandanti-inflammatory actions. The plant's antimicrobial properties have been attributed to phenolic compounds and essentialoils,whichshowefficacyagainstvariousbacterialandfungalpathogens.Inadditiontoits antimicrobial and anti-inflammatory effects, *M. jalapa* has been explored for its potential in managing metabolic disorders. Its phytoconstituents have been shown to regulate blood glucose levels,improvelipidmetabolism,andenhanceinsulinsensitivity,indicatingitspromiseasanatural therapeutic agent for diabetes management. Moreover, preliminary studies have suggested anticancer activity, particularly against breast and liver cancer cells, with certain extracts inducing apoptosisincancerouscells.Despiteitspromisingbioactivity,thefullpharmacologicalpotentialof *M.jalapa*requiresfurtherinvestigationthroughclinicalstudiesandsystematicreviews.Thesafety profile and efficacy of its bioactive compounds in humans remain fully elucidated, but current findings suggest that *M. jalapa* holds considerable promise as a multi-functional medicinal plant. Keywords: Mirabilis jalapa, phytoconstituents, bioactivity, antioxidant, antimicrobial, anti-inflammatory, antidiabetic, anticancer.

RECENTINNOVATIONSINFLOATINGDRUGDELIVERYSYSTEMFOR ENHANCING THERAPEUTIC EFFICACY BY GASTROPROTECTIVE MICROBALLOONS.

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Gastroretentive microballoons are a cutting-edge drug delivery method that improves stomach retention and bioavailability. These floating microspheres are hollow, low-density particles that remain buoyant in gastric secretions for a prolonged amount of time, extending their time in the stomach.Thesemicroballoons,comprisedofpolymerssuchashydroxypropylmethylcellulose

(HPMC), ethyl cellulose, and Eudragit, are formed by techniques such as solvent evaporation, ionotropicgelation,andspraydrying.Theirhollowdesignenablesforregulatedmedicationrelease, whichreducesdosefrequencyandincreasespatientcompliance.Gastroretentivemicroballoonsare particularlybeneficialformedicationsthathavelimitedabsorptionwindows,lowintestinalstability, or pH-dependent solubility. Applications involve the treatment of local gastrointestinal problems (e.g., Helicobacter pylori infections), increasing the bioavailability of medications such as metformin and amoxicillin, and providing a long- lasting therapeutic consequences. This delivery method is a viable strategy for overcoming obstacles in oral medication administration and improving therapeutic effectiveness.The unique properties of gastroretentive microballoons allow for prolonged drug release in the stomach, leading to sustained and consistent drug levels in the bloodstream.Additionally,thesemicroballoonscanhelpreducethefrequencyofdosing,improving patient compliance and convenience. Overall, gastroretentive microballoons offer a promising solutionforoptimizingdrugdeliveryandenhancingpatientoutcomesinvariousclinicaltrials.Key words: Gastroretentive microballoons (GRMs), Floating drug delivery system, Buoyancy, Metformin

METHODSDEVELOPMENTANDVALIDATIONOFROSUVASTATINCALCIUMBYUV, HPLC

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This study presents the development and validation of analytical methods for the determination of rosuvastatin calcium, a widely prescribed statin for managing hyperlipidaemia, using both UV-Visible Spectrophotometry and High-Performance Liquid Chromatography (HPLC).The primary objective of this study is to develop and validate reliable analytical methods for the quantitative determination of Rosuvastatin Calcium in pharmaceutical formulations using two different techniques: UV-Visible Spectrophotometry (UV) and High-Performance Liquid Chromatography (HPLC).The UV method is based on measuring the absorbance of rosuvastatin at its maximum wavelength, while the HPLC method involves the separation of the drug from potential excipients andimpuritiesusingasuitablemobilephaseandstationaryphase.Bothmethodswereoptimizedto ensure accuracy, precision, sensitivity, and robustness. The methods were validated according to ICH guidelines, ensuring accuracy, precision, specificity, and robustness for routine analysis of rosuvastatin calcium in bulk drug and pharmaceutical formulations. Both UV and HPLC methods offer reliable and cost-effective tools for quality control and routine monitoring of rosuvastatin in pharmaceutical application Propranolol hydrochloride and rosuvastatin calcium showed λmax at 289 nm and 243 nm respectively. Linearity was found in the range 2-42 µg/ml with correlation coefficient(r)0.9984forpropranololhydrochlorideand2-40µg/mlwithcorrelationcoefficient(r) 0.9996 for rosuvastatin calcium. The UV method is simple, fast, and cost-effective, suitable for routineanalysis,whiletheHPLCmethodprovideshighersensitivityandresolution,makingitideal for more complex analyses and quality control. Both methods are reliable for the routine determination of Rosuvastatin Calcium in pharmaceutical formulations.

NANOPARTICLE-MEDIATEDDRUGDELIVERYSYSTEMSFORTARGETED CANCER THERAPY: AN OVERVIEW

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Targetedcancertherapyhasrevolutionizedoncology,improvingtreatmentoutcomesand reducing

side effects. Nanoparticle-mediated drug delivery systems (NDDS) have gained significant attention due to their ability to selectively target cancer cells, enhancing drug efficacy and minimizing toxicity. This review highlights recent advancements in NDDS for targeted cancer therapy. Conventional cancer treatments often suffer from limitations, including non-specific targeting and systemic toxicity. NDDS has emerged as a promising solution, leveraging nanoparticles to deliver anticancer agents directly to tumour sites. Nanoparticles, liposomes, and Antibody-DrugConjugates(ADCs)are innovative drugdelivery systemsbeing explored in cancer research to improve drug delivery specificity and efficacy. Nanoparticles can release drugs at the tumour site, minimizing side effects on healthy tissues. These methods aim to enhance treatment outcomes and overcome drug resistance. Passive targeting: Passive targeting is a method for improving targeted drug delivery in cancer treatments. By utilising nanoparticles or liposomes, drugs can be encapsulated and delivered directly to the tumour site, increasing their concentration and reducing toxicity in healthy tissues. Active targeting: Active targeting is a promising way to improve targeted drug delivery. This method involvesputting specific ligandsorantibodies on the surfaceofnanoparticlessothattheycanbindtospecificcancercellreceptors.Thisallowsformore precise and efficient drug delivery while minimizing exposure to healthy cells.NDDS have demonstrated remarkable potential in targeted cancer therapy, offering improved efficacy and reduced toxicity. Future research should focus on optimizing nanoparticle design, targeting strategies, and addressing toxicological concerns.Nanoparticles, Target Strategies, Recent Advances and Future Directions, Toxicological Consideration.

TRANSFORMATIONINPHARMASECTORTHROUGHDIGITALINNOVATION

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Thepharmaceuticalsectoristraditionallyrootedinmeticulousresearchandregulateddevelopment is undergoing a profound transformation driven by digital innovation. This delves into the multifaceted impact of digital technologies on this sector, from drug discovery to patient care. We explorehowtheadvancementsthroughartificialintelligence,machinelearningadbigdataanalytics are accelerating the drug development, enhancing clinical trials, and virtual reality though. This presenting new opportunities and challenges for drug discovery and development. Advancements in areas such as Digital pill, Zip dose technology, Precision medicine, In silico toxicology. Digital pills also known as smart pills or ingestible sensor, are a combination of medication and a tiny sensor that is safe to consume. Digital tools are improving clinical trials by making them more efficientandhelpingresearchersfindpotentialtreatmentsmorequickly.Theinnovationsinpharma enhancingthepatientcarebyenablingpersonalizedmedicinesandimprovingthewaymedications are prescribed and checked. In silico toxicology is computational models are used to predict and evaluate the potential toxicity of drug candidates early in the development process. These are also used to rapidly evaluate and show promising drug candidates from large chemical libraries. SophisticatedComputationalmodelthatstimulatesdrug-targetinteractions,pharmacokinetics,and otherfactors.Thispresentationprovidesanoverviewofthedigitalinnovationsthatareshapingthe pharmaceutical industry, the challenges, and opportunities they present and the ways in which the industryisadaptingtothesechallenges.Thispresentationhighlightsthedigitalinnovationsthatare transforming the pharmaceutical sector and their potential to revolutionize the future of medicine.
Keywords: Digital Pill, Zip Dose Technology, Precision Medicine, In Silico Toxicology

THEFUTUREOFPHARMA:HOWDIGITALTECHISRESHAPINGHEALTH CARE

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ThePharmaceuticalindustryisundergoingasignificanttransformationwiththeintegrationof

digital technologies including the drug discovery patient care. These new technologies offering bettertreatmentsandbettercaretothepatients.Genetherapyaimstotreatandcuregeneticdisorders byreplacingandreappearingfaultygene.Thehumaninsulinpumpmadethelifeofdiabeticpatients easier by managing their blood sugar levels and by ensuring continuous delivering of insulin. Another exciting innovations is the sweat finger wrap. It is a wearable device and utilizes sweat to monitor conditions like hydration and glucose levels. Digital pills consist of a combination of medicationandasmallsensorthathelpstotractthepatienttreatmentplan.Thisabstracthighlights the power of digital technologies. All these innovations together making the healthcare more effective and easier to manage. Keywords: gene therapy, human insulin pump, sweat finger wrap

THE METHANOLIC EXTRACT OF ALBIZIA ODORATISSIMA (AO) BARK ATTENUATEDTHEDEVELOPMENTOFDIABETICNEPHROPATHYINRATS.

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Methods:HealthyWistarratsofeithersexweighing180-200gwereemployedinthepresentstudy. ExperimentaldiabeteswasinducedinratsbyinjectingSTZatadoseof45mg/kg(i.p.).Assessment ofDNwasdonebyestimatingglucoselevelinbloodandurinesample.Moreover,different antioxidant parameters like Catalase, superoxide dismutase (SOD) and thiobarbituric acid reactive substances(TBARS)inkidneytissuesamplewereassessed.Additionally,inflammatorycytokines likeinterleukin-1(IL-1),transforminggrowthfactorbeta(TGF-β)andtumournecrosisfactoralpha (TNF-α) were assessed in renal tissue. Results Methanolic extract of AO bark (AOB) has shown significantpreventionagainstdiabetesassociatednephropathy.Thebarkextractdecreasedglucose levelboth in urine and blood sample. The AO extracteither alone or in combination with standard drug(glibenclamide)showedsignificantreductioninoxidativestressinrenaltissue,as demonstratedbyincreasedcatalaseandSODlevels,ordecreasedTBARSlevelscomparedto diabeticrats.Additionally,methanolicextractofAOBaloneorincombinationwithglibenclamide significantlyreducedinflammatorycytokineslikeIL-1,TGF-βandTNF-αindiabeticrats.ConclusionOurstudiessuggestthatmethanolicextractofAOBmightbebeneficialforthetreatment ofDN.TheabilityofAOtoattenuateDNmaybemediatedbytheinhibitionofoxidativestressand inflammatory cytokines by AOB extract. Keywords: *Albizia odoratissima*, Nephropathy,STZ,Glibenclamide

TERNARYEUTECTICCOMPOSITIONINMULTICOMPONENTSYSTEMS: FUNDAMENTALS AND APPLICATIONS

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Ternary eutectic systems are multicomponent mixtures with unique thermodynamic and structural properties, characterized by a eutectic point where three components coexist in equilibrium at a specific temperature and composition, resulting in the lowest melting point of the mixture. These systems are critical in applications such as a drug delivery system, offering advantages like enhanced thermal efficiency, mechanical strength, and controlled solidification processes.Their studyinvolvesanalyzingphasediagramstounderstandphaseequilibria,solidificationbehavior,and microstructure evolution, with factors such as component interactions, thermal properties, and cooling rates influencing their stability. In pharmaceuticals, ternary eutectic mixtures improve the solubility, dissolution, and bioavailability of poorly water-soluble drugs. The study incorporates advanced analytical techniques such as differential scanning calorimetry (DSC), X-ray diffraction (XRD), and Fourier-transform infrared spectroscopy (FTIR) to characterize eutectic formations in selecteddrug-excipientsystems.Thispaperreviewstheirfundamentalprinciples,experimental

methodologies,andapplications,highlightingtheirimportanceinaddressingchallengesinmodern material science and engineering. Keywords:Ternary eutectic systems, multicomponent formulations, phase diagrams, thermodynamics, drug solubility, eutectic point.

NANOEMULSION-AREVIEW

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Nano emulsions are advanced colloidal systems that offer immense potential in pharmaceutical, cosmetic, and food industries due to their unique physicochemical properties. These thermodynamically stable systems consist of nanosized droplets (20–200 nm) of oil and water stabilized by surfactants and co-surfactants. Their nanoscale size ensures improved solubility, stability, and bioavailability of poorly water-soluble drugs, making them ideal for drug delivery applications.Nanoemulsionsexhibitahighsurfaceareaandsmalldropletsize,enablingenhanced absorption, targeted delivery, and controlled release of therapeutic agents. Additionally, their transparentappearance,non-irritatingnature,andeaseofpreparationmakethemapreferredchoice fortopicalandoralformulations.Thisarticleexplorestheformulationtechniques,characterization methods,andapplicationsofnanoemulsionswhileaddressingtheirlimitationsandfuturescopein pharmaceutical innovations. Keywords: Nanoemulsion, drug delivery, bioavailability, nanoscale, solubility, surfactants, colloidal systems, targeted delivery, pharmaceutical formulations.

REVIEWARTICLEONPHARMACEUTICALANALYSISOFCAPSULE ACCORDING TO STANDARD PHARMACOPOEIAS

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Capsules, as one of the most widely used dosage forms in pharmaceuticals, require thorough analysisto ensuretheirquality, safety, and efficacy.Thisreview providesan in-depthexamination of the analytical methods and quality standards for capsule formulations, as prescribed by various standard pharmacopoeias, including the United States Pharmacopoeia (USP), British Pharmacopoeia (BP), and Indian Pharmacopoeia (IP). Key tests covered include dissolution, disintegration,weightvariation,andcontentuniformity,allcriticalforconfirmingdosageaccuracy and bioavailability. Advanced analytical techniques, such as high-performance liquid chromatography(HPLC),gaschromatography(GC),andspectrophotometry,arealsodiscussedfor their roles in quantifying active ingredients, identifying impurities, and validating stability. Emphasis is placed on the importance of adhering to pharmacopeial standards to maintain consistency and regulatory compliance in capsule production. This review aims to guide pharmaceutical analysts, researchers, and quality control professionals in selecting and applying appropriateanalyticalmethodologiesforcapsuleevaluation,contributingtotheoverallintegrityof pharmaceutical products. Keywords:Capsule analysis, pharmacopeial standards, USP, BP, IP, dissolution test, disintegration, weight variation, content uniformity, HPLC, GC, spectrophotometry, quality control

NATURALPRODUCTSINQUALITYOFULCERHEALING

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Gastric ulcer is a chronic disease that features unwanted complications such as bleeding, stenosis, perforation,etc.ConventionalulcertreatmentsareH2antagonists,PPI,essentialtohealandprevent complications. Besides anti *Helicobacter pylori* therapy effectively reduces ulcer recurrence and causesphysiologicalchangesingastricmucosa,sothattheulcerhealingprocessisaffected.Despite these treatments, some patients do not heal so quality of ulcer healing (QOUH) is on the focus. QOUH is the reconstruction of the mucosal structure and prevention of ulcer recurrence and is promoted by various gastro-protectives originating from natural origin. These gastro-protectives originated from *Artemisia and* garlic. Ethanol extract of *Artemisia* and S Allyl Cysteine derived fromgarlicareusedintheearlyphaseofulcerandaccelerateulcerhealing.Thesealsopreventthe recurrence of ulcers after completely healing, in these aspects of ulcer healing acid suppressants weresomewhatinferior.ThesecompoundssuppressIL-2andTNFαandCOX2.SallylCysteine, originating from garlic prevents gastritis by enhancing antioxidative activity.It inhibits TNF-α induced proinflammatory signalling, COX 2, and Cytosolic phospholipase A. In this study, the effectofArtemisiaandgarlicongastricmucosainulcerisdiscussed.Manypreclinicalandclinical studies also support Artemisia and garlic as a promising antiulcer agent.

Keywords–Gastriculcer,Perforation,H2antagonist,PPI,GastricMucosa,QOUH,SAllyl Cysteine, IL-2, TNFα, COX 2, Gastritis.

AREVIEWONDEVELOPMENTSINORALBIOPHARMACEUTICALS DELIVERY SYSTEMS: OBSTACLES AND POSSIBILITIES.

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Abstract: Introduction: Oral delivery of biopharmaceuticals remains a significant challenge due to poor bioavailability, instability, and enzymatic degradation. Recent advancements in pharmaceuticaltechnologieshaveimprovedoralbioavailability,enablingthedevelopmentoforally administered biopharmaceuticals. Biopharmaceuticals offer promising therapeutic options, including proteins, peptides, and nucleic acids. Future Directions and Personalized Medicine: Developingoraldelivery systemstailoredtoindividualpatientneeds,incorporatingbiomarkersand pharmacogenomics. Nanotechnology Advancements: Exploring novel nanoparticle designs, materials, and surface modifications to enhance bioavailability and targeting. Mucosal Barrier Overcoming: Investigatingmucolytic agents, permeation enhancers, and bio-adhesive polymers to improveabsorption.EnzymaticDegradationInhibition:Designingprodrugs,enzymeinhibitors,and protective coatings to minimize degradation. In Silico Modelling and Simulation: Developing computational models to predict oral absorption, pharmacokinetics, and pharmacodynamics. Clinical Translation and Regulatory Frameworks: Establishing clear guidelines and standards for oral biopharmaceutical development and approval. Research Opportunities: Investigating the oral deliveryofCRISPR-Cas9geneeditingtechnologies.Exploringoralvaccinationstrategiesutilizing nanoparticle-based systems. Developing oral formulations for biologic therapies in oncology and immunology.Designing personalized oral delivery systems for rare genetic disorders. Elucidating the role of the gut microbiome in the absorption of oral biopharmaceuticals. Conclusion: Oral delivery of biopharmaceuticals has made significant progress. Emerging technologies, such as nanoparticlesandliposomes,offerimprovedbioavailabilityandtargeteddelivery.Furtherresearch is needed to overcome enzymatic degradation, poor solubility, and mucosal barriers. Keywords: Oral delivery system, Future Directions and Research Opportunitie

DIGITALTRANSFORMATIONINPHARMACEUTICALS:DRIVING INNOVATION AND EFFICIENCY

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The pharmaceutical industry is undergoing a significant digital transformation, reshaping the way drugs are developed, manufactured, marketed, and delivered to patients. This transformation leverages cutting-edge technologies such as Artificial Intelligence (AI), Machine Learning (ML), Internet of Things (IoT), block chain, and big data analytics to optimize various aspects of the pharmaceutical value chain. Key areas impacted by digital transformation include drug discovery and development, where AIand predictive analytics are accelerating the identification of potential compounds and clinical trial optimization. In manufacturing, Industry 4.0 technologies are improvingefficiency,reducingerrors,andensuringqualitythroughsmartautomationandreal-time monitoring.Digitaltoolsarealsoenhancingsupplychaintransparency,ensuringtimelydeliveryof medications,andenablingpersonalizedmedicinethroughpatient-centereddataanalysis.Moreover, digital transformation is enhancing customer engagement through digital marketing, virtual consultations, and telemedicine, thereby improving patient outcomes and broadening access to healthcare services. The integration of block chain ensures secure, traceable, and transparent transactions, critical for regulatory compliance and combating counterfeit drugs.This presentation willexplorethevarioustechnologiesdrivingdigitaltransformationinthepharmaceuticalindustry, highlight the benefits, challenges, and regulatory considerations, and discuss the future outlook of a digitally empowered pharmaceutical ecosystem. Keywords:Digital Transformation, Artificial Intelligence (AI), Machine Learning (ML).

THEDIGITALREVOLUTIONINTHEPHARMACEUTICALINDUSTRY

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Digitalizationinthepharmaceuticalindustryistheuseofdigitaltechnologiestoimproveprocesses, operations, and supply chains, etc. The process of using new technologies to improve the pharmaceuticalindustry,includingdrugdevelopment,manufacturing,andpatientcarerefersdigital innovation. As pharma's digital transformation continues to evolve, digital technologies and cognitive tools are finding their way into all aspects of the industry, allowing for faster drug developmentand expanded treatmentoptionsfora growing numberofconditions.There are a few examples of digitalization which includes – improved supply chain, better manufacturing, faster drug development, improved patient care, better data management, increased productivity, improvedpatientengagement.Thepharmaceuticalindustryfacesmanychallengeswhicheffectthe productionandavailabilityofproduct,toovercometheseproblemsdigitalizationisarevolutionary weapon. In this, I will introduce the digitalization in pharma sector, benefits of digitalization followed by the challenges faced by. Keywords – digitalization, pharmaceutical industry, innovation.

DISINTEGRATION PROPERTIES OF ISABGOL HUSK: A STUDY ON MECHANISMSANDAPPLICATIONRANGESFORPHARMACEUTICAL TABLETS

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Introduction: Isabgol, commonly known as psyllium husk, is a dietary fiber with numerous health benefits. It alleviates constipation, supports weight loss, regulates blood glucose levels in diabetic patients, and prevents piles by promoting laxation and stool bulkiness. Additionally, its anti-inflammatory properties make it effective in managing acne and pimples when applied topically. Objective:Thisstudyinvestigatedthedisintegrationpropertiesof Isabgolhusk(IH),sodium

alginate (SA), calcium alginate (CA), and alginic acid (AA) as tablet disintegrants. Methods: Formulations with varying physico-chemical properties and concentrations (4% and 10%) were tested for disintegration time. Results: The study revealed that IH, CA, and AA exhibit rapid disintegration, comparable to superdisintegrants used as controls. Conclusion: Isabgol husk demonstrates potential as an effective tablet disintegrant, offering rapid disintegration and expanding its applications beyond. Keywords: Isabgol husk, psyllium husk, tablet disintegrant, superdisintegrant, pharmaceutical applications

ENHANCINGBRAINDELIVERYOFDOXEPINHYDROCHLORIDEVIAION-TRIGGERED *IN SITU* NASAL GEL: DEVELOPMENT AND CHARACTERIZATION.

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Theobjective ofthe studywasto improvedoxepin hydrochloride administration to the brain using an ion-triggered in situ nasal gel. Significanthealth issues are presented by brain illnesses, such as depression,whichaffectsapproximately300millionindividualsglobally.Becausetheblood-brain barrier (BBB) is so tight, it makes it difficult to transfer drugs to the brain and reduces the effectiveness of many treatments. A promising way to get around the BBB is through intranasal medicationdelivery,whichhasahighbioavailability,rapiddrugabsorption,andfewersideeffects. Using gellan gum& HPMC (Hydroxy propyl Methylcellulose) asthe main ingredients, this study created an in situ gel. When the gel comes into touch with nasal mucosal secretions, it changes phases from liquid to gel, which lengthens the duration of the drug's residence and decreases mucociliary clearance. Through ion-triggered gelation, gellan gum creates a cross-linked matrix, while HPMC increases viscosity to guarantee long-term drug release. The formulation is a viable substitute for brain-targeted drug delivery since it takes advantage of the nasal cavity's direct anatomical link to the brain. The ion-triggered nasal gel presents a fresh strategy for successful therapeutic intervention in brain illnesses, including depression, by resolving the drawbacks of conventional delivery systems. The results of the study highlight how this novel delivery method may enhance the management of a number of disorders affecting the central nervous system. Keywords- Gellan gum, in situ gel, nasal delivery, HPMC, Doxepin.

VITAMINS'FUNCTION

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Vitamins are vital components of many biochemical processes in the human body, serving asboth enzyme cofactors and necessary nutrition simultaneously. This article explores the complex methods that clarify their essential role in catalysing metabolic events that are essential for physiologicalfunctions.Accordingtoathoroughanalysisofthebodyofresearch,coenzymessuch as vitamin B1, riboflavin (B2), niacin (B3), and pyridoxine (B6), among others,convert substrates into products necessary for cellular metabolism and homeostasis. The essay also emphasises how importantvitaminsareforpreservingenzymefunctionandcontrollingmetabolicprocesses.Certain vitamindeficienciescancausepoorenzymeperformance,whichcanleadtoanumberofmetabolic diseases and health issues. Keywords: Vitamins , Enzyme, health

NOVELDRUGDELIVERYSYSTEMS

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Drugdeliverysystemsaredesignedtointroducetherapeuticsubstancesintothebodyinawaythat increasesefficacywhile decreasing side effects.Traditionaldrug delivery methods,such asoralor intravenousadministration,oftensufferfromdrawbackslikelowbioavailability,off-targeteffects, andlimitedcontroloverdrugrelease.NovelDrugDeliverySystems(NDDS)aimtoovercomethese limitations by incorporating advanced technologies to ensure accurate drug delivery and optimal therapeutic outcomes.

In recent years, novel drug delivery systems (NDDS) have emerged as transformative approaches to optimize therapeutic efficacy, minimize side effects, and balance patient compliance. These systems, involving nanoparticles, liposomes, transdermal patches, and biodegradable polymers, offer precise drug targeting, controlled release, and improved pharmacokinetics. NDDS addresses limitations of conventional drug delivery by overcoming challenges such as poor bioavailability, fast drug degradation, and off-target toxicity. Advances in nanotechnology, biotechnology, and material science have paved the way for innovative platforms tailored for chronic diseases, cancer therapy, and personalized medicine This paper explores the principles, advancements, and future perspectives of NDDS, emphasizing its role in revolutionizing healthcare.

THEROLEOFQUANTUMCOMPUTINGINPROTEIN-LIGANDINTERACTION STUDIES

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Evaluation of protein-ligand interactions is key in drug discovery to identify high specificity and efficacy therapeutic molecules. They are quite intricate interactions to compute. One often has to use approximations in molecular docking and dynamics simulations. In this field, quantum computing as a transformational tool had emerged with its capability to directly model quantum mechanical events. Projects such as National Mission on Quantum Technology and Applications (NM-QTA), Science, Technology, and Innovation Policy (STIP) 2020, and Digital India Initiative arepromotedbytheIndiangovernmenttopromotebreakthroughsinquantumtechnology.Thegoal oftheseinitiativesistocreateanecosystemthatcandevelopadvancedresearchandapplicationsin pharmaceuticals, healthcare, and biotechnology. Using quantum algorithms like the Variational QuantumEigensolver(VQE)andQuantumPhaseEstimation(QPE),scientistscangetsignificantly more precise results by modeling protein-ligand interactions, calculating binding energies, and predicting molecular properties. Quantum computing progress is congruent with India's strategic objectives, and they are emphasized in this abstract. Quantum computing in drug discovery is conceived in line with the Department of Biotechnology's (DBT) thrust in bioinformatics and the India Semiconductor Mission (ISM) to develop domestic quantum hardware capabilities. Hybrid quantum-classicalmethodologiesarefacilitatedbytheseactivitiestoenrichmolecularsimulations, reduce lead optimization timescales, and accelerate drug development schedules. While they promotepublic-privatepartnerships,quantumcomputingcouldgiveaccuratemolecularinsightsto tackle global health issues and help strengthen India's position in pharmaceutical innovation. Government legislation, along with this paradigm change, has the potential to alter drug development altogether, opening up new horizons in precision medicine and tailored treatments.

Keywords: National Mission on Quantum Technologies, Variational Quantum molecular docking and dynamics simulations

ANOVERVIEWOFTHEMICROPARTICLEDRUGDELIVERYSYSTEMANDITS NUMEROUS THERAPEUTIC USES IN DIABETES

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With the ability to encapsulate both soluble and insoluble substances, the microparticulate drug deliverysystem(MDDS)hasgarneredsignificantattentionfrommodernsocietyduetoitspotential to address the problems that have long beset conventional medicine. Clinical trials have demonstrated that MDDS outperforms conventional drug delivery methods in terms of improving drug bioavailability, stability, targeting, and release control, as well as providing comfort, ease of administration, and improved patient compliance by reducing medication toxicity and dosing frequency. This abstract discussed the production process, drug delivery, and potential therapeutic applicationsofMDDS.Drugreleasecontrolviagastroretention,enhanceddrugdissolution,reduced side effects, targeted drug delivery, mucosal drug delivery, natural products loaded with MPs, improved insulin stability, administration routes, andsustained drug release discussed in detail as therapeuticapplicationsofantidiabeticdrug-loadedMPs.Thepresentscenarioandpotentialfuture developments in creating MPs loaded.

ETHOSOMESNANOTECHNOLOGY:TAILORINGLIPIDVESICLESFOR TARGETED AND TRANSDERMAL DRUG DELIVERY

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Ethosomes are novel lipid-based vesicular systems that demonstrate unique improvements in drug delivery with respect to other nanoparticles, especially for transdermal applications. Their high ethanol content strongly improves flexibility and deformability, which allows squeezing through the intercellular spaces without any drug leakage, The ethanol, moreover, contributes to increase thefluidityofthelipidsofthecellmembranesindermallayers,allowinganindepthpenetrationof the nanostructures. Moreover, the high ethanol content of ethosomes allows the promotion of the encapsulation of either hydrophilic or lipophilic active agents,a feature particularly useful when it dealswithnaturalextracts,afamilyofcompoundscharacterizedbyahugechemicalvariability.As a further advantage, being natural extracts often obtained in ethanol-based solutions, their incorporation in ethosomes makes not necessarily expensive and time- -consuming procedures finalized at solvent removal. Following the initial exploitation of ethosomes, research focuses on the development of varıants such as ınvasomes and transethosomes, which show improved drug encapsulation and delivery capacity. This review provides the state-of-the-art on ethosomal research, with special attention on the encapsulation and delivery of natural extracts and their transdermal delivery. Keywords: Ethosomes, nanostructures, drug encapsulation, transdermal delivery

SELF-ASSEMBLEDNANOPENETRATORFORCANCERTREATMENT

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Self-assembled nano penetrators are a promising area of research for cancer treatment. The ability oftheself-assemblednanopenetratortodeliverdrugspreciselyhasdrawntheattentionofnumerous experts in recent times. Typically, nano penetrators are those nanoscale devices or structures that aredesignedtopenetratematerialsatthenanoscalelevel,andaccordingtothefundamentalprinciple of self-assembly. These small particles made of peptides or proteins, that can be designed to target cancercellsspecificallyanddeliverdrugsorothertherapeuticagentsdirectlytothem.Thistargeted approachcanhelptoreducesideeffectsandincreasetheeffectivenessoftreatment.Herearesome ofthewaysthatself-assemblednanopenetratorsarebeingusedincancerresearch.Nanopenetrators canbeloadedwithanticancerdrugsandthendesignedtoreleasetheminresponsetospecific

signals, such as changes in pH or temperature. This targeted release can help to increase the concentrationofthedrugatthetumorsiteandreduceexposuretohealthytissues.It canbeusedto deliver immune-stimulating agents to cancer cells, which can help to activate the body's own immune system to fight the cancer. Nano penetrators can be labeled with imaging agents, radioactive tracers, to help doctors visualize tumors and monitor the progress of treatment. While self-assemblednanopenetratorsarestillintheearlystagesofdevelopment,theyholdgreatpromise for improving the treatment of cancer. Keyword- Self-assembly, Nano penetrator, Cancer cells, Immune stimulating agent

NANOEMULGEL:ANOVELINSIGHTSINTOPICALAPPLICATIONTO ENHANCING BIOAVAILABILITY OF ANTIFUNGAL DRUG

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Delivering medications that are hydrophobic or poorly soluble in water has proven challenging lately.Numerousapproacheshavebeendevelopedtodealwiththeformeraswellasotherimportant problems like stability, bioavailability, and so forth. An innovative drug delivery technique called nano-emulgel aims to improve the therapeutic profile of lipophilic medications. The goal of nano-emulgel, a combined preparation of several systems, is to address these constraints. The new techniquecreatedbyaddingnano-emulsiontogelenhancesstabilityandpermitsfastandregulated releaseofmedication.Thefusionofthetwosystemsmakesthisformulationadvantageousinseveral ways. Lipophilic drugs can be easily incorporated and the skin permeability of the incorporated drugscanbeenhancedinseveralfoldsduetothefinelydistributeddropletsofnanoemulsionphase. The capacity of nano-emulgel to accomplish targeted distribution, its safety profile, its ease of application, and the fact that it does not undergo first pass metabolism or gastrointestinal degradationhaveallcontributedtoitsgrowingattention.Thepharmacokinetics,safetyprofiles,and formulation elements of nano-emulgel for topical drug delivery are the main topics of this review. Nevertheless, just a handful of formulations—nanoemulgel being among them—have shown promise in resolving the problems. nanoemulgels are good candidates for drug delivery. The rheological characteristics of nanoemulgels aid to increase patient acceptability.
Keywords:Nanoemulgel,Topicaldeliver,Lipophilicity,Bioavailability

POLYMERICNANOFIBERS:INNOVATIONSINGASTRO-RETENTIVEDRUG DELIVERY SYSTEMS

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Nanofibers have emerged as an option for targeted drug administration, especially for gastro-retentive applications. These ultrafine fibers with sizes under 500 nm in diameter, provide a substantial surface area-to-volume ratio, hence improving drug loading and release kinetics. The distinctivefeaturesofnanofibers,includingtheirvariablewettability,elasticity,anduniquesurface qualities,providethemexemplarycandidatesforgastro-retentivedrugdeliverysystems(GRDDS). Nanofiberscanmitigate theconstraintsofconventionaloraladministration strategiesby extending stomach residence time and enhancing medication absorption. This approach facilitates stomach-specific drug release for an extended duration, enhancing the local action of the drugs due to prolonged interaction with the gastric mucosa. Consequently, the nanofiber technology presents a promisingmethodforgastricretentiondrugdelivery.Keywords:Nanofibers,gastro-retentivedrug delivery systems, controlled drug delivery, electrospun nanofibers.

CLINICALPROTOCOLANDPHARMACOTHERAPEUTICSFORTREATMENTOF INFERTILITY IN WOMEN

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Introduction: Infertility in women has been a serious concern in the recent past decade throughout the globe. Several factors and reasons have been responsible for such drastic decline in fertility of women. Nowadays, with advancedmedical technology and therapeutic advancementsan initiative has been taken to bridge the gap by achieving pregnancy to the hopeless women. In Vitro fertilization technology is one of such practices which have created lots of awareness and hope amongstthechildlesscouples.Duetolackofawareness,illiteracy,lowsocioeconomicbackground and belonging to non medical fraternity, several IVF centres are creating dissatisfaction and high charges to the couple in need. In this presentation we are trying to focus on the understanding of infertility, diagnosis, line of treatment, pharmacotherapeutic approach and chances of maximum success in IVF. Based on the diagnosis line of treatment could be surgical (Laproscopy) or drug therapyusingHormoneReplacementTherapy(HRT).Incase,theabovetwowaysdon'tgiveresult thanonemustgoforIVFinwhichthehormonalcycleandleveloffemaleismanagedwiththehelp of hormonal therapy. Collection of egg, test tube fertilization and implantation are the subsequent steps to be followed till a positive HCG report confirms pregnancy. Throughout this journey the femalehastogothroughseveralhormonal,supplementsandotherdrugswhichcostnotonlytothe economy but also possess mental issues. Being a pharmacist we shall focus on the implications of drug therapy and its approach for the success of IVF.

OVERVIEWOFANTHROPOMORPHICMOLECULES:THE NANOPUTIANS/NANOKIDS

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Nanoputians are a series of microscopic, human-like figures designed by the chemist and artist KatalinBorkowski,aspartofafascinatingblendofartandnanotechnology.Thesetiny,molecular- scale characters are created from individual molecules, and their design was inspired by organic shapes and the principles of molecular chemistry. Each Nanoputian is made from molecules that self-assemble into the tiny, humanoid shapes, demonstrating the possibilitiesofnanotechnology in the creation of functional or artistic objects at a molecular level. The Nanoputians are typically shown in playful, cartoon-like poses and are often used to illustrate concepts related to molecular design,themanipulationofmaterialsatanatomicscale,andtheintersectionofartandscience.The Nanoputians have become a symbol in nanotechnology, showcasing the potential for using molecular structures to create complex, engineered systems.

CADMIUMCHLORIDEINDUCEDNEUROTOXICITYINWISTARRATSANDITS MANAGEMENT

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Cadmiumchloride(CdCl2)isaheavymetalknownforitsneurotoxiceffects,whichposesignificant health risks to both humans and animals. This study investigates the neurotoxic impacts of CdCl2 exposureinWistarrats,focusingonbehavioural,biochemical,andhistopathologicalalterations.A totalof30maleWistarratsweredividedintothreegroups:acontrolgroupreceivingsaline,agroup exposedtoalowdoseofCdCl2,andagroupexposedtoahighdose.Behaviouralassessmentswere conducted using the open field and elevated plus maze tests to evaluate anxiety and locomotor activity. Biochemical analyses measured oxidative stress markers, including malondialdehyde (MDA) and antioxidant enzyme activities. Histopathological examinations of brain tissues were performed to identify structural changes. Preliminary findings indicate that CdCl2 exposure significantlyimpairscognitivefunction,increasesoxidativestress,andinducesneuronaldamagein

a dose-dependent manner. Notably, the high-dose group exhibited pronounced anxiety-like behaviours and reduced exploratory activity. Management strategies, including antioxidant supplementation (e.g., vitamin E and selenium), were tested for their potential protective effects against CdCl2-induced neurotoxicity. Results suggest that these antioxidants mitigate oxidative stress and improve behavioural outcomes, highlighting their therapeutic potential. This research underscores the importance of understanding cadmium-induced neurotoxicity and developing effective management strategies to safeguard neurological health in exposure scenarios. Future studies will aim to elucidate the underlying mechanisms and optimize treatment protocols for enhanced neuroprotection.Keywords: - Cadmium chloride, Neurotoxicity, MDA, oxidative stress.

RECENTINNOVATIONSINFLOATINGDRUGDELIVERYSYSTEMFOR ENHANCING THERAPEUTIC EFFICACY BY GASTROPROTECTIVE MICROBALLOONS.

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Gastroretentive microballoons are a cutting-edge drug delivery method that improves stomach retention and bioavailability. These floating microspheres are hollow, low-density particles that remain buoyant in gastric secretions for a prolonged amount of time, extending their time in the stomach. These microballoons, comprised of polymers such as hydroxypropyl methylcellulose (HPMC), ethyl cellulose, and Eudragit, are formed by techniques such as solvent evaporation, ionotropicgelation,andspraydrying.Theirhollowdesignenablesforregulatedmedicationrelease, whichreducesdosefrequencyandincreasespatientcompliance.Gastroretentivemicroballoonsare particularlybeneficialformedicationsthathavelimitedabsorptionwindows,lowintestinalstability, or pH-dependent solubility. Applications involve the treatment of local gastrointestinal problems (e.g., Helicobacter pylori infections), increasing the bioavailability of medications such as metformin and amoxicillin, and providing a long- lasting therapeutic consequences. This delivery method is a viable strategy for overcoming obstacles in oral medication administration and improving therapeutic effectiveness.The unique properties of gastroretentive microballoons allow for prolonged drug release in the stomach, leading to sustained and consistent drug levels in the bloodstream.Additionally,thesemicroballoonscanhelpreducethefrequencyofdosing,improving patient compliance and convenience. Overall, gastroretentive microballoons offer a promising solution for optimizing drug delivery and enhancing patient outcomes in various clinical trials.
Key words: Gastroretentive microballoons (GRMs), Floating drug delivery system, Buoyancy, Metformin

RECENTADVANCEMENTINPERSONALIZEDGLOMERULUSCHIPUSING STEM CELLS IN TREATMENT OF CHRONIC KIDNEY DISEASE (CKD)

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As a selective filtration barrier that is necessary for maintaining systemic homeostasis, the glomerulus is an important part of the kidney. Advanced in vitro models are necessary since disruptions in its function are a contributing factor to a number of renal disorders. Recent developments in bioengineering have developed glomerulus chips, which are used in vascular endothelium and stem cell-derived epithelium on microfluidic substrates to mimic the human glomerulus.Thisabstractgivestheinformationattheevolutionanddesignofglomeruluschips,

with a focus on the differentiation of induced pluripotent stem cells (iPSCs) into endothelial and podocyte cells, their co-cultivation to restore the filtration barrier, and the incorporation of biomimetic components to improve physiological relevance. Glomerulus chips are produced by combining iPSCs into glomerular cell types, including endothelial cells and podocytes, in microfluidic media. The glomerular microenvironment is replicated by including dynamic fluid flow and a biomimetic glomerular basement membrane (GBM). These chips effectively replicate glomerular disorders such diabetic nephropathy and focal segmental glomerulosclerosis, mimic selective filtration, and react to nephrotoxic drugs. Glomerulus chips have the potential to revolutionize nephrology research by facilitating mechanistic investigations of renal disorders, precisionmedicine,anddrugscreening.Replicatingmesangialcellconnections,guaranteeinglong- term stability, and expanding the technology for clinical use are still difficult procedure thus glomeruluschipsopenthedoorfornoveltherapeuticapproachesinthetreatmentofrenalillnessin spite of these obstacles. Keywords**:** Stem cells, Vascular Endothelium, Microfluidics, Nephrotoxicity, Focal Segmental Glomerulosclerosis, Diabetic Nephropathy

ABRIEFSTUDYONCARICAPAPAYA-AREVIEW

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Carica papaya belongs to caricaceae family and it is commonly known as‘papaya’. Carica papaya is used in ayurvedic medicines from very long time. It is used as anti-inflammatory, antioxidant, diuretic, antibacterial, abortifacient, vermifuge, hypoglycemic, antifungal activity, antihelmenthic and immunomodulatory etc. Scientific evidences suggest their versatile biological function that supports its traditional use in different diseases. Phytochemical studies shows that plant carica papaya contains mainly alkaloids carpaine, pseudocarpaine, tannins, flavnoids, carcin, gamma terpine, glycoside carposides, sugars etc. The plant has effective pharmacological activity such as anti-inflammatory, antioxidant, diuretic, antibacterial, abortifacient, hypoglycemic, antifungal, antihelmenthic and immunomodulatory, hepatoprotective and anticonvulsant activity. Keywords: Carica papaya, caricaceae, abortifacient, pharmacological activity.

ROLEOFPHARMACISTINHEALTHCARE

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Background:Theroleofpharmacistsinhealthcareisundergoingsignificanttransformation,driven bytheneedformorepatient-centered,cost-effective,andhigh-qualitycare.Objective:Thisreview aims to explore the evolving role of pharmacists in healthcare, with a focus on their contributions to enhancing patient outcomes and improving healthcare systems. Methods: A comprehensive literature review was conducted to identify key studies, reports, and initiatives that highlight the expanding role of pharmacists in healthcare. Key Findings:Pharmacists are increasingly taking on expandedrolesinhealthcare,including:MedicationtherapymanagementandoptimizationDisease statemanagementandpreventionHealthpromotionandeducationSInterprofessionalcollaboration and communication Quality improvement and patient safety initiative Conclusion: The evolving role of pharmacists in healthcare is critical to enhancing patient outcomes, improving healthcare systems,andreducinghealthcarecosts.Asthehealthcarelandscapecontinuestoshift,pharmacists mustbepreparedtoadaptandexpandtheirroletomeetthegrowingneedsofpatientsandhealthcare systems. Keywords: pharmacist, healthcare, patient outcomes, healthcare systems, medication therapymanagement,diseasestatemanagement,healthpromotion,interprofessionalcollaboration, quality improvement.

FLAXSEED MUCILAGE-BASED HYDROGELS TAILORED WITH ACRYLIC ACIDTOFORMNON-TOXIC,BIOPOLYMERFORCONTROLLEDRELEASEOF *CALENDULA OFFICINALIS*: *IN VITRO AND IN VIVO ASSAY*

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Mucilage, a type of biopolymer, exists in all parts of plants and can be intracellular or extracellular. These colourless and odourless secretions possess emerging commercial applications in the fields of biomaterials, agriculture, cosmetics, and pharmaceuticals due to their inherent properties of being non-toxicandbiodegradable.Inordertoexploittheirpotential,themucilagecanbefurthermodified with synthetic polymers for various other applications, one of which is drug delivery. This paper presents a study on the modification of flax seed mucilage with acrylic acid (FLX:AA) and a cross- linker, ethylene glycol dimethacrylate, by free radical polymerization. The semi-synthetic hydrogels thus synthesized were characterized for their stimuli-responsive properties in water, saline solution, and glucose solution and in solutions of varying pH of 2, 4, 7, and 8. In addition to this, protein absorptionandbloodcompatibilitytestswereusedtoevaluatethepolymer'sbiocompatibility.FTIR, SEM,XRD,andTGAtoolswereemployedtocharacterizethesynthesizedhydrogels.Thehydrogels showing the best swelling were selected for both *in vitro* and *in vivo* studies. The encapsulation efficiency was found to be 61.65% after 24 hours of exposure to the flower extract of Calendula officinalisforcarryingoutaninvitrostudy.An*invivo*studyonanimalswasperformedbyfollowing the excision model. The continuous monitoring of the wound has shown significant improvement in wound contraction, epithelization time, and wound index. In this model, antioxidant activity, total protein, and hydroxyproline levels in the healing tissue samples were higher than in the control samples. The results supported that calendula extract (CE) encapsulated hydrogels (CE^{+}FLX: AA) promoted faster healing than without encapsulation (CE^{-}FLX: AA) hydrogels and then that of the control sample.Keywords: biopolymer; flaxseed; modification; *Calendula officinalis; in vitro*, *in vivo*, wound healing

FROM PAPERTO E-PRESCRIBING OFMULTIDOSE DRUG DISPENSING:A QUALITATIVE STUDYOFWORKFLOWINACOMMUNITYCARESETTING

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E-prescribing is now widespread and, in some countries, has completely replaced paper prescriptions.InNorway,almostallprescribingiselectronic,exceptformultidosedrugdispensing (MDD),whichisstill sentto thepharmacybyfaxorordinarymail.MDD isanadherenceaidused by one-third of all patients receiving home care services. In this paper, we present results from a qualitative study evaluating the introduction ofe-prescribing forMDD ina community health care setting. The focus is on the work and workflow for the pharmacists and nurses involved in the medication-handling process. We used the pragmatic process evaluation framework and the systematictextcondensationmethodtoanalysethedata.Weconducted12interviewswith34nurses andpharmacists.Thisstudyshowsthatthee-prescribingofMDDledtogreaterintegrationbetween systems,bothwithintheexistingMDDsystemandacrosscarelevels,potentiallyimprovingpatient safety. However, the structured prescriptions increased the need for clarifications, resulting in an increasedoverallworkload.Agreaterunderstandingoftherolesandresponsibilitiesofthedifferent professionalsinthemedicationmanagementchainandtheirneedswouldimprovetheworkflowof the nurses and pharmacists involved. Keywords:e-prescribing, multidose drug dispensing, community care, interviews, nurses, pharmacists, work, workflow, collaboration

METHODSDEVELOPMENTANDVALIDATIONOFROSUVASTATINCALCIUM BY UV, HPLC

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This study presents the development and validation of analytical methods for the determination of rosuvastatin calcium, a widely prescribed statin for managing hyperlipidaemia, using both UV-Visible Spectrophotometry and High-Performance Liquid Chromatography (HPLC). The primary objective of this study is to develop and validate reliable analytical methods for the quantitative determination of Rosuvastatin Calcium in pharmaceutical formulations using two different techniques: UV-Visible Spectrophotometry (UV) and High-Performance Liquid Chromatography (HPLC). METHODS: The UV method is based on measuring the absorbance of rosuvastatin at its maximum wavelength, while the HPLC method involves the separation of the drug from potential excipients and impurities using a suitable mobile phase and stationary phase. Both methods were optimized to ensure accuracy, precision, sensitivity, and robustness. The methods were validated according to ICH guidelines, ensuring accuracy, precision, specificity, and robustness for routine analysisofrosuvastatincalciuminbulkdrugandpharmaceuticalformulations.BothUVandHPLC methods offer reliable and cost-effective tools for quality control and routine monitoring of rosuvastatin in pharmaceutical application. RESULT: Propranolol hydrochloride and rosuvastatin calcium showed λmax at 289 nm and 243 nm respectively. Linearity was found in the range 2-42 µg/ml with correlation coefficient (r) 0.9984 for propranolol hydrochloride and 2-40 µg/ml with correlation coefficient (r) 0.9996 for rosuvastatin calcium CONCLUSION: The UV method is simple, fast, and cost-effective, suitable for routine analysis, while the HPLC method provides higher sensitivity and resolution, making it ideal for more complex analyses and quality control. BothmethodsarereliablefortheroutinedeterminationofRosuvastatinCalciuminpharmaceutical formulations.

STRATEGIESTOSTRENGTHENOFDIGITALTRANSFORMATIONIN PHARMACEUTICALS

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Weareexperiencingseminaltimesasignificantdigitaltransformationdrivenbytheneedtoenhance efficiency,productquality,andregulatorycomplianceinanincreasinglycomplexenvironmentand computing that seem to define a fourth industrial revolution. This may fundamentally change the waywelive,work,andrelatetooneanother.Embracingdataanddigitalinformationisatoppriority forthesedays,andLifeSciencesarenoexception.Usingbigdata,cloudcomputing,andblockchain technologies,enterprisefinanceisgraduallytransitioningtowardsdigitaltransformation.Academia hasalreadyresearchedthemotivations,efficiencyimprovements,andethicalimpactsofthedigital transformation. Through a comprehensive systematic literature review, the research explores the underlying reasons for digital transformation, identifies key challenges in implementing digitally enabled QMS, and evaluates the benefits of regulatory compliance through digital technologies, artificial intelligence, and machine learning. Findings indicate that while digital transformation offers substantial benefits in improving data integrity, streamlining processes, and enhancing regulatory compliance, pharmaceutical companies face significant challenges in implementation, including legacy system integration, data standardization, and organizational resistance to change. We discuss the challenges, highlight the benefits, and see the importance of leading the way to becomefutureproof.Theresultsshowthatdigitizationtransformationofpharmaceuticalenterprises has a significant positive impact on regional healthcare equity, and it can be further enhanced by improving flexibility and increasing data assets. These findings contribute to accurately assessing thesocialresponsibilitiesofpharmaceuticalenterprisesandprovidenewperspectivesandevidence

forimprovingregionalsocialwelfarelevels.

EXPLORINGBUCCALDELIVERYINNOVATIONSFORTHEREGULATIONOF SALIVARY FLOW AND CONTROL OF HYPERSALIVATION

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Excessivesalivation,orhypersalivation,cancauseanumberofproblemsforindividuals,including neurological condition such as Parkinson's disease, cerebral palsy, and stroke, as well as adverse drug reactions. While still available, conventional treatment including anticholinergic medication and surgery which have significantdrawbacks, such as constipation, urinary retention, and blurred vision and some limitations. we investigate the effectiveness of the buccaldrug delivery system as a target strategy for managing hypersalivation. By utilizing the mucosal lining of buccal cavity, these systems enable site of action, thereby minimize adverse effects. Our study looked at new developmentsinbuccaldelivery technologies, such asinnovative formulations,and smartdelivery systems specifically to control salivary flow. Using buccal delivery, we studied the process of medication absorption and salivary regulation via buccal administration, addressing challenges related to patient compliance and bioavailability. Additionally, our study investigated potential futuredirectionsforbuccaltherapeuticmedicinalmethod,suchasselectivemuscarinicantagonists tooffermoreefficientandminimallyinvasivetherapyalternativesforhypersalivation.Overall,our research finds that buccal therapeutic systems as patient-friendly substitute for management hypersalivation,demonstratingpotentialimprovementsinclinicalresultandqualityoflifeforthose who are impacted. Keywords: Hypersalivation, Buccal delivery, salivary flow

ANTIVENOMPOTENTIALOFAQUEOUSEXTRACTOFM*IMOSAPUDICA*ROOT AGAINST SNAKE ENVENOMATION

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Thereisasubstantialriskofsnakebiteintheworkplace,particularlyforpeoplewholiveinregions that experience temperatures that are classified as subtropical or tropical. In addition to the 5.4 million occurrences of snake bites and 2.7 million cases of envenomation that occur annually, it is estimated that there are around 81,000-1,38,000 deaths that occur all over the world. There is a greaternumberofpeopleworkingonplantationsandfarmersthantherearewworkers.Antivenomis theonlytherapythatisnowavailable,andthecreationofitischallengingduetothewidediversity of snake species that may be found all over the world, the circumstances in which it is stored, and the limited amount of venom that is accessible for manufacturing. It has been established that antivenom treatment is associated with both delayed and acute hypersensitivity reactions, despite the fact that it is only partially effective in avoiding damage to local tissue. As a result, the efforts of the scientific community to investigate plants that have medicinal properties have become increasinglysignificant.Researchconductedinthefieldofethnobotanyhasrevealedthatanumber of plants have been utilised in the treatment of a variety of ailments, including snakebites. *The purposeofthisstudywastoinvestigatethepotentialinhibitoryeffectsofwater-basedrootextracts obtainedfromMimosapudicaonthevenomsofanumberofdifferentspecies.*Itwasshownthatthe aqueous extract exhibited a significant reduction in mortality, phospholipase activity, edema-formingactivity,fibrinolyticactivity,andhemorrhagicactivity.Forthepurposeofdetermining

whetherornotM.pudicaplantextractsareefficientinneutralisingthevenomofcobrasandkraits, the current research employed a mix of in vivo and in vitro approaches. Keywords- Snake venom, Snakebite, edema-forming,

FORMULATIONANDEVALUATIONOFPOLYHERBALOINTMENTSTO ENHANCED WOUND HEALING.

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The use of polyherbal ointments in wound healing has gained significant attention due to their synergistic effects, combining the therapeutic properties of multiple plant extracts. This research aims to formulate and evaluate a polyherbal ointment incorporating extracts from Tulsi (*Ocimum sanctum*), Sesame (*Sesamum indicum*), Sandalwood (*Santalum album*), and Peepal (*Ficus religiosa*), known for their individual wound-healing, antimicrobial, and anti-inflammatory properties.Theseplantscontainbioactivecompoundssuchasflavonoids,alkaloids,terpenoids,and tannins, which have been traditionally used for their therapeutic benefits in skin care and wound management. The study will focus on preparing the polyherbal ointment using a suitable base, followed by the incorporation of standardized herbal extracts in optimal concentrations. The formulation will be evaluated for physicochemical properties, including pH, spreadability, consistency, and skin irritation potential. In-vitro antimicrobial testing will assess the ointment's efficacy against common wound pathogens such as *Staphylococcus aureus* and *Pseudomonas aeruginosa*. Additionally, in-vivo wound healing models in rats will be used to evaluate the ointment'sabilitytoenhancewoundclosure,collagendeposition,andangiogenesis.Thestudyaims to demonstrate the synergistic effect of these herbal extracts in accelerating wound healing, improving antimicrobial activity, and reducing inflammation. The results could provide valuable insightsintothedevelopmentofasafe,effective,andnaturalalternativetoconventionalwoundcare treatments. The research will contribute to the advancement of herbal medicine in modern wound healing therapies. Keywords: Polyherbal ointment, wound healing, Tulsi, Sesame, Sandalwood, Peepal, antimicrobial, anti-inflammatory, herbal extracts.

ANTIOXIDANTANDANTI-INFLAMMATORYPROPERTIESOFFUNNEL Fruit:ImplicationsforDrugDevelopment

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Funnel fruit (commonly known as *Foeniculum vulgare* or fennel) has long been valued for its culinary and medicinal properties. Recent studies highlight its potent antioxidant and anti-inflammatory effects, which are attributed to its bioactive compounds, including flavonoids, phenolic acids, and essential oils. These properties are crucial in mitigating oxidative stress and inflammatory pathways that are implicated in the development of chronic diseases such as cardiovasculardisorders,diabetes,andneurodegenerativeconditions.Theantioxidantactivityof funnel fruit is primarily driven by its ability to neutralize free radicals and inhibit oxidative enzymes, while its anti- inflammatory effects involve the modulation of key inflammatory mediators,suchascytokinesandenzymeslikecyclooxygenase(COX).Thisdualactionsuggests that funnel fruit may play a significant role in the prevention and management of inflammatory diseases. The growing body of evidence on its pharmacological potential presents an exciting avenue for the development of novel therapeutic agents targeting oxidative stress and inflammation.Future research should focus on isolating specific active compounds from funnel

fruit, optimizing their bioavailability, and evaluating their clinical efficacy for integration into drug development. These findings underscore the potential of funnel fruit as a natural source of antioxidantsand anti-inflammatory agents,offering promiseforcomplementary andalternative medicine. Keywords: Funnel fruit, *Foeniculum vulgare*, antioxidant, anti-inflammatory, bioactive compounds

REVOLUTIONIZINGPHARMAWITHAI:INNOVATIONSANDGOVERNMENT SUPPORT IN INDIA

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We are witnessing a physiological revolution within the pharmaceutical industry as a result of the continuous evolution of Artificial Intelligence (AI) and automation. Today, these technologies are revolutionizing drug discovery, clinical trials, manufacturing and the supply chain to bring to the market much safer and more effective medicines. More effectively uses AI powered platforms to benchmark huge amounts of datasets to accelerate drug discovery and reduce time and cost. Automationoflaboratoryprocessenhancesreproducibilityandprecisionforexperiments.WithAI, yourpatientrecruitmentsaremadeeasier,patientadherencemonitored,andrealtimedataanalyzed where it can improve outcomes in clinical trials. The government of India, for its part, is actively promoting digital transformation within the pharma sector with its Pharma Vision 2020 initiative, which seeks to put the country on the world map of end to end drug manufacturing. Production linked incentive (PLI) scheme that is proposed for Pharmaceuticals or make in India scheme encouragetoadoptadvancedtechnologiessuchasAIandrobotics.Innovationisfurthersupported by the Digital India program through Digital infrastructure and innovation in skill development. SomeoftheAItoolsthatarenowsupportedbytheIndiangovernmentareSwasthVayu,anAIbased medical device for respiratory diagnosis and the eVIN (Electronic Vaccine Intelligence Network), using AIto makevaccine logistics and cold chain managementmore efficient.AIalso playsarole of predictive analytics in manufacturing that help to control the quality, preventing waste and makingtheworksmootherandeasier.Roboticanddigitaltwinsarerevoicingproductionlineswith complianceandefficiency.AIforecastingdemandandmitigatingthedisruptionsaremakingsupply chain logistics more resilient. These are all furthered by India's policies of personalized medicine and affordable healthcare solutions which areenabledbyAI Driven platforms in public health and pharmaceutical R&D. Finally, by driving AI and automation, we see the support of governments redefiningIndia'spharmaceuticalindustry.Indiaisadoptingthesetechnologies,anactwhichallows it to be a global leader in innovation, tackling the worlds' healthcare problems without compromising on accessibility and affordability.

PHYTOCHEMISTRYANDPHARMACOLOGICALACTIVITIESOFCLITORIA TERNATEA

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Butterfly pea, or Clitoria ternatea, is a perennial climber belonging to the Fabaceae family. This plant, which is well-known for its bright blue blossoms, is used in pharmacological research, traditionalmedicine,andcooking.Itsmanysectionshavesignificanttherapeuticpotentialandare richinavarietyofphytochemicals,includingterpenoids,alkaloids,flavonoids,andanthocyanins.
C. ternatea is used in traditional Ayurvedic medicine to treat neurological problems, lower stress levels, and improve memory. Its anti-inflammatory, anti-cancer, antibacterial, antidiabetic, and antioxidant qualities have all been confirmed by contemporary pharmacological research. Its

aqueousandmethanolicextractsarenotablefortheirsignificantcytotoxiceffectsandradical

scavengingactivity,highlightingtheirpotentialfortreatingdisorderslinkedtooxidativestress.Its neuroprotective and adaptogenic properties further encourage its application in reducing stress-relateddisorders. Preclinical investigations have shownpromisinganti-tumor properties,making C. ternatea a promising option for more cancer therapy study. Despite its widespread historical use, thorough research on its safety, clinical effectiveness, and innovative therapeutic uses is crucial.Inordertofullyrealizethepharmaceuticalpotentialofthisadaptableplant,moreresearch is required, as this review highlights by integrating ethnobotanical knowledge with new pharmacologicalfindings.Keywords:Clitoriaternatea,Phytochemistry,Pharmacologicalactivity

INSILICOADMET,PROFILINGANDDOCKINGANALYSISOFSOMEMDA- MB-231 INHIBITOR FOR BREAST CANCER

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The Natural products rich in the source of compounds for the Drug Discovery, and themajority of Anticancer Drugs currently used in clinical settings are derived from natural products such as PaclitaxelandVinblastine.Theinvitroantitumoractivitiesofthesynthesizedβ-carboline /acylhydrazonehybridswerefirstlyevaluatedagainst.ThehumantumourcelllinesMCF-7(breast), MDA-MB-231 (breast), Raji (lymphoma) and H460 (lung). The preliminary screening of growth inhibitionrateoftheabovetumourcelllinessummarizedintheresultsshowedthatcompound12g, 12iand12jexhibitedgoodinhibitionactivitiesonMCF-7,RajiandH460cellsattheconcentration of 1 µM. Within this study we predicted the biological activities & side effects of novel potent antitumor activity of β- carboline Acylhydrazone MDA-MB- 231 inhibitor. Our study confirmed thattheinvestigatedcompoundsrevealgoodoralbioavailabilityandskinpermeabilityandalsothey have high gastrointestinal absorption. β-CarolineThe Natural products have been a rich source of compoundsfortheDrugDiscovery,andthemajorityofAnticancerDrugscurrentlyusedinclinical settings are derived from natural product scaffolds such as Paclitaxel and Vinblastine. The best- known members of β-carboline compounds are Harmine, Harman and Norharman. Naturally occurring and synthetic β-carboline alkaloids are widely studied due to their large spectrum of important pharmacological and biological properties, such as antitrypanosomally and antileishmanial ant Alzheimer anti-platelet aggregation and anti-thrombotic anti-Parkinson and as DYRK1A inhibitors. Acylhydrazone Acylhydrazone scaffold (-CONHN=) has attracted considerable attention for decades due to their broad applications ranging from medicinal agents, agrochemicalstofunctionalmaterials.OneoftheanticanceragentsSP2509withabenzo-hydrazone moiety exhibited potent antitumor activity against several tumor cell lines by inhibiting LSD1.

EFFECTOFALOECAPSULESINPREDIABETESPATIENTS

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Diabetes is such a disease which creates a big issue in front of health professionals worldwide. Prediabetesisaconditionhavingbloodglucoselevelsabovenormalbutbelowthedefinedthreshold ofdiabetes.Thestudyisdesignedtoevaluatetheclinicalsignificanceandefficacyofaloecapsules and metformin in prediabetic patients.A descriptive, randomized, open-labelled,case-control, and observational study was carried out to find out the clinical significance of the reduction in blood glucoselevelinprediabeticpatientinMaharashtra.Total29patientswereenrolledinthestudy.The study shows that the aloe capsule 500mg and Metformin 500mg show significant reduction in fasting blood sugar level, Postprandial sugar level, lipid profile such as total cholesterol and AlbuminCreatinineRatiobutsideeffectismorewithMetforminlikedecreasedironcontentinthe body. The benefits of aloe capsules for lowering total cholesterol and reducing the risk of cardiovascular diseases are greatest for prediabetics. The aloe capsules preparation is for hypoglycaemic activity as well as reduction of total Creatinine ratio and albumin Creatinine ratio andcardiacheartillnessareencouraging,especiallygiventheiroutstandingsafetyprofileand

compliance

SYNTHESIS,CHARACTERIZATION,MOLECULARDOCKING,AND ANTIMICROBIAL EVALUATION OF TRIAZOLE DERIVATIVES

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Thesynthesisofnoveltriazolicderivativesisofsignificantinterestduetotheirpotentialtherapeutic uses.Inthisstudy,wedesignedsevennoveltriazolicderivativesthroughatwostepreactionprocess. TheinitialstepinvolvedtheN-alkylationof1,2,4-triazolewithethyl2-chloroacetateinthepresence ofanhydrouspotassiumcarbonate underreflux conditions,yielding ethyl2-(1H-1,2,4-triazol-1-yl) acetate.Thisintermediatewassubsequentlysubjectedtoamidationwithvarioussubstitutedanilines under reflux to afford the corresponding N- (substitutedphenyl)-2-(1H-1,2,4-triazol-1-yl) acetamides.Characterisationofthesecompoundswascarriedoutusing1H-NMR,ESI-MS,andFT- IR. The 1H-NMR spectra confirmed the presence ofthe expected chemical shifts, correlating with thearomaticprotonsandtriazolemoiety.ESI-MSprovidedmolecularionpeaksconsistentwiththe proposed molecular weights of the derivatives, while FT-IR spectra showed characteristic absorption bands corresponding to amide and ester functionalities, and the triazole ring. The interactions of the synthesized derivatives to DNA Gyrase B subunit from Escherichia coli (PDB ID: 1KZN) were evaluated by Molecular docking to assess the antimicrobial potential of these derivatives.Compounds4D,4E,and4Gexhibitedthehighestbindingaffinitieswithdockingscores of-6.9,-6.2,and-6.4kcal/mol,respectively.Theseresultssuggeststronginteractionsbetweenthese derivatives and the protein's active site. Furthermore, the antimicrobial activity of the synthesized compounds assessed by ZOI assay. Compounds 4D, 4E, and 4G demonstrated significant antimicrobial activity, correlating well with their docking scores showcasing ZOI diameters as 14 mm, 16 mm and 18 mm respectively. In conclusion, the synthesis and characterisation of these triazolic derivatives provide valuable insights into their structure-activity relationships. The high docking scores and antimicrobial activities of 4D, 4E, and 4G suggest compounds to serve as promising candidates for therapeutic advancement.
Keywords:Triazoles,Antimicrobial,Moleculardocking,Characterization,ZOI.

A CASE-CONTROL STUDY: INVESTIGATION OF HAEMATOLOGICAL AND BIOCHEMICALALTERATIONSINWOMENSUFFERINGFROMPOLYCYSTIC OVARIAN SYNDROME (PCOS)

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This study explores hematological and biochemical alterations in women with polycystic ovarian syndrome(PCOS)throughacase-controlstudydesign,aimingtoidentifypotentialbiomarkersand therapeutic targets. PCOS, one of the most common endocrine disorders among women of reproductive age, affects 8–13% globally and remains a leading cause of infertility. Characterized by hormonal imbalances, hyperandrogenism, and metabolic disturbances, its pathophysiology involvescomplexinteractionsamong inflammatory,genetic, and environmentalfactors.Thestudy hypothesizes that hematological and biochemical changes may exacerbate PCOS symptoms and progression.Atotalof114BMI-matchedparticipants,including57womenwithPCOSand57non- PCOS controls, were analyzed for levels of Vitamin D, Vitamin B12, TNF-α, TSH, FSH, LH, and complete blood count parameters. The results revealed several critical differences between the groups.Vitamin D levels were significantly lower in the PCOS group ($p = 0.001$), aligning with evidence linking Vitamin D deficiency to insulin resistance and hyperandrogenism. TNF-α levels, aninflammatorycytokine,weremarkedlyelevated($p<0.001$),highlightingtheroleofchronic

inflammation in PCOS. TSH levels were also significantly higher in PCOS patients (p = 0.027), suggesting a possible association between thyroid dysfunction and PCOS pathophysiology. Hematological analysis identified significant differences in PLR, HGB, HCT, MCV, and MCH levels, indicating alterations in inflammatory and metabolic states. However, parameters such as RBC, WBC, and several CBC indices showed no significant variations. TNF-α demonstrated a moderate negative correlation with PLR (r = -0.308, p = 0.020) and NLR (r = -0.301, p = 0.023), underscoringitsinteractionwithinflammatorypathwaysinPCOS.Thelackofsignificantvariation in Vitamin B12 levels between cases and controls (p = 0.903) suggests a nuanced relationship, potentially influenced by genetic and environmental factors, with further studies needed to assess homocysteine levels for confirmation. The study concludes that PCOS is characterized by significant hormonal, biochemical, and hematological alterations. Vitamin D deficiency and elevated inflammatory markers, particularly TNF-α, play pivotal roles in the disorder's pathophysiology. Hormonal dysregulation, such as increased FSH and TSH levels, was evident, while the intercorrelation of biomarkers revealed complex interdependencies. These findings highlight the importance of targeting inflammatory pathways and hormonal imbalances in PCOS management.

ENHANCINGCLINICALTRIALSWITHDIGITALTWINS

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The integration of digital twins and artificial intelligence (AI) is revolutionizing clinical trials by enhancing patient simulations and improving treatment outcomes. Digital twins, as virtual representationsofreal-worldpatients.ByincorporatingAI,thesesimulationsbecomemoreadaptive and responsive, capable of analyzing large datasets, identifying patterns, and predicting outcomes with higher precision and efficiency than traditional methods. This study highlights the numerous benefitsofthisinnovativetechnology,includingreducedtrialcosts,shorterdurations,andimproved patient stratification. It also explores the challenges of data integration, ensuring consistency, and addressing ethical concerns such as patient privacy and regulatory compliance. Key applications, such as surgical risk assessments and device optimization, demonstrate the practical potential of digitaltwins.Thefutureofclinicaltrialsliesinleveragingreal-timedatamonitoring,adaptivetrial designs, and ethical frameworks to further streamline processes and enhance healthcare outcomes.
Keywords : Digital Twins ,Artificial Intelligence (AI) , Clinical Trials ,Personalized Medicine, Patient Stratification ,Data Integration, Ethics and Privacy , Surgical Risk Assessments, Device Optimization ,Adaptive Trial Designs

QBDBASEDFORMULATIONOPTIMISATIONANDCHARACTERIZATIONOF FINASTERIDE LOADED NANOGEL FOR ALOPECIA

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Alopecia,particularlyandrogeneticalopecia,isaprogressivehairlossconditioncausedbyelevated dihydrotestosterone (DHT) levels. Finasteride, a 5-alpha reductase inhibitor, is a widely used therapeutic agent for this condition. Aim:To develop, optimize, and characterize a finasteride-loadednanogelusingaQbDapproachfortheeffectivetreatmentofalopecia.Objectives:Todesign and optimize the formulation using QbD principles, identifying critical factors affecting product quality. To characterize the nanogel for its physicochemical properties, drug release profile, and dermal penetration potential. To evaluate the stability and suitability of the formulation for topical

application. Methodology Quality by Design (QbD) Implementation: Defined the Quality Target ProductProfile(QTPP)foreffectivetopicaldelivery.IdentifiedCriticalQualityAttributes(CQAs): Particle size, encapsulation efficiency, drug release, viscosity, and pH. Applied Design of Experiments (DoE): A Box-Behnken design was employed to optimize polymer concentration, crosslinker amount, and pH. Formulation Development: Nanoparticles were prepared using ionic gelation with chitosan as the polymer and calcium chloride as the crosslinker. The nanoparticles wereincorporatedintoa carbopol-basedgelmatrix containing penetration enhancers.Results-The optimized finasteride-loaded nanogel demonstrated desirable attributes, including enhanced penetration, sustained release, excellent stability, and patient-friendly properties.. Summary Finasteride-loaded nanogel resulted in a stable and effective formulation with enhanced dermal penetration, controlled release, and excellent stability. The nanogel demonstrated promising potential as a patient-friendly alternative to oral finasteride for alopecia treatment.

THEROLEOFDIGITALTWININCLINICALTRIAL

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The integration of digital twins and artificial intelligence (AI) is revolutionizing clinical trials by enhancing patient simulations and improving treatment outcomes. Digital twins, as virtual representationsofreal-worldpatients.ByincorporatingAI,thesesimulationsbecomemoreadaptive and responsive, capable of analyzing large datasets, identifying patterns, and predicting outcomes with higher precision and efficiency than traditional methods. This study highlights the numerous benefitsofthisinnovativetechnology,includingreducedtrialcosts,shorterdurations,andimproved patient stratification. It also explores the challenges of data integration, ensuring consistency, and addressing ethical concerns such as patient privacy and regulatory compliance. Key applications, such as surgical risk assessments and device optimization, demonstrate the practical potential of digitaltwins.Thefutureofclinicaltrialsliesinleveragingreal-timedatamonitoring,adaptivetrial designs, and ethical frameworks to further streamline processes and enhance healthcare outcomes.

A RESEARCH PAPER ON EVALUATION OF PHARMACOGNOSTIC, PHYTOCHMICALANDANTICANCERPROPERTIESOFRUDRAKSHAPLANT

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The study aims to evaluate the anticancer potential of the rudraksha plant (*Eleocarpous ganitrus*) through a comprehensive investigation of its Pharmacognostic and phytochemical studies. Cancer isoneofthemostseriousdiseasesintheworldincludingbothdevelopedanddevelopingcountries withahighrateofmorbidityandmortality.Itiswellknownthatallovertheworldcancerisoneof themostseriousheathproblemsthataffect thedurationandqualityoftheindividual's life.Asthe conventional therapeutic strategies fail to fulfill the major requirements for a successful cancer therapy, the use of naturally developed anticancer agents has evolved as an alternative safe, low cost, and convenient one. Morphological evaluation was carried out and organoleptic characters were evaluated. Microscopy in the form of transverse section of fresh sample and powder sample was carried out. Extract of selected plants were studied on cancer cell lines. It was found that selectedmedicinalplantsareresponsibleforthemanagementofcancerviavariousmechanismslike free radicle scavenging activity, antioxidant, DNA replication inhibitor, blockage of mitosis, polymerizationoftubulinproteinetc.Medicinalplantsmaybeusedformanagementofcancerdue totheireasyavailability,affordableprice,minimumsideeffectsetc.Celllinesarehavinggreat

importance&promisingfutureinmanagementofCancer,therebypreventingexperimentalanimals from undergoing unnecessary trauma. It was found that secondary metabolites of medicinal plants used for treatment of cancer. Intervention with phytochemicals, either when used alone oras synergistically, they exert positive effects on cancer chemoprevention. Keywords: Rudraksha, *Eleocarpous ganitrus*, Phytochemical, Pharmacognostic, Anticancer activity.

VITILIGO: INSIGHTS INTO ITS PATHOPHYSIOLOGY, DIAGNOSIS AND TREATMENTADVANCESOFMELANOCYTESDEGENERATIVEDISORDER.

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Vitiligo is a complex, chronic skin disorder characterized by the selective destruction of melanocytes, the pigment-producing cells, resulting in depigmented patches on the skin, hair, and mucous membranes. Affecting approximately 0.5–2% of the global population, vitiligo has a multifactorialetiologyinvolvinggeneticpredisposition,autoimmunemechanisms,oxidativestress, and environmental triggers. The condition is classified into non-segmental and segmental types, with non-segmental vitiligo being more common and characterized by bilateral and symmetrical distribution of lesions. It is a multifactorial autoimmune disorder associated with a dysregulated immune response, where cytotoxic T cells and inflammatory cytokines target melanocytes. interferon-gamma (IFN-γ)playsa crucialrole by inducing chemokineslikeCXCL9 and CXCL10, which recruit T cells to the skin, perpetuating the inflammatory response. Oxidative stress and intrinsic defects in melanocytes contribute to their vulnerability, while genetic predisposition and neurogenicfactorsfurthermodulatediseaseprogression.Cellulartherapies,includingmelanocyte-keratinocyte transplants and stem cell approaches, have shown promising results in restoring pigmentation in stable vitiligo. Recent advancements in treatment strategies focus on targeting specific pathways involved in disease pathogenesis. Janus kinase (JAK) inhibitors, such as ruxolitinib, have emerged as effective therapies by modulating the JAK-STAT pathway and reducing T cellmediated inflammation. This abstract highlights the evolving understanding of vitiligo pathophysiology and the potential of current and emerging therapeutic approaches in achieving durable repigmentation and improving patient outcomes

Keywords:Vitiligo,JAKinhibitors,repigmentation,melanocytesspecificantibodies

NANOTECHNOLOGY-BASEDDRUGDELIVERYSYSTEMSFORENHANCED TREATMENT OF VISCERAL LEISHMANIASIS

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Leishmania donovani, the parasite that causes visceral leishmaniasis (VL), is a neglected tropical illness that mostly affects areas with little resources and has a high morbidity and fatality rate. Current treatment alternatives, such as pentavalent antimonials, amphotericin B, and miltefosine, are constrained by issues such drug resistance, systemic toxicity, high cost, and insufficient drug absorption. Drug delivery methods based on nanotechnology have been a game-changer in overcoming these obstacles, providing tailored distribution to diseased macrophages, improved pharmacokinetics, and increased drug stability. In order to minimize toxicity and improve therapeutic efficacy, nanocarriers such liposomes, polymeric nanoparticles, solid lipid nanoparticles,anddendrimersenableregulateddrugreleaseandminimizeoff-targeteffects.When comparedtotraditionalformulations,liposomalamphotericinBhasshownnotableclinicalsuccess

andfewersideeffects,settinganewstandard.ByusingmultifunctionalNanoplatformsfortheco- delivery of medications and immunomodulators, recent advancements in nanotechnology have broadened the scope of VL treatment and enhanced host immunological responses. Furthermore, particular targeting of macrophage receptors has been made possible by developments in nanoparticle surface engineering, which has increased drug accumulation at infection sites. The creation of vaccination adjuvants based on Nano carrier technology and the incorporation of diagnostic imaging agents into therapeutic nanostructures, which would allow for real-time treatment efficacy monitoring, are examples of future potential. The unmet demands of managing VLandthewiderimplicationsofnanotechnologyforneglectedtropicalillnessesarehighlightedin thispaper.Keywords:Visceralleishmaniasis,Leishmaniadonovani,nanotechnology,drugdelivery systems,

PREDICTIONANDSTANDARDIZATIONOFDOSEOFCIPROFLOXACININ CASE OF LUNG TARGETED DELIVERY BY PBPK MODELLING

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Abstract: Introduction: Ciprofloxacin is a widely used antibiotic which falls under second generation fluoroquinolone class. It is known for its ability in treating many bacterial infections. FoodandDrugAdministration(FDA)hasapprovedCiprofloxacintotreatvariousdiseasesanditis recommended as a second-line therapy for multidrug-resistant tuberculosis by World Health Organisation (WHO). Aim and objective: The pharmacokinetic profiling incorporates the information on Absorption, distribution, metabolism, Excretion (ADME) and physicochemical properties of the drug molecule with physiology and biology of specific population for simulation of the drug concentration–time profile. Methods: In-silico model is designed by combining all collectedphysiological,biochemicalandanatomicaldataintotheopensystempharmacology(PK- Sim) software. In this Study, at first Ciprofloxacin 500 mg oral dose and then 500 mg to 200 mg pulmonarydoseisadministeredtotheEastAsianmaleadulthumanpopulationandtheirpopulation simulation is compared. Result: We found that, values of pharmacokinetic parameters of 500 mg oral dose with such as AUC (7132.04434 µmol*min/L), Cmax(53.75 µmol/L),tmax(0.70 h),half-life (5.36 h) are closed to the pharmacokinetic parameters of 210 mg pulmonary dose with values AUC (5454.85 µmol*min/L),Cmax(53.47µmol*L/1), tmax(0.05 h), half-life(5.36 h). Conclusion: Afterthesimulationitcanbepredictedthatthe500mgoraldosehasalmostsimilarpharmacokinetic parameterto210mgpulmonarydoseofCiprofloxacin.Keywords:Ciprofloxacin,PBPKModelling, PK-Sim Software, Pharmacokinetics, Oral dose, Pulmonary dose.

EFFECTOFALOECAPSULESINPREDIABETESPATIENTS

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Abstract: Diabetes is such a disease which creates a big issue in front of health professionals worldwide. Prediabetes is a condition having blood glucose levels above normal but below the definedthresholdofdiabetes.Thestudyisdesignedtoevaluatetheclinicalsignificanceandefficacy of aloe capsules and metformin in prediabetic patients. A descriptive, randomized, open-labelled, case-control, and observational study was carried out to find out the clinical significance of the reduction in blood glucose level in prediabetic patient in Maharashtra. Total 29 patients were enrolled in the study. The study shows that the aloe capsule 500mg and Metformin 500mg show significantreductioninfastingbloodsugarlevel,Postprandialsugarlevel,lipidprofilesuchastotal cholesterol and Albumin Creatinine Ratio but side effect is more with Metformin like decreased iron content in the body. The benefits of aloe capsules for lowering total cholesterol and reducing theriskofcardiovasculardiseasesaregreatestforprediabetics.Thealoecapsulespreparationisfor hypoglycaemic activity as well as reduction of total Creatinine ratio and albumin Creatinine ratio

and cardiac heart illness are encouraging, especially given their outstanding safety profile and compliance.

SUSTAINED-RELEASEGASTRO-RETENTIVEDRUGDELIVERYSYSTEMS: ENHANCING DRUG EFFICACY AND BIOAVAILABILITY

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Sustained-release gastro-retentive drug delivery systems (GRDDS) are innovative approaches that enhance the therapeutic efficacy of drugs with narrow absorption windows in the upper gastrointestinal(GI)tract.Byextendinggastricretentiontime,thesesystemsallowforacontrolled release of drugs in the stomach, ensuring prolonged absorption and consistent plasma drug levels. GRDDSisespeciallybeneficialfordrugsthatarepoorlyabsorbedinthelowerGItract,haveshort half-lives, or require an acidic environment for stability. Key strategies include floating tablets, swellingandexpandingsystems,andbioadhesivetablets,allofwhicharedesignedtoincreasethe residence time of the drug in the stomach. Gastro-retentive drug delivery systems (GRDDS) have emerged as an effective solution to improve the bioavailability of drugs that require prolonged residence in the stomach. Floating systems, one of the most widely used approaches, are designed to float on gastric fluids and maintain a stable position for sustained drug release. increase gastric retention through expansion or adherence to the stomach lining. GRDDS can be particularly beneficial in treating localized stomach conditions or improving the absorption of drugs with an absorption window in the upper GI tract. However, challenges include ensuring sufficient gastric retention while achieving a balanced release profile. Overall, GRDDS offerspromising benefits in delivering drugs effectively, reducing the frequency of administration, and supporting patient adherence.

FROMFABRICSTOFORMULATION:ANTHERAEAASSAMENSIS(MUGASILK) AS POTENTIAL BIOMATERIAL

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Mugasilk,producedbytheindigenousAntheraeaassamensissilkworm,hasgainedattentionforits promisingapplicationsasabiomaterialinvariousbiomedicalfieldsduetoitsdesirablemechanical strength, thermal properties, biocompatibility, non-toxicity, highest tensile strength among all natural silk, hydrophobicity, high durability, antimicrobial and anti-inflammatory making it a functional substitute to synthetic polymers for tissue regeneration, controlled drug delivery and otherbiomedicalapplications.Mugasilkisnaturalfiberconsistingoffibroinandsericin.Fibroinis the core part made of heavy and light chain of alanine, tyrosine, and glycine, and is an excellent flexible sustainable material for emerging technology. Sericin, a globular protein composed of serine, alanine, and glycine.provides suitable matrix forbiomedical applications. Muga silk fibres (MSF) can be utilized in wound healing, controlled drug delivery, tissue scaffolds. A. assamensis breeds five to six times a year resulting in less quantity of MSF per mature larvae also based on literature search it is observed that very limited work has been carried out on Muga silk fibroin extracted from cocoons making it a challenge in large scale production. However, the research in this field continues to expand and more significant observations must be generated with feasible results for their reliable use in different biomedical applications. Keywords: Muga silk, Antheraea assamensis, Tissue regeneration.

EVALUATINGTHEEFFICACYOFPLANTINDIABETESMANAGEMENT:A THERAPEUTIC EXPLORATION

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Diabetes mellitus remains a global health challenge, with conventional treatments often accompanied by side effects and limitations in long-term efficacy. As a result, there is growing interest in exploring natural alternatives for diabetes management. A succulent plant native to Southern Africa, has emerged as a potential candidate due to its reported therapeutic properties. Thisstudyevaluatestheefficacyofinmanagingdiabetes,focusingonitsbioactivecompoundsand their mechanisms of action. Preliminary evidence suggests that extracts from the plant may help improve insulin sensitivity, and reduce oxidative stress, which plays a key role in diabetic complications. Additionally, may offer anti-inflammatory benefits, further supporting its potential as an adjunct to traditional diabetes treatments. Despite promising results, further clinical studies are needed to confirm its safety, effectiveness, and potential integration into diabetes management protocols. Keywords - Oxidative stress, Diabetes, antioxidants, Phytochemicals, Herbal remedies, Insulin sensitivity.

PHYTOCHEMISTRYANDPHARMACOLOGICALACTIVITIESOFCLITORIA TERNATEA

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AbstractButterflypea,orClitoriaternatea,isaperennialclimberbelongingtotheFabaceaefamily. This plant, which is well-known for its bright blue blossoms, is used in pharmacological research, traditional medicine, and cooking. Its many sections have significant therapeutic potential and are richinavarietyofphytochemicals,includingterpenoids, alkaloids,flavonoids,andanthocyanins.
C. ternatea is used in traditional Ayurvedic medicine to treat neurological problems, lower stress levels, and improve memory. Its anti-inflammatory, anti-cancer, antibacterial, antidiabetic, and antioxidant qualities have all been confirmed by contemporary pharmacological research. Its aqueous and methanolic extracts are notable for their significant cytotoxic effects and radical scavenging activity, highlighting their potential for treating disorders linked to oxidative stress. Its neuroprotective and adaptogenic properties further encourage its application in reducing stress-relateddisorders.Preclinicalinvestigationshaveshownpromisinganti-tumorproperties,makingC. ternatea a promising option for more cancer therapy study. Despite its widespread historical use, thoroughresearchonitssafety,clinicaleffectiveness,andinnovativetherapeuticusesiscrucial.In ordertofullyrealizethepharmaceuticalpotentialofthisadaptableplant,moreresearchisrequired, as this review highlights by integrating ethnobotanical knowledge with new pharmacological findings. Keywords: Clitoria ternatea, Phytochemistry, Pharmacological activity

THENEEDFORAIINNOVELDRUGDELIVERYDEVELOPMENT

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The rapid advancements in artificial intelligence (AI) are revolutionizing various sectors, with healthcare and pharmaceuticals being at the forefront of this transformation. In particular, AI has demonstratedsignificantpotentialinthedevelopmentofnoveldrugdeliverysystems(DDS).These systemsarecriticalforimprovingtheefficacy,targeting,andpatientcomplianceoftherapeutic

agents. Traditional approaches to drug delivery often face challenges such as poor bioavailability, non-specifictargeting,andissuesrelatedtopatientvariability.AI,throughitsabilitytoanalyzevast datasets, model complex biological systems, and optimize drug formulations, offers solutions to these challenges. Machine learning algorithms, deep learning models, and computational simulations enable the prediction of drug interactions, optimal dosages, and the design of nanoparticlesandcarriersfortargeteddelivery.Moreover,AIcanacceleratethediscoveryofnovel drug deliverymethodsbyidentifying promising compoundsand deliveryvehiclesmore efficiently than conventional techniques. By integrating AI with materials science, pharmacology, and nanotechnology, the pharmaceutical industry can develop more personalized, effective, and safer drugdeliverysystems.ThispaperexplorestheroleofAIinovercomingcurrentlimitationsindrug delivery,itsapplicationinthedesignandtestingofnewDDS,andthefuturepotentialforAI-driven innovations in drug delivery development. Key words: Artificial intelligence, Drug delivery systems, Bioavailability

ARTIFICIALPANCREASSYSTEM:BRIDGINGTHEGAPBETWEENBIOLOGY AND TECHNOLOGY

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The introduction of the artificial pancreas marks an important turning point in diabetes care, providing a novel way to maintain optimum glycemic control. This cutting-edge technology integratescontinuousglucosemonitoring(CGM)systemswithinsulininfusionpumpsviaadvanced control algorithms, resulting in a closed-loop system that closely mimics the function of a healthy pancreas. The artificial pancreas significantly reduces the frequency of hyperglycemia and hypoglycemia, reducing the burden of constant self-management for diabetics. This abstract examines the development of the artificial pancreas, from its conceptual phases to the present generation of hybrid and completely automated devices. It investigates the technological developmentsthathavecontributedtoitssuccess,suchasimprovementsinsensoraccuracy,insulin administration systems, and machine learning algorithms. Furthermore, the abstract emphasizes therapeutic outcomes, patient perceptions, and the economic effects of greater acceptance. While problems such as cost, accessibility, and regulatory barriers persist, the artificial pancreas marks a paradigm change in diabetes care, providing promise for a safer, more efficient, and less invasive future. Despite these obstacles, the artificial pancreas is a revolutionary invention in diabetes treatment, with the potential to improve health outcomes, increase patient autonomy, and change thefutureofchronicdiseasemanagement.Keywords:-Continuousglucosemonitor(CGM),Insulin infusion pump, Control algorithm, Diabetes.

DEVELOPMENTANDPHARMACOLOGICALEVALUATIONOFNIOSOMAL FORMULATIONS OF EUCALYPTUS LEAF EXTRACTS

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Antimicrobial, anti-inflammatory, and antioxidant qualities are among the well-known medicinal qualities of eucalyptus leaves. However, their pharmaceutical uses are limited by the poor water solubility and bioavailability of their bioactive components. The purpose of this study was to improve the distribution and effectiveness of eucalyptus leaf extracts by creating and assessing niosomalformulations.Solventextractiontechniqueswereusedtocreateeucalyptusextracts,which werethenexaminedforphytochemicalcontent.Thethin-filmhydrationapproachwasusedtocreate niosomes using cholesterol and non-ionic surfactants (Span and Tween). Particle size, shape, stability, and entrapment efficiency were evaluated for the formulations. The antibacterial, antioxidant,andanti-inflammatorypharmacologicalpropertiesoftheniosomeswereevaluatedand contrastedwiththoseoffreeextracts.Thestabilityandcontrolledreleaseoftheeucalyptusbioactive were shown to be enhanced via niosomal encapsulation. In DPPH radical scavenging tests, higher antioxidant activity and improved antibacterial efficiency against bacterial and fungal strains were noted. Better bioavailability and prolonged release of active ingredients further increased the anti-inflammatory qualities. This work shows that niosomes may effectively transport the bioactive eucalyptus,overcoming issueswith solubility and delivery. The resultsdemonstrate how niosomal systemsmay beused tocreate naturalproduct-based treatmentsforoxidative stress,inflammation, and infections. To get these formulations closer to clinical use, more in vivo research and large- scale analyses are advised. Keywords: Eucalyptus leaves, niosomes, drug delivery, antimicrobial, antioxidant, anti-inflammatory.

INTEGRATING NANOTECHNOLOGY AND DIGITAL INNOVATION IN PHARMACEUTICS:PIONEERINGADVANCESINDRUGDEVELOPMENT, DELIVERY, AND PERSONALIZED HEALTHCARE

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Theintegrationofnanotechnologywithdigitalinnovationsmarksanewfrontierinpharmaceutical science, transforming approaches to drug development, delivery, and personalized healthcare. Nanotechnology enables thedesign ofadvanced drug delivery systems, such as nanoparticles, that offerprecisetargeting,controlledrelease,andimprovedbioavailability.Thesesystemssignificantly enhance therapeutic efficacy and reduce side effects. Simultaneously, the incorporation of digital tools, including artificial intelligence (AI), big data, and Internet of Things (IoT), is driving efficiencyandinnovationinthepharmaceuticalindustry.AIacceleratesnanomedicinedevelopment by predicting molecular interactions and optimizing formulations, while IoT-connected devices enable real-time tracking and monitoring of drug delivery. Additionally, digital twins—virtual models of biological systems—facilitate simulations that streamline preclinical testing and reduce development costs. Blockchain technology adds a layer of security and transparency, ensuring the authenticity of nanotechnology-driven pharmaceutical products across global supply chains.This convergence also advances personalized medicine by enabling treatments tailored to individual genetic and environmental profiles, enhancing patient outcomes. The synergy between nanotechnologyanddigitaltransformation isnotonly reshaping pharmaceuticalprocessesbutalso paving the way for smarter, more patient-centered healthcare systems. This paper explores the transformative potential of these interdisciplinary innovations, highlighting their role in creating a new era of precision and efficiency in pharmaceutics. Keywords: Nanotechnology, Internet of things, Artificial intelligence, Health-care system

ORALTHINFILMS:ANOVELDRUGDELIVERYSYSTEMFORENHANCED PATIENT COMPLIANCE AND RAPID ACTION

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Oral Thin Films (OTFs) have emerged as a novel and innovative drug delivery system offering distinct advantages over conventional dosage forms. These films, which dissolve or disintegrate rapidly when placed on the tongue, provide an effective, patient-friendly solution for the administration of various medications. Their ease of use, especially for pediatric, geriatric, and dysphagic patients, has garnered significant interest in the pharmaceutical industry.This presentationexplorestheformulation,advantages,andapplicationsofOTFs,focusingontheirrole in enhancing bioavailability, providing fast onset of action, and improving patient compliance. By bypassing first-pass metabolism, these films allow for more efficient drug delivery with reduced side effects. Furthermore, the flexibility in dosage, ease of administration without water, and the potential for taste masking makes OTFs a preferred choice for a variety of therapeutic areas, including pain management, gastrointestinal disorders, and allergy treatments. Through the incorporation of various polymers, plasticizers, and active pharmaceutical ingredients (APIs), the formulationofOTFscanbetailoredtomeetspecifictherapeuticneeds.Thispresentationhighlights the key formulation considerations, manufacturing processes, and quality control parameters essentialforthesuccessfuldevelopmentofOTFs.Asanemergingtechnology,oralthinfilmsoffer a versatile and patient-centric approach to drug delivery, providing a glimpse into the future of pharmaceuticalinnovation.Keywords:Oralthinfilms,Drugdeliverysystem,RapidDisintegration, Bioavailability, Patient compliance, First pass metabolism, Fast onset of action, Taste masking, Polymer formulation, Pharmaceutical Innovation.

MOLECULARDOCKINGUSEDFORTHEDEVELOPMENTOFNEWDRUG

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Moleculardockingisacomputationalmethodologyutilizedindrugdiscoverytomodelandpredict the binding interactions between a ligand and its protein target. This technique is essential for understanding how possible medications bind to targets in molecular biology, biochemistry, and drug discovery. Docking has two primary methods and usually results in a stable ligand-receptor complex. While the second computes pairwise interaction energies to mimic the docking process, the first matches complementary surfaces of the protein and ligand. Each has special benefits and drawbacks. Rigid docking, flexible docking, induced docking, fragment-based docking, covalent docking,blinddocking,ensembledocking,multi-targetdocking,high-throughputvirtualscreening (HTVS), and quantum mechanical docking are some of the several molecular docking strategies. BecausetheystrikeabalancebetweenprecisionandefficiencyflexibledockingandHTVSarethe most widely employed of these. Rapid analysis of massive datasets is made possible by HTVS, while dynamic interactions are accurately model by flexible docking. They work together to facilitate the identification of first hits and the refinement of results, making them essential components of contemporary drug discovery workflows. Tools like Auto Dock, Auto Dock Vina, MolecularOperatingEnvironment(MOE),andDOCKmakethesetechniqueswidelyavailableand improve their use in pharmaceutical research. They are essential to drug development because of their versatility with regard to a wide range of targets and chemicals. The combination of these methods guarantees reliable, effective procedures for finding and creating new therapeutic candidates. Keywords: Molecular Docking, Drug Design, Ligand, Binding Affinity, Drug Discovery Molecular Docking Simulation.

ADVANCESINPHYTOCHEMICALEXTRACTIONANDISOLATION

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Phytochemicals,thebioactivecompoundsderivedfromplants,playacriticalroleindrugdiscovery, nutraceuticals,and variousindustrialapplications.Efficientextraction and isolation techniquesare essential for obtaining high-purity phytochemicals while preserving their bioactivity. Recent advancesinextractionandisolationmethodshavesignificantlyimprovedtheefficiency,yield,and sustainability of phytochemical processing. Traditional techniques, such as maceration, Soxhlet extraction,andsteamdistillation,havebeenwidelyusedbutoftensufferfromlimitationslikehigh solvent consumption, long processing times, and thermal degradation of sensitive compounds. Modern methods, including ultrasound-assisted extraction (UAE), microwave-assisted extraction (MAE),andsupercriticalfluidextraction(SFE),offergreenerandmoreefficientalternatives.These techniques enhance the recovery of phytochemicals by reducing solvent usage, improving energy efficiency, and preserving thermolabile compounds. Isolation and purification methods have also evolved,withadvancedchromatographictechniqueslikehigh-performanceliquidchromatography (HPLC), ultra-performance liquid chromatography (UPLC), and preparative chromatography providing higher resolution and speed. Additionally, hyphenated techniques such as liquid chromatography-mass spectrometry (LC-MS) and gas chromatography-mass spectrometry (GC-MS) enable precise identification and quantification of complex phytochemical mixtures.
This review highlights the principles, applications, and advantages of modern extraction and isolation techniques. It also discusses their role in addressing challenges like scalability, reproducibility, and environmental sustainability in phytochemical research. By adopting these advancedmethods,researcherscanunlockthefullpotentialofplant-derivedbioactivecompounds, contributing to innovations in medicine, food, and agriculture. Keywords: Phytochemical, Eco-friendly Pesticides, Sustainable Agriculture, Natural Pest Control.

NEXT-GENERATIONTRANSDERMALDRUGDELIVERYSYSTEMS: ADVANCES, CHALLENGES AND FUTURE PROSPECTS

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Transdermal drug delivery systems (TDDS) have emerged as a transformative approach to non-invasive drug administration, offering enhanced patient compliance, controlled drug release and minimized systemic side effects. The next-generation TDDS integrates cutting-edge technologies such as nanotechnology, microneedles and smart wearable systems to overcome the limitations of conventionalmethods.Nanoparticles,liposomesandsolidlipidcarriersimprovedrugsolubilityand permeability, expanding the range of deliverable therapeutics to include macromolecules like insulinandvaccines.Innovationssuchasmicroneedlearraysenablepainless,precisedrugdelivery with minimal invasiveness, while electroporation and sonophoresis disrupt the skin barrier for enhancedpenetration.Additionally,smartTDDSequippedwithbiosensorsandresponsivesystems offer real-time monitoring and tailored drug release, aligning with the paradigm of personalized medicine.Despitetheseadvances,challengessuchasthestratumcorneum'simpermeability,limited drug compatibility, scalability of production and regulatory hurdles impede widespread adoption. Patient variability in skin properties and environmental influences further complicate TDDS optimization.Future prospects focus on addressing these barriers through interdisciplinary innovations, including AI-driven personalized TDDS, eco-friendly materials and hybrid technologies that integrate multiple modalities for enhanced efficacy. By advancing research and fostering collaboration between academia, industry and regulatory bodies, next-generation TDDS hold the potential to revolutionize therapeutic delivery, enabling safer, more effective and patient-centric healthcare solutions. *Keywords:Transdermal drug delivery systems, Nanotechnology, Microneedles, Smart TDDS& Drug permeability.*

ANOVERVIEWONCLINICALPHARMECOKINETIC

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The study of pharmacokinetics (PK) examines how a drug moves through the body from administrationuntilexcretion.Toexplaindrugadsorption,distribution,metabolism,andexcretion, pharmacokineticprinciplesareemployed.Thepharmacologicalactionofadruganditsexposurein a readily available biological sample, like blood or plasma, can be linked using pharmacokinetic principles. The use of pharmacokinetic principles for the safe and efficient administration of drugs to patients is known as clinical PK. Forecasting the safety and efficacy of medications, selecting appropriate dosage schedules, and minimizing adverse effects all depend on an understanding of these mechanisms. By taking patient-specific factors into account, pharmacokinetic principles enable clinicians to tailor medication therapy in clinical settings. Pharmacokinetic properties, including half-life, clearance, and volume of distribution, are helpful in modifying dosages to achieve therapeutic goalswithoutproducing toxicity.Advancesin pharmacokinetic modelling and simulation have revolutionized drug development and dosage optimization**.** Keywords: Clinical Pharmacokinetic, Absorption, Distribution, Metabolism, Excretion, Half life

DEVELOPMENTANDASSESSMENTOFPOLYHERBALDOSAGEFORM FORTHEREGIMENOFDENGUEFEVER

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The dengue virus, a member of theFlaviviridaefamily, is the cause of dengue, a disease that can spread epidemically throughout many tropical and subtropical climates**.** Humans can contract dengue viruses through the bite of an infected Aedes mosquito. While dengue is uncommon in the UnitedStates,itiswidespreadandamajorpublichealthconcernintropicalandwarmsub-tropical regions of the world. In metropolitan areas, dengue fever is most prevalent, and epidemics usually happen during the rainy season when mosquitoes reproduce heavily in standing water. Dengue is thought to infect about 390 million people worldwide each year and is endemic in over 100 countries. DEN-1, DEN-2, DEN-3, or DEN-4 are four closely related viruses that can cause dengue.n Syzygium aromaticum oil, Carica papaya Linn and Ocimum sanctum Linn leaves, Tinospora cordifolia stem, Allium sativum, Phyllanthus emblica, and Azadirachta indica were among the herbal plants used to make the polyherbal dosage form along with excipients for the treatment of dengue fever.The extracts were made from various plant sections. Following extraction, granules were made using the wet granulation technique with the aid of extracts and excipients. The granules were then assessed using a variety of techniques, including their physical appearance, flow properties, loss on drying, bulk density, tap density, Hausner ratio, Carr's index and Angle of repose. Ultimately, a polyherbal tablet was created and assessed by different techniques, including the tablet's physicalappearance, thickness, weight variations, hardness, friability and disintegration. KeyWords:*Dengue fever,AedesMosquito,PolyherbalDosage form.*

AREVIEW:ADVANCESINTHEHERBALTREATMENTOFMOUTH ULCER

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A sizable percentage of people have mouth ulcers. An unpleasant ailment that affects the oral mucosa is a mouth ulcer. Because of how terrible these ulcers are, there is often a need for an effective herbal remedy. Although they are not fatal, they may interfere with everyday tasks like speaking and eating. Despite the effectiveness of conventional therapies, herbal remedies are becoming more popular since they are safer and easier to obtain. Effective herbal alternatives are essential given the possible adverse effects of synthetic medications. Stress, malnutrition, and microbial infections are frequently implicated, while the precise etiology is still unknown. A potential remedy with few adverse effects is provided by herbal substitutes. Certain herbal formulationshavebeenproveninrecentresearchtohaveantiulcereffectsthroughmechanismssuch improving mucosal healing, regulating the immune system, and supplying anti-inflammatory and antibacterial activities. This review emphasizes the efficacy of plant-based therapies as natural substitutes for synthetic medications by examining the investigation of herbal remedies for mouth ulcers. It highlights their ability to promote mucosal healing, their anti-inflammatory and antibacterial qualities, and their reduced adverse effects.. Herbal medications present an appealing strategyfortreatingoralulcers,withanemphasisoneffectiveness,patientsafety,andsimplicityof use, as interest in natural remedies develops. Keywords: Mouth ulcers, herbal treatment, mucosal repair, anti-inflammatory activity, antimicrobial activity

IMPACTOFCRISPRONTHESPREADOFANTIMICROBIALRESISTANCE GENES IN MICROBIAL COMMUNITIES

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Antimicrobial resistance (AMR) occurs when microbes such as, Bacteria, parasite, virus, fungi evolveandbecomeresistthedrugsdesignedtokillthem.AMRisasignificantglobalhealthconcern asitcanleadtoineffectivetreatmentandthespreadofinfectioninresponsetothisthreat,theIndia and United Nations with the WHO have called for multisectoral, multi- disciplinary action, recognizing that human, animals and environmental health are inter dependent. New strategies are requiredtocontrolbacterialinfectionsandspreadofAMR.Theclusteredregularlyinterspacedshort palindromicrepeats(CRISPR)andCRISPRassociatedproteins(Cas)areanRNAguidedadaptive immune system in prokaryotes that recognizes and defends agonist invasive genetic elements. To preventandcontrolthebacterialdrugresistance,CRISPER/Cassystemhasbeendevelopedintoa new gene editing tool because it specifically targets cleave DNA sequence encoding antibiotic resistance gene. In this, we will introduce the antimicrobial resistance, mechanism of CRISPR, delivery strategies and then relationship between antimicrobial resistance and CRISPR – Cas. Keywords – Antimicrobial resistance, CRISPR, Pharmaceutical Industry

THEMANAGEMENTOFCANCERSBYTHEPHARMATHERAPEUTICAND NATURAL PHYTOCHEMICAL

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Unbridled cell division and excrescence growth are emblem of the complex and deadly complaint known as cancer. A blend of life, environmental, and heritable variables can contribute to the development of cancer. These rudiments intrude with regular cellular processes, which causes unboundedgrowth,irruption,andmetastasis.Bone,lung,colon,andprostatecancerarejustamany of the different ways that cancer can appear. Histopathological analysis, necropsies, and imaging stylesaregenerallyusedintheopinionprocess.Dependingonthecancer'sformandstage,treatment options can include immunotherapy, radiation remedy, chemotherapy, surgery, and targeted remedy.New treatments including perfection drug and immunotherapy have been developed as a resultofrecentdevelopmentsincancerexploration.Promisingadvancementsinpatientissuesand

quality of life have been demonstrated by these interventions. A good diet, harmonious exercise, and quitting smoking are other life changes that can dramatically lower the threat of cancer. Key words: - Customized drug, cancer forestallment, carcinogenesis, cancer biology, cancer opinion, and cancer treatment.

FORMULATIONANDEVALUATIONOFNOVELDRUG-LOADEDDELIVERY SYSTEMS FOR ANTI-HYPERTENSIVE DRUG

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Pharmaceutical literature has shown a rise in the development of Gastro retentive Drug Delivery Systems (GRDDS) for the past 30 years due to their commercial success. Nifedipine is a calcium channel blocker that is commonly used to treat hypertension and angina pectoris. Upon oral administration, the gastrointestinal tract absorbs Nifedipine quickly and almost completely. This research aimed to create and evaluate nifedipine microspheres to enhance their bioavailability and ensure sustained drug release. This innovative approach holds great promise in enhancing nifedipine-based therapies, benefiting patients with hypertension and related conditions. Solvent evaporation was used to prepare nifedipine microspheres with ethyl cellulose and hydroxypropyl methylcelluloseaspolymers.Thefloatingmicrospherewereevaluatedforyield,size,entrapment, buoyancy,SEM,anddrugrelease.Thedrugwasfoundtobecompatiblewiththepolymerused.The resultsofthisstudysuggestthatmicrospherescanbypassfirst-passmetabolism,therebyimproving bioavailability. This study formulated nifedipine microspheres to enhance its oral bioavailability and sustain drug release. The optimized formulation was radiolabeled with Technetium-99m for evaluationbygammascintigraphy.Gastricretentionwasevaluatedbygammascintigraphyinadult rats, which revealed that the optimized formulation demonstrated gastroretention in vivo for 12 h, indicatingthattheoptimizedformulationcouldbeasuitablecandidateforgastroretentivesystems. Stability studies further confirmed the integrity of the developed formulations.

PRECISIONNUTRITION:THEFUTUREOFPERSONALIZED NUTRACEUTICALS IN HEALTH OPTIMIZATION"

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A revolutionary approach to health optimization, precision nutrition focuses on individualized dietary plans that are adapted to each person's particular genetic, metabolic, and environmental characteristics. Personalizedmedicine, microbiomics, andgenomicsare allbeing integrated in this new field to optimize nutritional intake for disease prevention and health promotion. In this paradigm, nutraceuticals—bioactive substances made from food—are essential because they provide focused interventions that can enhance conventional nutrition. Recent developments in omics technologies (isto understand genetic causality of complex traits of human diseases.), data analytics,andartificialintelligencehaveenabledtheidentificationofspecificnutrientrequirements and metabolic responses at an individual level. This personalized approach has the potential to improve general well-being, manage chronic diseases, and revolutionize preventive healthcare. Precisionnutritionhasgreatpotential,buttherearestillobstaclestoitswidespreaduse,suchasdata privacy, ethicalissues,and the requirementforextensiveclinicalvalidation.Thisabstractexplores thecurrentlandscapeofprecisionnutrition,thefunctionofnutraceuticalsinmaximizinghealth,and the potential paths for tailored dietary interventions meant to enhance personal health outcomes.

HARNESSINGHERBALREMEDIES:ANEFFECTIVEAPPROACHTOFUNGAL INFECTION MANAGEMENT

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Herbal treatments have gained significant attention as a natural alternative for managing fungal infections, driven by the challenges of drug resistance and side effects associated with synthetic antifungal agents. Plants produce diverse bioactive compounds that exhibit antifungal properties, making them a valuable resource in combating fungal pathogens. These natural remedies are believed to act through mechanisms such as disrupting fungal cell membranes, interfering with metabolic pathways, and inhibiting growth and reproduction. One of the key advantages of herbal therapies is their broad-spectrum activity against various fungal species, including those causing common infections like athlete's foot, ringworm, and candidiasis. Additionally, the complex composition of plant-based compounds reduces the likelihood of resistance development, which is agrowingconcernwithconventionalantifungaldrugs.Herbaltreatmentsareoftenpraisedfortheir minimalsideeffectsandabilitytoenhanceoverallhealthbysupportingimmunefunction.Despite these benefits, challenges remain in the widespread adoption of herbal antifungal therapies. Issues suchasvariabilityinplantextracts,lackofstandardizedformulations,andlimitedclinicalvalidation hinder their integrationintomainstream medicine.Advances inphytochemical research, improved extractionmethods,andrigorousclinicalstudiesareessentialtoaddressthesechallengesandensure consistency, safety, and efficacy. Herbal antifungal therapies also align with the principles of sustainablehealthcare,astheirproductiontypicallyhasalowerenvironmentalimpactcomparedto synthetic drugs. Moreover, they offer an affordable and accessible solution, particularly in regions with limited access to conventional healthcare resources. Herbal treatments hold promise as an effective and eco-friendly approach to managing fungal infections. With ongoing research and development, they have the potential to complement or even replace synthetic antifungal agents, providinganaturalandholisticsolutiontothispersistentglobalhealthchallenge.Theabovereview article is focused on the exploration of herbal treatments for fungal infections. It highlights the effectiveness of plant-based remedies as natural alternatives to synthetic antifungal drugs, emphasizing their antifungal properties, fewer side effects, and potential for reduced resistance. Additionally,thearticlefocusesonthesustainabilityandenvironmentalbenefitsofherbalsolutions, whilestressingtheneedforfurtherresearchtoestablishtheirclinicaleffectivenessandconsistency.

Keywords:Herbal therapies, Antifungal activity, Bioactive compound.

SYNTHESIS ANDEVALUATIONOFNOVELANTIMICROBIALAGENTS

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Thegoalofthisstudywastodesign,synthesize,andevaluateaseriesofnovelantimicrobialagents targeting bacterial and fungal strains. Using a rational approach, computational modeling, and moleculardocking,wedesignedantimicrobialcompoundswithpotentialefficacy.Thecompounds weresynthesizedthroughorganicchemistrytechniquesandevaluatedforantimicrobialactivityin vitro against various bacterial and fungal strains. Structure-activity relationship (SAR) studies wereconductedtounderstandhowthechemicalstructureinfluencesantimicrobialactivity.Some of the synthesized compounds demonstrated broad-spectrum activity, identifying them as agents candidates for further development.

Antioxidant activity of Isolated and Different semi synthesized Compounds, derivatives from Steviosides (Stevia rebaudiana)

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The present study evaluated the antioxidant activity of the Ethanolic extract, isolated Stevioside and (07) derivative semi synthesized from Stevia rebaudiana. Extracting using soxhlet apparatus to obtain Ethanolic extract from the of Stevia rebaudiana followed by isolation of a vital flavonoids glycoside (Steviosides , Glycoside Low caloric Value), and Semi synthesizing a new Molecule derivative. The antioxidant activity was, evaluated by 1,1- diphenyl-2-picryl hydroxyls, (DPPH) free radical scavenging activity methods. The antioxidant potential was, determined by IC50 Value. The isolated Semi synthesizing a new
Molecule Aa showed higher biological activity and semi synthesized derivative (LU 07) showed potent antioxidant activity as compared to other derivatives.
Keywords: Stevioside, the high-performance liquid HPTLC, and The steviol Sugars

A Comprehensive Review on Diabetic Wound Healing: Current Perspectives, Challenges, and Future Directions in Management

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Diabetic wound healing remains a significant challenge in clinical practice due to the multifactorial nature of diabetes-induced impairments. Chronic hyperglycemia disrupts the normal phases of wound healing-hemostasis, inflammation, proliferation, and remodeling-by impairing cellular functions, angiogenesis, and extracellular matrix remodeling. Factors such as oxidative stress, neuropathy, and reduced vascularization exacerbate delayed healing, making diabetic wounds prone to chronic infections and complications. This review explores the underlying mechanisms of impaired healing, including the roles of growth factors, cytokine dysregulation, and keratinocyte and fibroblast dysfunction.Current management strategies are categorized into conventional therapies, advanced treatments, and emerging technologies. Conventional approaches, including wound dressings, debridement, and antibiotics, remain the cornerstone of wound care. However, advanced treatments like growth factor-based therapies, hyperbaric oxygen therapy, and skin substitutes have shown promise in improving healing outcomes. Emerging technologies, such as nanotechnology-based solutions, gene therapy, and stem cell treatments, represent a paradigm shift in diabetic wound management, although their cost and accessibility remain challenges.Lifestyle factors, including nutrition, exercise, smoking cessation, and alcohol moderation, significantly influence wound healing outcomes. A balanced diet supports glycemic control and provides essential nutrients for tissue repair, while regular exercise improves circulation and reduces systemic inflammation. Addressing behavioral factors, such as smoking and alcohol consumption, is crucial to optimize wound healing and reduce complications.Despite advancements, several challenges persist, including drug resistance in chronic infections, high costs of advanced therapies, patient non-compliance, and the psychological burden of living with chronic wounds. These challenges underscore the need for integrated treatment approaches that combine conventional methods, advanced therapies, and lifestyle interventions. Personalized medicine, artificial intelligence, and innovations in biomaterials hold promise for addressing these gaps and improving diabetic wound management.Future directions in research focus on making advanced therapies more cost-effective and accessible, exploring the role of microbiome modulation, and leveraging artificial intelligence for real-time wound monitoring and predictive analytics. Additionally, understanding patient-centric barriers and providing psychological support are critical for improving compliance and overall outcomes. This review emphasizes the importance of multidisciplinary care and continued innovation to address existing

gaps in knowledge and practice, paving the way for more effective, personalized, and accessible solutions for diabetic wound healing.

Keywords: Diabetic wound healing, hyperglycemia, advanced therapies, nanotechnology, stem cell therapy, lifestyle interventions, personalized medicine, artificial intelligence, microbiome modulation, extracellular matrix remodeling.

A STUDY TO ASSESS THE PREVALENCE OF TROPONIN T ABNORMALITY IN ACUTE STROKE

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BACKGROUND : The brain–heart connection was described early in the 20th century when Levy showed that changes in central nervous system metabolism influenced cardiac function' the last decade it has become evident that acute stroke in many cases is accompanied by a rise in the concentration of troponins in serum, indicating concomitant coronary disease.

OBJECTIVES: To assess the prevalence of troponin T abnormalities in acute stroke

MATERIAL AND METHODS: Team of trained resident who clinically diagnose case of acute stroke confirm with senior neurophysician and imaging, Serum cardiac troponin T (quantitative) was done 18-24hrs after onset of neurological deficit

CONCLUSION: Troponin T was elevated in 4.4% of patients of stroke.

Keywords: troponins, stroke

Thank You

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