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PHARMACEUTICAL EDUCATIONAL SOCIETY

INTERNATIONAL CONFERENCE

Hybrid Mode: Both Offline & Online

"Advancements in Pharmaceutical Innovation:
Exploring Benefits and Opportunities"

PHARMACON 2023

Souvenir

SATURDAY, 02 DEC 2023

VENUE: Satyajit Ray Auditorium, Swami Vivekanand Subharti University, NH-58, Bypass Road, Meerut-250005

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International Conference

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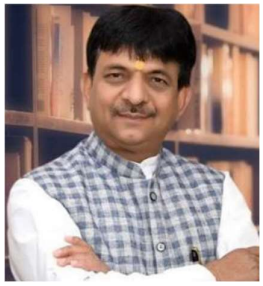
MESSAGES

MESSAGE

FROM THE DESK OF CHIEF GUEST

PHARMACON 2023



प्रिय सम्मानित प्रतिभागियों, आयोजकों, और फार्माकॉन 2023 के मेहमानों,

स्वामी विवेकानंद सुभारती विश्वविद्यालय में फार्मास्युटिकल एजुकेशनल सोसाइटी (पेसोट्स) और फार्मेसी संकाय द्वारा आयोजित अंतर्राष्ट्रीय सम्मेलन फार्माकॉन 2023 के लिए एकत्र हुए आप सभी को मैं बहुत खुशी और उत्साह के साथ हार्दिक बधाई देता हूं।

यह सम्मेलन फार्मास्यूटिकल्स के गतिशील क्षेत्र में ज्ञान, विचारों और प्रगति के आदान-प्रदान के लिए एक प्रकाशस्तंभ के रूप में कार्य करता है। फार्मास्यूटिकल्स के क्षेत्र में, फार्माकॉन जैसे सम्मेलन अंतःविषय चर्चाओं के लिए एक मंच प्रदान करते हैं, नवाचार को बढ़ावा देते हैं और ग्राउंडब्रेकिंग खोजों के लिए मार्ग प्रशस्त करते हैं। जैसा कि हम विज्ञान और स्वास्थ्य देखभाल की सीमाओं को नेविगेट करते हैं, यह जरूरी है कि हम सामूहिक रूप से उद्योग को आगे बढ़ाने के लिए अपने अनुभवों, चुनौतियों और जीत को साझा करें।

मुझे विश्वास है कि फार्माकॉन 2023 में विषयों की विविध श्रेणी और वक्ताओं की क्षमता फार्मास्युटिकल विज्ञान के विकास और विकास में महत्वपूर्ण योगदान देगी। इस क्षेत्र के भविष्य को आकार देने में शामिल सभी लोगों के समर्पण और जुनून को देखना खुशी की बात है।

मैं एक फलदायी और प्रेरक सम्मेलन के लिए अपनी शुभकामनाएं देता हूं। फार्माकॉन 2023 विचारों का एक पिघलने वाला बर्तन, नवाचार के लिए एक उत्प्रेरक और दवा विज्ञान में उत्कृष्टता की सामूहिक खोज का एक प्रमाण हो सकता है।

हार्दिक शुभकामनाएँ,

Shri Kapil Dev Aggarwal
Minister of State, Vocational Education and Skill Development
Government of Uttar Pradesh

MESSAGE

FROM THE DESK OF CHIEF GUEST

PHARMACON 2023

It gives me immense pleasure to write a message for the International Conference PHARMACON 2023 on "Advancements in Pharmaceutical Innovation: Exploring Benefits and Opportunities" on 2nd December 2023 hosted by Faculty of Pharmacy, Swami Vivekanand Subharti University & Pharmaceutical Educational Society (PESOTS). Conferences offer wonderful platforms for interaction and exchange of scientific initiatives and ideas. It will provide a great platform to further explore the ever-expanding horizons of academic and industrial collaborative research. I am confident that this conference will provide an effective platform for innovation, technology transfer and entrepreneurship along with dissemination of the knowledge and the rich experience of the Pharma professionals to m eet the solutions for challenging problems. It will be a virtuous learning experience for all the participants, delegates and the students.

I hope this event will motivate everybody to work towards the profession.

With regards,

DR. MONTU KUMAR PATEL
Hon'ble President
Pharmacy Council of India

MESSAGE

FROM THE DESK OF GUEST OF HONOUR

PHARMACON 2023

It gives me enormous pleasure to note Faculty of Pharmacy, Swami Vivekanand Subharti University & Pharmaceutical Educational Society (PESOTS) is organizing International Conference PHARMACON 2023 on "Advancements in Pharmaceutical Innovation: Exploring Benefits and Opportunities" on 02nd December 2023 at the Satyajit Ray Auditorium, Swami Vivekanand Subharti University, Meerut (U.P). It is indeed heartening to note that participants from various organizations in the areas of Pharmacy institutes and industries have consented to share their views and discuss the issues related and relevant to the conference. I do hope that some promising recommendations must come which shall be ultimately beneficial for human health related problems. I hereby express my sincere compliments to the organizers of this conference and selecting this very important topic.

I wish this International conference a grand success.

With regards,

DR. DEEPENDRA SINGH
ERC Chairman
Pharmacy Council of India

MESSAGE

FROM THE DESK OF GUEST OF HONOUR

PHARMACON 2023

Esteemed Pharmacy Professionals,

With great pleasure, I extend my warmest greetings to all attending Pharmacon 2023, an International Conference of paramount significance. The collaboration between the Pharmaceutical Educational Society (PESOTS) and the Faculty of Pharmacy at Swami Vivekanand Subharti University 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 Pharmacon 2023 a resounding success and a lasting impact on academia**.**

Warm Regards,

Dr. Nikhil Sachan
Deputy Secretary
University Grant Commission

MESSAGE

FROM THE DESK OF GUEST OF HONOUR

PHARMACON 2023

It is indeed a matter of pleasure that Pharmaceutical Education Society and Faculty of pharmacy, Swami Vivekananda Subharti University, Meerut are Organising the first annual conference of Pharmacon 2023 with theme "Advancement in pharmaceutical innovation - Exploring Benefits and Opportunities at Subharti University, Meerut on 2 December 2023.

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 pharmacon-2023 a grand success.

With best wishes,

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

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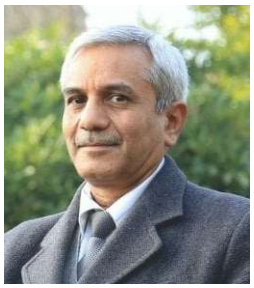

MESSAGE FROM

FROM THE DESK OF CHIEF PATRON

PHARMACON 2023

It is a matter of great pleasure that Faculty of Pharmacy, Swami Vivekanand Subharti University, Meerut is organizing an International conference (PHARMACON 2023) in collaboration with Pharmaceutical Educational Society - pesots.

The topic **"Advancements in Pharmaceutical Innovation: Exploring Benefits and Opportunities"** 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.

Atul Krishna
President

MESSAGE FROM

FROM THE DESK OF CHIEF PATRON

PHARMACON 2023

It is an honour and privilege to extend my heartfelt greetings to everyone gathered for the International Conference Pharmacon 2023. This auspicious event, meticulously organized by the Pharmaceutical Educational Society (PESOTS) and the Faculty of Pharmacy at Swami Vivekanand Subharti University, promises to be a beacon of enlightenment in the field of pharmaceutical sciences.

Conferences such as Pharmacon 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 Swami Vivekanand Subharti University in curating this international conference are truly commendable.

In the pursuit of academic and scientific excellence, it is imperative that we come together to share insights, innovations, and research findings. Pharmacon 2023 presents a unique opportunity for experts, scholars, and professionals to engage in meaningful discussions, explore synergies, and contribute to the collective knowledge pool.

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.

To the participants, I encourage you to embrace the wealth of knowledge that will be shared during Pharmacon 2023. The diverse perspectives and experiences brought forth in this forum have the potential to shape the future of pharmaceutical research and development.

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 Pharmacon 2023.

Warm regards,

Dr. S. C. Kulshreshtha
Hon'ble Chairman
Shri Ram Group of Colleges, Muzaffarnagar
Advisor, pesots

Dr. Shalya Raj, M.D.S

Chief Executive Officer,
Swami Vivekanand Subharti University, Meerut

Professor,
Dept. of Conservative Dentistry &Endodontics
Subharti Dental College, Meerut

Subhartipuram, NH-58, Delhi-Haridwar Meerut Bypass Road, Meerut-250005
Website: www.subharti.org, Email:ceo@subharti.org, Ph:0121-2439043, 2439052, Fax:0121-2439067

Dated: 21.11.2023

Message

It is heartening to know that the Faculty of Pharmacy and PESOTS (Pharma Education Society) is jointly organizing an International Conference PHARMACON-2023 with the theme "Advancements in Pharmaceutical Innovation: Exploring Benefits and Opportunities" on 2nd December, 2023.

In the contemporary scenario with the enormous drift of information and rapid strides in term of technological progression, one has to keep abreast to grow academically and professionally. "Innovate and Initiate" is the mantra of success today and it is high time that we understand that there cannot be a cartel of ideas, innovations and ingenuity. The Indian pharma industry is all set to hit $ 65 billion by the financial year 2024 doubling to $ 130 billion by 2030. The opportunities are aplenty and pharmaceutical innovations aiming at the prerequisite of healthy living to fulfil the hopes of society are urgently needed thus making the theme of the conference apt and in sync with the need of the hour.

I am certain that this congregation of masterminds and sharing of their experiences in the field of pharmacology at this conference will provide the attendees a comprehensive exposure about the latest happenings in the field of Pharmacology consequently helping them to understand and appreciate diverse points of view. The active participation in the conference of one and all should whet and quench the knowledge thirst and help build a camaraderie with fellow colleagues.

I trust and believe that this conference will uphold the trends and traditions of Subharti University thus creating a deserving place for itself in the hearts and minds of all concerned. My compliments and best wishes to Dr Shokindra Kumar and his ardent team for immaculately hosting this conference.

Jai Hind,
Jai Subharti

Dr. Shalya Raj
CEO

SWAMI VIVEKANAND SUBHARTI UNIVERSITY
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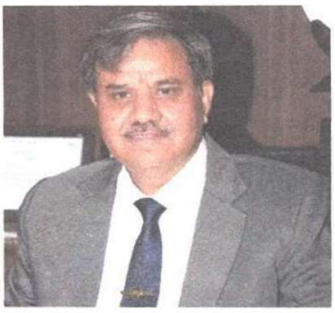
OFFICE OF THE VICE-CHANCELLOR
Maj Gen (Dr) G.K. Thapliyal, SM (Retd.)
MDS, FIBOMS
Vice-Chancellor

ACCREDITED WITH GRADE A NAAC

Faculties of the University

- Faculty of Dental Sciences (Estd. 1996)
- Faculty of Physiotherapy & Allied Sciences (Estd. 1999)
- Faculty of Medicine (Estd. 2000)
- Faculty of Nursing (Estd. 2000)
- Faculty of Law (Estd. 2002)
- Faculty of Engineering & Technology (Estd. 2005)
- Faculty of Management & Commerce (Estd. 2007)
- Faculty of Education (Estd. 2008)
- Faculty of Pharmacy (Estd. 2009)
- Faculty of Fine Arts (Estd. 2009)
- Faculty of Arts & Social Science (Estd. 2009)
- Subharti Polytechnic College (Estd. 2010)
- Faculty of AYUSH (Estd. 2011)
- Faculty of Science (Estd. 2013)

No.U-04/SVSU/2023/852
Dated: 29.11.2023



Message

It gives me immense pleasure to learn that Faculty of Pharmacy, Swami Vivekanand Subharti University, Meerut and PESOTS (Pharma Education Society) are jointly organizing an International Conference (PHARMACON 2023) on "Advancements in Pharmaceutical Innovation: Exploring Benefits and Opportunities" on 2nd December, 2023.

I am sure that International Conference would be able to provide a platform to researchers and scholars and will update delegates about latest innovations and opportunities in pharmaceutical sector.

I congratulate Dr. Shokindra Kumar, Dean & Principal-Kharvel Subharti College of Pharmacy, Organizing Secretary and his team members for taking initiative to organize this International conference. I am sure that this conference will prove to be a foundation of growth for new ideas towards a better tomorrow. I wish the Organizers all the best and great success of the conference.

I extend my warm greetings to all the participants and convey my best wishes for the grand success of the conference.

JAI HIND!

Maj Gen (Dr.) G. K. Thapliyal
Vice- Chancellor

0121 6678 000
Subhartipuram, NH-58, Delhi-Haridwar Bypass Road, Meerut-250005
www.subharti.org

MESSAGE FROM

FROM THE DESK OF PATRON

PHARMACON 2023

Dear Esteemed Participants of Pharmacon 2023,

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 Swami Vivekanand Subharti University for organizing International Conference Pharmacon 2023 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

FROM THE DESK OF PATRON

PHARMACON 2023

Dear Esteemed Participants of Pharmacon 2023,

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 Swami Vivekanand Subharti University for orchestrating this intellectual symphony.

Your presence contributes to the vibrancy of this forum, where ideas converge, innovations are born, and collaborations flourish. May Pharmacon 2023 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 CONVENER

PHARMACON 2023

It is a great pleasure and immense pride for all of us that Faculty of Pharmacy, Swami Vivekanand Subharti University, Meerut and Pharmaceutical Education Society (PESOTS) jointly would be organizing an International Conference, PHARMACON 2023 "Advancements in Pharmaceutical Innovation: Exploring Benefits and Opportunities" on 2nd December, 2023. Currently, there are lot of innovations and development taking place in Pharma Sector. The objective of conference is to bring the experts across the globe on the 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.) Sokindra Kumar
Dean
Faculty of Pharmacy
Swami Vivekanand Subharti University
Meerut

MESSAGE

FROM THE DESK OF CONVENER

PHARMACON 2023

Dear Esteemed Participants, Organizers, and Guests of Pharmacon 2023,

It is with great pleasure and enthusiasm that I extend my warmest greetings to all of you gathered for the International Conference Pharmacon 2023, organized by the Pharmaceutical Educational Society (PESOTS) and the Faculty of Pharmacy at Swami Vivekanand Subharti University.

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 Swami Vivekanand Subharti University to bring together experts, researchers, and professionals from across the globe is commendable. In the realm of pharmaceuticals, conferences like Pharmacon 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 calibre of speakers at Pharmacon 2023 will contribute significantly to the growth and development of pharmaceutical sciences. It is heartening to witness the dedication and passion of all those involved in shaping the future of this field.

I extend my best wishes for a fruitful and inspiring conference. May Pharmacon 2023 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-CONVENER

PHARMACON 2023

Dear Pharmacon 2023 Participants,

Heartfelt greetings! As the Secretary of PESOTS, Chhattisgarh, and Vice Principal of J K College of Pharmacy, Bilaspur, I extend my warmest welcome to this prestigious International Conference. Your presence amplifies the significance of this intellectual confluence.

Let us embrace the opportunity to share knowledge, forge collaborations, and inspire innovation in pharmaceutical sciences. May Pharmacon 2023 mark the beginning of transformative advancements. Here's to a conference filled with insightful discussions and meaningful connections.

Best Regards,

Dr. Mohd Akhtar Rasool
Secretary pesots, Chhattisgarh
Vice Principal,
J K College of Pharmacy, Bilaspur, CG

MESSAGE

FROM THE DESK OF CO-CONVENER

PHARMACON 2023

It gives me an immense pleasure to welcome all dignitaries and participants in the one day International conference PHARMACON-2023 on "Advancements in Pharmaceutical Innovation: Exploring Benefits and Opportunities" on 2nd December, 2023 organized by Faculty of Pharmacy, Swami Vivekanand Subharti University & 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,

DR. LUBHAN SINGH

Professor
HOD (Pharmacology)
Swami Vivekanand Subharti University
Meerut

MESSAGE

FROM THE DESK OF CO-CONVENER

PHARMACON 2023

Dear Colleagues,

I am honoured and delighted to welcome you to the International Conference PHARMACON 2023 on "Advancements in Pharmaceutical Innovation: Exploring Benefits and Opportunities" on 2nd December, 2023 organized by Faculty of Pharmacy, Swami Vivekanand Subharti University & 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-ordinators and steering committee members and my sincere regards to the organizers.

We are looking forward to meet all of you in Faculty of Pharmacy, Swami Vivekanand Subharti University for this wonderful session.

With Regards

DR GANESH PRASAD MISHRA

Professor
HOD (Pharmaceutical Chemistry)
Swami Vivekanand Subharti University
Meerut

MESSAGE

FROM THE DESK OF CO-CONVENER

PHARMACON 2023

It is with great pleasure and anticipation that I extend my warmest welcome to all of you for the **PHARMCON 2023**, **International conference on "Advancements in Pharmaceutical Innovation: Exploring Benefits and Opportunities"** on 2 Dec, 2023.

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 **PHARMCON 2023**, **International conference on "Advancements in Pharmaceutical Innovation: Exploring Benefits and Opportunities"**

Best Regards

Dr. Garima Verma
Professor
HOD (Pharmaceutics)
Swami Vivekanand Subharti University
Meerut

MESSAGE

FROM THE DESK OF ORGANISING SECREATARY

PHARMACON 2023

I am honoured and delighted to welcome you, to International Conference on ***"Advancements in Pharmaceutical Innovation: Exploring benefits and Opportunities. PHARMACON 2023."*** on dated Dec 02nd 2023 Organised ***by Pharmaceutical Education Society (PESOTS)*** in Association Faculty of Pharmacy, Swami Vivekanand Subharti University, Meerut, (U.P.).

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 ***PHARMACON 2023***, 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 ***PHARMACON 2023*** a successful venture.

Recognition should go to the Local Organizing Committee members who have all worked extremely hard for the details of important aspects of the conference programs and social proceeding.

It is pleasing to note that the agenda of this conference covers a wide range of interesting topics related to all theoretical and practical aspects, but not limited to Pharmaceutical Sciences, Research, and multidisciplinary research fields.

With Warm Regards,

Dr. D. C. Sahu
National Joint Secretary,
Pharmaceutical Educational Society
Professor & Dean,
School of Pharmacy, GHRU, Saikheda, (M.P.)

MESSAGE

FROM THE DESK OF ORGANISING SECREATARY

PHARMACON 2023

Dear all
JAI Hind
Warm welcome from organizing committee
It's a matter of great pleasure that Swami Vivekanand Subharti University, Meerut and pharmaceutical educational society (pesots) are organizing international conference "Pharamcon 2023"

On behalf of organizing team, I welcome all the distinguished guest, Speakers and delegates to "Pharmacon 2023" at swami Vivekanand Subharti University, Meerut.

The conference will begin with the scientific sessions by learned speakers, presentation by awardees and poster presentation. I believe that all the delegates will be immensely benefited by the scientific deliberations of the conference.

I wish to express my deep gratitude to the Local organizing committee for their invaluable advice, guidance and support throughout last few months during the process of organizing the conference.

The organizing committee has put all the affords to make your visit comfortable and scientifically fruitful as possible any inadvertent lapse may please be excused.

My sincere thanks to all to all the delegates and wish them all the success in their future endeavour.

With regards

Dr. Rupesh Kumar Pandey
Assoc. Professor
Swami Vivekanand Subharti University
Meerut

MESSAGE

FROM THE DESK OF ORGANISING SECREATARY

PHARMACON 2023

It gives me great pleasure that Faculty of Pharmacy, Swami Vivekanand Subharti University & Pharmaceutical Educational Society (PESOTS) hosting **PHARMACON 2023** one day International Conference on "Advancements in Pharmaceutical Innovation: Exploring Benefits and Opportunities" held on 2nd December, 2023.

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 organisations, 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 guests Dr. Montu Kumar Patel (President-Pharmacy Council of India) & Mr. Kapil Dev Aggarwal (Minister of State, U.P) Guest of honour Dr. Deependra Singh (ERC Chairman-Pharmacy Council of India), Dr. Vibhu Sahani (Chairman Finance Committee- Pharmacy Council of India), Dr. Nikhil Sachan (Deputy Secretary- UGC) all of them for being accepted our invitation. Conference includes four invited talks, more than 200 Oral & Poster presentations. On the behalf of the organising 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 regards,

Dr. Manish Kumar Pathak
Assoc. Professor
Swami Vivekanand Subharti University
Meerut

MESSAGE

FROM THE DESK OF ORGANISING SECREATARY

PHARMACON 2023

Dear Esteemed Participants of Pharmacon 2023,

Welcome to a nexus of innovation and inspiration! As the National Joint Secretary of PESOTS and the Founder of SmartConnect Pharmacy, I am honoured to witness the collective brilliance gathered at this International Conference.

In this arena of knowledge, let's amplify our commitment to progress. Seize the opportunity to connect, collaborate, and catalyse change. Your ideas have the power to redefine the landscape of pharmaceutical sciences.

May Pharmacon 2023 be the canvas where breakthroughs are painted, and aspirations take flight. Embrace the spirit of innovation, for it is the heartbeat of progress.

Wishing you a conference filled with motivation, meaningful exchanges, and the spark that propels us toward a brighter future.

Best Regards,

Mr. Himanshu Sharma
National Joint Secretary,
Pharmaceutical Educational Society
Founder, SmartConnect Pharmacy

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A REVIEW ON PHARMACOLOGICAL ACTIVITY OF BACOPA MONNIERI

Takdeer kumari[1]*, Rahul Sharma[1], Dr Aditya Singh[1]
[1]Aryakul College of Pharmacy and Research, Lucknow 226001, Uttar Pradesh, India
Corresponding E-mail: **takdeerrawat0054@mail.com**

Bacopa monneri (L) Penn (B.monnieni) commonly known as 'Brahmi' the role of free radical reaction in deases pathology is established . It suggests that this reaction is necessary for normal metabolism but can be detrimental to heath includes various disease and others free radicals lead to cellular necrosis. The plant possesses significant anticariogenic and cardioprotective activity has wide application in the treatment of anxiety depression most ancient India physician and ayurvedic practitioner utilized herb for treating dermatitis anemia and diabetes it is safe cardiac tonic 1956, asvikar et al. 1992. It involves a complex array of enzyme activation, mediator release, extravasations of fluid, cell migration B. monnieri (leave) were collected from karamjul sundarban khuda Bangladesh in August 2012. The collected sample were identified by national herbarium dhuka merpur Bangladesh.
Bacopa monneri (L) Penn (B.monnieni) sources various pharmacological activity including anti-inflammatory activity, antioxidant activity, antifungal activity ,antidibetic activity ,analgesic activity ,anticancer activity , antistress activity ,anxiolytic activity ,bronchodilator activity, anti-parkinsonian activity, anti-Ischemic, anti-Alzheimer activity
Keywords: Antidibetic, antidibetic, antioxidant, anxiolytic, anticancer, Anti parkinsonian

INNOVATIVE INSIGHTS: DECODING CUTTING-EDGE TECHNOLOGICAL ADVANCEMENTS IN PHARMACEUTICS FIELD

Anany Shree Saini[1], Kumar Vaibhav[1]
[1]Student B. Pharm- Hari College of Pharmacy Saharanpur
Corresponding E-mail: anany.saini1107@gmail.com

Pharmaceutical Discovery and Development: Technology advancements have sped up the identification of new compounds and improved the effectiveness of drug development. Examples of 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 personalized therapy based on unique genetic profiles. Methods of production and delivery have also improved as a result of these developments. This abstract looks at the amazing developments in several areas, including Advanced Drug Delivery Systems. Delivering sustained-release medications, which boost efficacy and lessen side effects, is now possible thanks to cutting-edge uses of nanotechnology, microneedles, and implantable technology.
Additionally, the traditional pharmaceutical manufacturing industry has been disrupted by additive manufacturing techniques, which allow for customized dosage forms and on-demand medication production. Regulations have evolved to keep up with technology, which encourages innovation and upholds safety standards in the mechanism of drug delivery. Better patient monitoring and disease management have been made possible by the integration of digital tool like wearables and telemedicine in healthcare, which has improved treatment outcomes.
When patient-centred healthcare is prioritized along with the potential for more individualized and effective treatments, the pharmaceutical industry has a bright future. The abstract outlines the ways in which a range of innovations are revolutionizing the pharmaceutical industry and can improve patient outcomes while also raising the bar for the quality and accessibility of healthcare. Apart from enhancing patient results and elevating the standard for healthcare quality and accessibility, the abstract elucidates the numerous innovations revolutionizing the pharmaceutical sector.
Keywords: Technological advancements, 3d printing, Advanced drug delivery systems, tech integration with medicines

OVERCOMING THE SOLUBILITY HURDLES: A CONTEMPORARY REVIEW ON SOLID DISPERSION TECHNOLOGY

Garima Katyal[1]*, Anuj Pathak[1], Vaibhav Sharma[1], Sahil Tyagi[1]
[1]KIET School of Pharmacy, KIET Group of Institutions, Delhi-NCR, Meerut Road, Ghaziabad- 201206, UP, India.
Corresponding E-mail: garimakatyal2001@gmail.com

Solid dispersions have caught a lot of interest as a viable means of improving the rate of dissolution and, as a result, the bioavailability of a range of drugs that are poorly soluble in water through a variety of strategies, including physical modifications, chemical alterations to the drug's material, and other approaches. Solid dispersion formulation is one of the most effective and promising methods for boosting solubility. A drug dispersion in a solid matrix, where the matrix was either a small molecule or a polymer, was characterized as a "solid dispersion." In order to create solid dispersions, a large range of hydrophilic and hydrophobic vehicles are used nowadays. Since a solid dispersion is fundamentally a two-component drug-polymer structure, the system's functioning and design are determined by the interaction between the two components. Depending on the properties of the carriers, controlled or instantaneous release solid dispersions may be created. The production of dispersions offers a variety of manufacturing and excipient options for medications that are poorly water soluble, giving oral administration systems more flexibility. The dispersed state is composed of several forms, such as amorphous/crystalline suspensions, crystalline/glass solutions, and eutectic mixes. Most of the carriers that were previously in use were synthetic, but nowadays the usage of synthetic carriers has been superseded by recent tendencies towards the use of natural carriers. We highlight the essential characteristics of this significant technology while summarizing our present knowledge of solid dispersions in both the solid state and in dissolution.
keywords**:** Solid dispersion, Solubility, Drug–polymer interaction.

A MINI REVIEW ON THE PHARMACOLOGICAL PROPERTIES OF NARINGENIN'S LIKE ANTI-INFLAMMATORY, IMMUNE-BOOSTING, NEUROPROTECTIVE AND THEIR SAFETY PROFILES

Arun Kumar[1]*, Mayank Pal[1]
[1]Aryakul College of pharmacy and research Raebareli, UP, 229311, India
Corresponding E-mail: kumararunipsr.kumar@gmail.com

Inflammatory, immune, and neurodegenerative diseases constitute a category of persistent and debilitating conditions affecting millions worldwide, with intertwined pathophysiological pathways. Recent research has spotlighted naturally occurring compounds like naringenin for potential therapeutic applications across multiple ailments. This review offers an encompassing exploration of naringenin's anti-

inflammatory, immune-protective, and neuroprotective mechanisms, elucidating its pharmacological targets, signal transduction pathways, safety profile, and insights from clinical investigations. Data for this review were amassed through the scrutiny of various published studies via search engines such as PubMed and Google Scholar. Content from reputable publishers including Bentham Science, Taylor and Francis, Nature, PLOS ONE, among others, was referenced. Naringenin exhibits substantial anti-inflammatory effects by restraining the NF-κB signaling pathway. It activates Nrf2, renowned for its anti-inflammatory properties, inducing the release of hemeoxynase-1 by macrophages. Furthermore, naringenin treatment downregulates the expression of Th1 cytokines and inflammatory mediators. It also impedes xanthine oxidase, counteracts reactive oxygen species (ROS), scavenges superoxide radicals, mitigates the accessibility of oxygen-induced K+ erythrocytes, and reduces lipid peroxidation. Naringenin's antioxidant prowess holds promise for addressing neurological conditions. Extensive research has been undertaken to establish the anti-inflammatory, immunomodulatory, and neuroprotective attributes of naringenin across various medical domains, lending credence to its pharmacological utility. The principal obstacle to naringenin's adoption as a therapeutic agent remains the dearth of in vivo data. Efforts should focus on rendering naringenin delivery patient-friendly, economically viable, and technologically advanced.

Keywords: "Naringenin", "immunomodulator", "anti-inflammatory", "neuroprotective", "anti-cancer", "Alzheimer disease", "diabetes mellites", "Parkinson's disease".

STUDY OF DRUG SOLUBILITY OF QUETIAPINE FUMARATE BY USING DIFFERENT SOLVENT UNDER UV SPECTROSCOPY

Abhinav Singh[1]*, K. Nagrajan[1], Parul Grover[1]
[1]Kiet School of Pharmacy Kiet Group of Institution, Delhi-Ncr, Ghaziabad-201206, Uttar Pradesh, India
*Corresponding Email: singhabhinav182001@gmail.com

Quetiapine fumarate is one popular and often used atypical antipsychotic drug used to treat a range of mental diseases or mental health conditions. The main way that this medication works in the brain is by controlling the activity of serotonin and dopamine receptors. It may be used to treat a wide range of mental diseases because of its broad profile, including By addressing both symptoms of schizophrenia positive and negative, it lessens delusions, hallucinations, and cognitive impairment. It is crucial for maintaining mood stability and managing manic and depressive episodes in bipolar disorder. In individuals with treatment of depressive disorder, quetispoin is added to conventional antidepressants. It enhances general quality of life and especially addresses symptoms of depression. Moreover, it has the capability to alleviate symptoms of generalized anxiety disorder, offering relief to those managing anxiety-related challenges.

A multitude of adverse effects are possible while using quetiapine fumarate. Weight gain, dry mouth, fatigue, and vertigo are a few of them. Blood pressure variations provide an additional potentiality.

The drug solubility of Quetiapine fumarate is checked in various solvent such as n-Hexane, Pyridine, Toluene, Chloroform, Diethy Ether, Acetonitrile, methanol, ethanol but the solubility of The drug was found most in solvent such as follows: the solubility of the drug is higher in Methanol with its Maximum wavelength **(λmax)** at 204nm having correspondly absorbance 0.160 respectively.

Keywords: Schizophrenia, Methanol and ACN, **λmax.**

NOVEL ISOXAZOLES DERIVATIVES SYNTHESIS FROM CHALCONES: ADME AND PHARMACOLOGICAL EVALUATION FOR ANTI-INFLAMMATORY ACTION

Sonu[1*], Baby Rabiya Parveen[2]
[1]School of Pharmaceutical Sciences, IFTM University, 244001 Moradabad, India
[2]Pharmacy Academy, IFTM University, 244001 Moradabad, India
*Corresponding Email: Katariasonu376@gmail.com

This study describes the synthesis, molecular docking, ADMET and biological activity of novel isoxazoles as first-in-class 4COX-2 inhibitors. The inhibition of 4COX-2 is a well-established therapeutic target in inflammation. A new series of isoxazole derivatives (5a–5m) were synthesized and evaluated for their Anti-inflammatory activity. All the synthesized compounds were in good agreement with FTIR, 1HNMR, ^{13}CNMR, MASS and results from elemental analysis. Three synthesized compounds (**5b**, **5c** and **5d**) have shown significant anti-inflammatory activity as compared to the reference drug mofezolac. Compound **5b, 5c,** and **5d** was further tested for anti-inflammatory activity. The result of the docking studies of **5b, 5c,** and **5d** with 4COX-2 main protease revealed a -8.7(**5b**), -8.5(**5c**), -8.4(**5d**) high binding affinity, which confirmed the results obtained from in vitro study. The reference antiinflammatory drug mofezolac also violates three of Lipinski's principles in this investigation, but our derivatives 5b, 5c, and 5d follow all of Lipinski's instructions. The one hydrogen-bonding donor groups and four hydrogen-bonding acceptor groups are present in all of the most active variations. Furthermore, molecular weights less than 500 and log P less than 5, hepatotoxicity drawback similar to mofezolac, which displayed hepatotoxicity drawback. Finally, the LD50 oral acute risky dosages of the novel isoxazole derivatives 5b, 5c, and 5d are nearly as low as the reference medication (2.231, 2.213, and 2.096, respectively, compared to 2.918 for mofezolac). The physiochemical and in silico pharmacokinetic parameters indicated reasonable drug-likeness properties of the novel compounds, including solubility, lipophilicity, absorption, Intestinal absorption, oral bioavailability, metabolic stability, AMES toxicity. This study provides insight for compound **5b, 5c,** and **5d**, as a novel lead compound as anti-inflammatory agent and selective 4COX-2 inhibitor.

Keywords: Isoxazole derivatives, Molecular docking, Chalcones, Cyclooxygenases.

NETWORK PHARMACOLOGY ANALYSIS AND EXPERIMENTAL VALIDATION TO INVESTIGATE THE MECHANISM OF FLAVAN-3-OLS AND AROMATIC RESIN IN ANXIETY

Ansari Vikhar Danish Ahmad[1], Subur W Khan[1*], Syed Ayaz Ali[1], Qazi Yasar[1]
[1]Y. B. Chavan College of Pharmacy, Dr. Rafiq Zakaria Campus, Aurangabad, (Maharashtra), India
*Corresponding Email: suburkhan@yahoo.co.in

Anti-anxiety activity of flavan-3-ols and aromatic resin was investigated using *in-silico* and *in vivo* studies. In network pharmacology, the targets for antianxiety and compounds were obtained from Swiss Target Prediction and GeneCards database. PPI interaction and KEGG analysis were used to investigate key pathways and molecular docking was carried out to confirm the binding interactions with the active sites. Elevated plus Maze, open field, light-dark, actophotometer, and hole board, were used to study antianxiety activity via AnyMaze Video Tracking Software. Compound-Target network analysis revealed that number of nodes are 306, and edges are 526 were hit by components.

PPI state that our network has significant interaction with (targets) that are involved in anxiety the average node degree was 1.94. KEGG analysis showed neuroactive ligand-receptor interaction, dopaminergic synapse, and serotonergic synapse are the major pathways involved in anxiety. In molecular docking EGCG has shown highest affinity for MAOA (**-9.5** kcal/mol), SLC6A4 (**-9.2** kcal/mol) and COMT (**-7.4** kcal/mol). Behavioral tests show significant reduction in anxiety-like behavior: increased entries and time in open arm ($p < 0.05$), light-dark test ($p < 0.01$), open field center activity ($p < 0.01$), hole board head dips ($p < 0.01$), and actophotometer beam interruptions ($p < 0.05$). The network analysis and animal study demonstrated that Flavan-3-ols and aromatic resin had antianxiety characteristics, indicating the necessity for more research to produce a novel antianxiety medication.
Keywords: Flavan-3-ols, Aromatic resin, Network pharmacology, Molecular docking, Anxiety

INVESTIGATING SHATA DHAUT GHRITA AS A CREAM BASE FOR A TOPICAL DRUG DELIVERY SYSTEM.

Madhuri D. Deshmukh[1]*, Moreshwar P. Patil[1]
[1]Department of Pharmaceutics, MET Institute of Pharmacy Adgaon Nashik, Affiliated to Savitribai Phule, Pune university, MH - 422003, India
*Corresponding Email: deshmukh0072@gmail.com

Ayurveda since ancient times, the science of health care and medicine has been regarded as extremely important. *Ghrita* is one among the *chaturvidha sneha* explained in Ayurveda and widely used as *Ahara* and *Aoushada*. *Shatadhauta ghrita* (SDG) is an example of *Dhouta samskara* and one such unique preparation. SDG (*shata* -100 times, *dhauta* - washed) is made by washing cow ghee along with water 100 times. This method turns ghee into a soft, cooling, nourishing, silky cream. *Shatadhauta Ghrita* was prepared using cow's ghee as per standard Ayurvedic classical texts and subjected to study organoleptic properties (color-white, odor- odorless taste- tasteless texture-Smooth oily and homogenous , weight-increased 50 gm to 75 gm), chemical properties (acid value-0.097±0.001, Iodine value-2.54±0.027, Saponification value-24.98±0.078, and Copper content- 1.19±0.0035 ppm , RM value-0.22±0.0057, P value-0.116±0.0088), physical properties (Moisture content-0.86±0.028, pH-5.86±0.033, Particle size-59.29±0.648, Viscosity (cp) at 20rpm for 30 seconds-9771±0.57, Type of emulsion-O/W) analyses as per the standard pharmacopeial procedures. The stability study was done as per the ICH guideline. In-vitro drug release study was performed in a phosphate buffer of pH 7.4 using a Franz diffusion cell apparatus and it was shows maximum drug release 92.96 ± 0.17% over a period of 3hr and also shows good antioxidant activity. The formulation did not show acute skin irritancy.
Keyword: Shatadhauta Ghrita, Ayurveda, Cow ghee, Samskara, Ahara, Aoushada

FORMULATION AND EVALUATION OF HERBAL HAND SANITIZER LIQUID USING A UNIQUE AYURVEDIC COMBINATION- PANCHAVALKALA

K B Neha[1*], Salma Khanum[1*]
[1.]Department of Pharmacognosy, Al Ameen College of Pharmacy, Bangalore-560027, Karnataka.
*Corresponding Email: nkaacp2022@gmail.com

Hand hygiene is one of the most important measures to prevent the spread of infectious diseases. To maintain Hand hygiene Alcohol based Hand sanitizers are used. Repeated use of these can cause harm like irritation, burns, dryness and dermatitis. Hence there is a need for natural antibacterial ingredients. Panchavalkala is a well- known Ayurvedic polyherbal combination *Ficus bengaenesis Linn*., *Ficus glomerata Roxb*., *Ficus religiosa Linn*, *Thespesia populanea Soland ex correa*, *Ficus lacor Buch-Ham*. All the barks were subjected to extraction by Refluxation using Hydroalcohol as solvent. To the above combination, leaves extracts of Tulsi, flower extracts of Hibiscus and Jasmine were added to potentiate the antimicrobial effect. Using this unique combination, Hand sanitizer liquid was prepared by addition of glycerin and aloe vera gel. It was evaluated for organoleptic properties, clarity, pH and Viscosity. The formulation was found to have good appearance and acceptable physical parameters, good compatibility and consistence. It was also evaluated for Antimicrobial activity by agar well diffusion method using different concentrations against *E.coli* and *S. aureus*. The formulation was significantly active against both the organisms which are commonly found on the skin. They were evaluated for antimicrobial efficacy by degerming method and hand wash method. The results of these showed good reduction in normal bacterial flora by degerming method and the contaminated sample by Hand wash method. Hence, the formulation developed in the present study can be claimed to be useful to overcome the shortcoming of synthetic hand sanitizers and can be developed into potent safe novel herbal hand sanitizer.
Keywords**:** Hand hygiene, Herbal Hand sanitizer Liquid, *Ficus bengaenesis Linn*., *Ficus glomerata Roxb*., *Ficus religiosa Linn*, *Thespesia populanea Soland ex correa*, *Ficus lacor Buch-Ham*.

***NERIUM OLEANDER*: CHEMICAL CONSTITUENTS, PHARMACOLOGICAL PROPERTIES AND RECENT SCIENTIFIC WORK AN OVERVIEW**

Manish Kumar Yadav[1], Komal Sharma[1], Ajay Kumar Shukla[2]
[1]Faculty of Pharmacy, Bhupal Nobles' University, Udaipur India
[2]Department of Pharmacy, Institute of Pharmacy, Dr. Rammanohar Lohia Avadh University Ayodhya, Uttar Pradesh, India
*Corresponding Email: manishky81@gmail.com

Nerium oleander is a significant medicinal herb in Indian folk medicine. In South Asian nations, particularly in India and Sri Lanka, there is a noteworthy occurrence of suicide instances involving Nerium oleander as well. All parts of the Nerium oleander plant are particularly contain a wide range of cardiac glycosides, including as neriin, oleandrin, cardenolides, gentiobiosyl, and odoroside. Steroids, flavonoids, and alkaloids are among of the secondary metabolites that this plant species produces, and they all have various therapeutic uses. It possesses a variety of significant pharmacological effects, such as antibacterial, anthelmintic, anti-inflammatory, hepatoprotective, immunopotent, anti-pyretic, antioxidant, antifungal, anticancer, and anti-HIV properties. This review's objective is to present evidence-based information on the Nerium oleander phytochemicals and pharmacological effects.
Keywords: *Nerium oleander,* anthelmintic, anti-inflammatory, hepatoprotective, immunopotent, anti-pyretic, antioxidant, antifungal, anticancer, anti-HIV.

C(RGDFK) ANCHORED SURFACE MANIPULATED LIPOSOME FOR TUMOR-TARGETED TYROSINE KINASE INHIBITOR (TKI) DELIVERY TO POTENTIATE LIVER ANTICANCER ACTIVITY

Payal Deepak[1*], Paruvathanahalli Siddalingam Rajinikanth[1]
[1]Department of Pharmaceutical Sciences, Babasaheb Bhimrao Ambedkar University, Lucknow, Uttar Pradesh, India
*Corresponding Email: payaldeepakmiet.07@gmail.com

Current anticancer drug research includes tumor-targeted administration as a critical component because it is the best strategy to boost efficacy and decrease toxicity. Low drug concentration in cancer cells, nonspecific distribution, rapid clearance, multiple drug resistance, severe side effects, and other factors contribute to the disappointing results of traditional chemotherapy. As an innovative technique of treatments for hepatocellular carcinoma (HCC) in recent years, nanocarrier-mediated targeted drug delivery systems can overcome the aforesaid limitations via enhanced permeability and retention effect (EPR) and active targeting. Epidermal growth factor receptor (EGFR) inhibitor Gefitinib (Gefi) has dramatic effects on hepatocellular carcinoma. Herein, we developed and assessed an αvβ3 integrin receptor targeted c(RGDfK) surface modified liposomes for better targeting selectivity and therapeutic efficacy of Gefi on HCC cells. The conventional and modified Gefi loaded liposomes, i.e., denoted as Gefi-L and Gefi-c(RGDfK)-L, respectively, were prepared through the ethanol injection method and optimized via Box Behnken design (BBD). The FTIR and 1H NMR spectroscopy verified that the c(RGDfK) pentapeptides had formed an amide bond with the liposome surface. In addition, the particle size, Polydispersity index, zeta potential, encapsulation efficiency, and *in-vitro* Gefi release of the Gefi-L and Gefi-c (RGDfK)-L were measured and analyzed. As indicated by the MTT assay on HepG2 cells, Gefi-c(RGDfK)-L displayed considerably higher cytotoxicity than Gefi-L or Gefi alone. Throughout the incubation period, HepG2 cells took up significantly more Gefi-c(RGDfK)-L than Gefi-L. According to the *in vivo* biodistribution analysis, Gefi-c (RGDfK)-L accumulated more strongly at the tumor site than Gefi-L and free Gefi. Furthermore, HCC-bearing rats treated with Gefi-c(RGDfK)-L showed a substantial drop in liver marker enzymes (alanine transaminase, alkaline phosphatase, aspartate transaminase, and total bilirubin levels) compared to the disease control group. Gefi-c (RGDfK)-L suppresses tumour growth more effectively than Gefi-L and free Gefi, according to an *in vivo* analysis of their anticancer activities. Thus, c(RGDfK)-surface modified liposomes, i.e., Gefi-c(RGDfK)-L may serve as an efficient carrier for the targeted delivery of anticancer drugs.
Keywords: Liposome, Tumor targeting, αvβ3 integrin receptor, c(RGDfK)-peptide, Hepatocellular carcinoma

TO SYNTHESIZE THE SIMPLIFIED VANCOMYCIN ANALOGUE AND EVALUATION OF ITS ANALOGUE AS NOVEL ANTIBIOTICS

Prateek Porwal[1], Satish Kumar Sharma[1]*, Dilip Kumar Chanchal[1]
[1]Glocal School of Pharmacy, The Glocal University, Mirzapur Pole, Saharanpur - 247001, Uttar Pradesh, India.
*Corresponding Email: prateekgupta2525@gmail.com.

The issue of multidrug-resistant bacteria is a significant concern in the global healthcare landscape. While a wide range of medications exists for conventional therapeutic purposes, only a limited number of molecules has the ability to function as ultimate options for treating serious infections. Hence, it is essential to establish strategies for the management of multidrug-resistant microorganisms. In this study, we present a collection of newly synthesised vancomycin derivatives that include thiol- and disulfide-containing functional groups. The newly synthesised compounds demonstrated increased antibacterial efficacy against a diverse array of bacterial strains, including vancomycin-resistant microorganisms as well as Gram-positive bacteria. The synthesised conjugates exhibited significant antibacterial activity against vancomycin-resistant enterococci. In summary, the findings of this study illustrate the capacity of modifying the structure of existing antibiotics to provide strong molecules capable of effectively combating bacteria that have developed resistance to several drugs.
Keywords – Vancomycin, Antibiotics, Disulfide moieties, Microbes, Multidrug resistance

SYNTHESIS, CHARACTERIZATION, ANTI-MICROBIAL AND ANTI-PROLIFERATIVE ACTIVITES OF NEW CLUBBED PYRAZOLINE-THIAZOLE DERIVATIVES

Dr. Ravichandra S[1*]
[1]Department of Pharmaceutical Chemistry, Chebrolu Hanumaiah Institute of Pharmaceutical Sciences, Chowdavaram, Guntur-19, Andhra Pradesh, India.
*Corresponding Email: yagneswarasai@gmail.com

In the study, synthesized and evaluated the anti-microbial and anti-proliferative activities of a series of pyrazoline clubbed thiazole hybrids derivatives (3a-3l). The structures of the newly synthesized compounds were deduced depending on their spectrum data and elemental analysis. The clubbed pyrazoline-thiazole hybrids derivatives of the selected compound were screened in vitro against anti-microbial i.e. anti-bacterial against bacterial strains *Staphylococcus aureus* (ATCC-11632), *Pseudomonas aeruginosa* (ATCC-10145) and anti-fungal activity against fungal strains-*Aspergillus niger* (ATCC-6275) and *Candida tropicalis* (ATCC-1369) against positive controls like ciprofloxacin for bacterial strains and fluconazole for fungal strains respectively and anti-proliferative against prostate cancer cell line (DU-145), docetaxel was positive control. The compound **3i** containing electron withdrawing (-CF_3) group was the most potent antibacterial candidate with double the activity than ciprofloxacin (MIC, 1 µg/mL) against both bacterial strains whereas compounds **3f** and **3j** substituted with -NO_2 and -OCF_3 groups displayed activity (MIC, 2 µg/mL) which is similar to the standard, for antifungal activity compound **3d** substituted with -OH group at position-4 was the most potent among all with MIC values 1 µg/mL. Compounds **3c** and **3e** bearing -OCH_3 and -CH_3 at position-4 of the phenyl ring displayed 2-times the activity than fluconazole (MIC, 4 µg/mL) with MIC 2 µg/mL. The compound **3b** containing -OCH_3 substituent at position-2 on the phenyl ring elicited similar activity as that of fluconazole. These results indicate that the incorporation hybrids substituted with electron withdrawing groups were instrumental in improving the antibacterial potency and an electron releasing substituents at positions-2 and 4 is vital in enhancing the antifungal activity with these new series of the compounds. For anti-proliferative activity i.e. compound 3-Pyridinyl (**3l**) showed IC_{50} at 1± 2µg/mL and 4± 2µg/mL for compound **3b** and 5±2µg/mL for compound **3c** and **3d** against the cell line, respectively.
Keywords: Pyrazoline, Thiazole, Isoxazole and anti-proliferative

FORMULATION AND EVALUATION OF CELECOXIB NANOSUSPENSION WITH IMPROVED PERFORMANCE

Ritika*[1], Nidhi Pandey[1], Debaprasad Ghosh[1], Ashu Mittal[1]

Department of pharmaceutics, KIET School of Pharmacy, Ghaziabad, UP, India.
*Corresponding Email: ritika.2024bph1107@kiet.edu

Aim and Objective: Celecoxib is a selective cox to inhibitor (NSAID) that acts as a potent analgesic and is a BCS Class II drug. It is weakly acidic in nature and shows poor solubility and dissolution characteristics. Here a Nano suspension of celecoxib in the form of dispersed Nano crystals were formulated and evaluated.
Materials and methods: Nano crystals of celecoxib was developed by wet milling, and media milling (Dynomill KDLA Type) technique and subsequent transformation into Nano suspensions for formulating a gel based topical dosage form. Nano gel formulations were optimized using the centre composite design of DOE (Design of experiment) from JMP 10 software.
Result and Discussion: The Nano suspension produced was then investigated using a Malvern Master sizer. Particle size of optimized batches was found to be 0.133µm and 0.761µm respectively. Gel was evaluated for any possible drug-polymer interaction studies by differential scanning calorimetric (DSC), its viscosity, spread ability, extrudability, texture analysis (TAXT PLUS) and in-vitro release of drugs in modified Franz diffusion cell. In-vitro diffusion studies of Nano gel showed a marked increase in permeation per unit area and flux in comparison to gel-containing micron-size drugs.
Conclusion: In conclusion, the above results illustrate the celecoxib nanocrystal based nanosuspension's effectiveness as an effective analgesic to treat the localized pain of patients when their particle size was reduced.
Keywords: Celecoxib, Nano crystal, Nano suspension, Franz diffusion cell, KDLA Type Dynomill.

DESIGN AND EVALUATION OF CONTROLLED RELEASE FLOATING MICROBALLOONS OF STAVUDINE

S. Siva Prasad[1]*, S. Vidyadhara[1]
[1]Chebrolu Hanumaiah Institute of Pharmaceutical Sciences, Chowdawaram, Guntur- 522019, Andhra Pradesh, India
*Corresponding Email: sivasunkara123@gmail.com

The Aim of this study was to design and evaluate stavudine floating microballoons for controlled drug release. Initially drug loaded low density granular pellets were prepared with $HPMCE_5$ and by using isopropyl alcohol as a granulating fluid. Further the low density granular pellets were subjected to microencapsulation by emulsion evaporation technique using ethyl cellulose and Eudragit S100 as coating polymers and 1%PEG as aqueous phase. The prepared microballoons were characterized for their particle size analysis, angle of repose and for compressibility index. The *in vitro* release studies were performed in 0.1N HCl as acidic medium. The prepared microballoons were free flowing and spherical in shape. From all the formulations F5E and F5F can be considered as a promising controlled release floating microbaloons of stavudine providing first order release over a period of 12 hours, with minimum floating Lag time of 1 minute. It was found that the drug:polymer, the stirring speed, the concentration of surfactant were the most significant variables which influenced the size of the stavudine microbaloons under the applied experimental condition.
Keywords**:** Stavudine, HPMC E_5 Controlled Release, Eudragit S 100.

RECENT ADVANCES IN ORAL FILMS: INTENSIFY AUSPICIOUS THERAPEUTIC ATTENTION FOCUSING VARIOUS AILMENTS

Sujani Chirtapudi[1*]
[1]Adarsa College of Pharmacy, G.kothapalli, E.G.Dt., Andhra Pradesh
*Corresponding Email: sujanisrinivas16@gmail.com

Oral administration is the most convenient route for administration of various pharmaceutical dosage forms like tablets, capsules, syrups, suspensions and emulsions. In different fast - dissolving preparations, mouth dissolving films have been produced by fast - dissolving drug delivery methods. Mouth dissolving films are oral solid dosage forms, made-up of hydrophilic polymer that dissolves quickly in the mouth and buccal cavity without incorporation of water or chewing. This dosage form allows the medication to bypass the first pass metabolism. So that the bioavailability of medication increases. Due to lower production cost, mouth dissolving films are superior to mouth dissolving tablets. Oral films are self-administrable, quickly dissolve, absorbs and improves onset of action that make it as a versatile dosage form for elderly and pediatrics who are facing difficulties in swallowing tablets and capsules. The aim of this review is on formulation techniques of various polymers with their concentration and applications. It also focuses on the use of polymers, plasticizers and evaluation parameters as well as currently available marketed products of mouth dissolving films.
Keywords: Mouth dissolving films, polymers, different concentrations, evaluation tests, marketed products

PHYTOCHEMICAL ANALYSIS AND PHARMACOLOGICAL ACTIVITIES OF SOYMIDA FEBRIFUGA AND NELUMBO NUCIFERA: AN OVERVIEW

Tinku Kumar[1]*, Anuj Malik[1]
[1]Maharishi Markandeshwar, Deemed to be University, Mullana, Ambala, Haryana
*Corresponding Email: tinkumaliyan22@gmail.com

Medicinal plants are used to treat illness and diseases for thousands of years. They have gained economic importance because of their application in pharmaceutical, cosmetic, perfumery and food industries. The interest in herbal systems of medicine is growing day-by-day because nature can cure many diseases. : From old historical era plants are considered as a biosynthetic innovative, which can able to produce primary and secondary metabolites. Many primary metabolites such as, proteins carbohydrates, lipids and secondary metabolites like glycosides, alkaloids, flavonoids, tannins, volatile oils etc. A large number of modern drugs have been isolated from natural sources which were used in traditional medicines such as tribal medicine in the form of crude drugs. Hence, it is essential to isolate and identify active constituents from the extracts and to verify their therapeutic activity and specify dose-response relationship. Along with the developments in synthetic chemistry, higher plants are still a source of the medicinal constituents. For exploring traditional medicines and to investigate their scientific applications an endemic medicinal plant Soymida febrifuga Adr. Photochemistry as well as traditional and pharmacological uses.

COMPREHENSIVE STUDY OF THE BIOLOGICAL ACTIVITIES OF PEMIROLAST ON INFLAMMATORY DISEASES

Vivek Singh[1]*, Swamita Arora[1], Sanjar Alam[1]
Rv Northland Institute, Dadri, Greater noida, Uttar pradesh 203207
*Corresponding Email: imvs.vivek@gmail.com

Objective: The primary objective of this review study is to investigate the role of pemirolast in various allergy diseases, including asthma and allergic rhinitis, and to understand the mechanisms of action, therapeutic efficacy, and safety profile of pemirolast in alleviating symptoms associated with allergic diseases, aiming to provide evidence-based insights that contribute to the optimization of treatment strategies. Environmental factors have been implicated in the development of the current allergy epidemic in recent decades.
Method: Examining pemirolast's biological activities, this review highlights how the drug can be used as an antimicrobial, analgesic, antiviral, anti-inflammatory, antioxidant, antihistamine, mast cell stabilizer, anti-HIV, anti-tubercular, anti-tumor, anti-neoplastic, anti-asthmatic, anti-malaria, diuretic, anti-anxiety, and antifungal agent, all with promising results.
Result: The pharmacological action of pemirolast influences inflammatory mediators, enzymes, and hormones linked to a range of diseases, such as basophils, mast cells, eosinophil activation, histamine, leukotriene, IgE, T-helper cell, macrophage T-cell, neutrophils, tryptase, T-lymphocytes, interferons I–III, (Aβ) peptide, dsRNA transcription, GABA, dopamine, serotonin, and norepinephrine. Investigations are also conducted into pemirolast's inhibitory effect on different illnesses.
Conclusion: This review of research provides insight into the many biological and therapeutic benefits of pemirolast potassium in many illnesses. Pemirolast has the potential to treat a variety of diseases when combined with other prescription drugs. Its ability to stabilize mast cells and reduce the release of inflammatory mediators makes it a valuable option for individuals with allergic reactions, and its specific mechanism of action makes it well-suited for conditions where mast cell activation plays a crucial role.
Keywords: Pyrimidine, Pemirolast Potassium, Anti-inflammation, Antioxidant

DESIGN AND EVALUATION OF ESOMEPRAZOLE MICROBALLOONS FOR FLOATING DRUG DELIVERY

Battula Sowjanya Lakshmi[1]*, Vidyadhara Suryadevara[1]
[1]Department of Pharmaceutics, Chebrolu Hanumaiah Institute of Pharmaceutical Sciences, Chandramoulipuram, Chowdavaram, Guntur - 522019, Andhra Pradesh, INDIA.
*Corresponding Email: miriampalli.sowjanyalakshmi@gmail.com

Floating microspheres have been used to create once daily formulations by achieving a consistent and extend release of medications in the stomach. The aim of present investigation is to design and evaluate floating microballoons consisting of Esomeprazole proton pump inhibitor and calcium silicate as porous carrier along with PEG 4000, Ethyl cellulose 7cps and Eudragit L 100 as coating polymers, which is capable of floating on gastric fluid. Particle morphology, micromeritic characteristics, in vitro floating behaviour, drug loading, and drug release were all investigated in relation to formulations and process variables.
The results indicated that drug release, loading efficiency, buoyancy percentage, and particle size all increased with increasing po lymer concentration. The particle size, particle yield, loading efficiency, buoyancy percentage, and *in vitro* drug release for optimized formulation (F8) were found to be 169.01± 2.87 µm, 80.19± 2.24%, 85.06± 0.61%, 80.19± 2.04%, and 91.21± 1.29%, respectively. The data was fitted to different kinetic models to illustrate its anomalous (non-Fickian) diffusion. The release pattern of Esomeprazole in simulated gastric fluid from all floating microspheres followed the Higuchi matrix model and the Peppas-Korsmeyer model.
Key Words: Esomeprazole, Floating microballoons, Calcium silicate, dichloromethane, methanol, PVA

DEVELOPMENT & EVALUATION OF CLOZAPINE LOADED MUCOADHESIVE MICROSPHERES FOR BRAIN TARGETING

Priyanka Sambhaji Nangare[1]*, Dr. Uttamsingh Baghel[1]
[1]Career Point University, Kota, Rajasthan, India.
*Corresponding Email: priyasnangare@gmail.com

In the present work, mucoadhesive nasal microspheres containing clozapine were formulated and evaluated for increasing its bioavailability at cerebrospinal fluid (CSF). Clozapine is antipsychotic agent which is of BCS class II, hence need to improve its bioavailability at central nervous system (CNS). To make the drug delivery system safer, natural polymer and crosslinker were used. Clozapine loaded cross-linked starch microspheres (CSMs) were successfully developed for intranasal (IN) delivery for CNS targeting using single emulsion cross-linking method. The CSMs formulation was optimized by Taguchi factorial design considering polymer concentration, surfactant concentration and cross-linker concentration as the independent variables and corresponding response variables being % entrapment efficiency and % mucoadhesive strength. The optimized batch exhibited entrapment efficiency 92.45% and mucoadhesive strength 93.46%. The prepared CSMs were evaluated for physical characteristics such as particle size, particle shape, surface morphology, drug entrapment efficiency, in vitro and in vivo bioavailability studies. The particle size of the prepared microspheres was in the range of 58-92 µm, which was suitable for nasal administration. In-vivo studies showed increased relative bioavailability with nasal route as compared to the oral route. IN route has helped to attain significant therapeutic levels of the antipsychotic drug in the CSF by surpassing the BBB and hepatic first pass effect.
Keywords: Clozapine, mucoadhesion, starch, Citric acid, Bioavailability

BEYOND THE THRESHOLD: ADVANCEMENTS IN NEUROPATHIC PAIN MANAGEMENT TECHNIQUES

Shafqat Zaidi[1]*, Krishana Kumar Sharma[1]
[1]Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India.
*Corresponding Email: zaidishafqat@gmail.com

Neuropathic pain, also referred to as nerve pain, is a debilitating condition that lasts for a long time and is caused by injury to or malfunctions in the nervous system. Unlike acute pain, which serves as a warning sign for tissue damage, neuropathic pain persists after the initial injury has healed,harm. Neuropathic pain comes in different forms, such as diabetic neuropathy, post-herpetic neuralgia, Neuropathic pain is a prevalent chronic pain disorder that significantly affects quality of life, typically resulting from a lesion or disease of the somatosensory nerve system. Trigeminal neuralgia, excruciating polyneuropathy, postherpetic neuralgia, and central post stroke pain are a few examples. The

majority of patients report persistent or sporadic spontaneous pain, such as a burning, prickling, or squeezing sensation, that may or may not be accompanied with evoked pain that is more sensitive to cold or light touch. There are various diseases where spontaneous pain may be caused by ectopic activity in the thalamus, nerve-end neuroma, compressed nerves or nerve roots, dorsal root ganglia, or other locations. Peripheral and central sensitization are involved in the underlying pathophysiology of evoked pain, which can also spread to nearby locations. The sensitization of nociceptive pathways is caused by maladaptive structural alterations, many cell-cell interactions, and molecular signaling. These include glial-derived mediators, immune cell activation, ion channel modifications, and epigenetic regulation. Medications that target the α2δ subunits of sodium and calcium channels as well as descending modulatory inhibitory pathways are the main treatment groups.
Keywords: Neuropathic pain, Neuralgia, somatosensory, pathophysiology.

ANTI-INFLAMMATORY AND ANTIMICROBIAL POTENTIAL OF THIAZOLOPYRIMIDINE AND ITS DERIVATIVE: A REVIEW

Arati Devi[1,2]*, Neetu Agrawal[1]
[1]Institute of pharmaceutical research, GLA University, Mathura.
[2] HIMT college of pharmacy, Greater Noida, UP.
*Corresponding Email: palarti101@gmail.com

In the area of synthetic organic chemistry, Numerous medicinal chemists globally are concerned in this structure, the fusion of two aromatic rings, thiazole and pyrimidine, results in the formation of thiazolopyrimidine scaffold, Scientist now find the various synthetic methods for synthesis of heterocyclic compounds using multi-component approaches such as green chemistry, microwave irradiation,and environmentally friendly methods to be highly exciting. A straightforward process for the one-pot synthesis of many novel thiazolopyrimidine derivatives has been established. Recently, an ionic liquid has recently been used to create a range of pyrimidine derivatives. The development of innovative anti-inflammatory entity has advanced steadily ever since aspirin's non steroidal anti-inflammatory drug discovery and the identification of its mode of action. As of now, there is no any chemical moiety that is safer to use over the long term to treat anti-inflammatory problems. Consequently, the biggest problem facing by researchers is the development of safe, affordable, and efficacious drug for the treatment of inflammatory disorders. Fused heterocycles have been shown to be important for immunological and inflammatory responses in a number of illness and conditions. Due to the wide range of biological properties it may possess acetylcholinesterase inhibitors activity, antimalarial, antiHIV, CXCR2 receptor antagonists, growth factor receptor tyrosine kinase inhibitors, Tie-2 kinase inhibitors, CDC25B phosphatase inhibitors, dipeptidyl peptidase IV Inhibitors, antioxidant and antimicrobial, anticancer, anti leishmanial, anti-inflammatory, anti hypertensive, bactericidal, analgesic and fungicidal properties, need to be further investigated.
Key word: Thiazolopyrimidines, antimicrobial , anti-inflammatory, Multi-component synthesis approaches

ANTI-INFLAMMATORY AND ANTICANCER ACTIVITIES AND SYNTHETIC PROSPECTS OF SUBSITITUTED PYRAZOLE AND ITS DERIVATIVES: A REVIEW

Poonam Kumari[1,2*], Neetu Agrawal[1]
[1]Institute of Pharmaceutical Research, GLA University, Mathura.
[2]Nandini Nagar Mahavidyalaya College of Pharmacy, Nawabganj Gonda (U.P.)
*Corresponding Email: poonamkumari7843@gmail.com

Bioctives compounds are accepted as primary Natural products since ancients time, and they continue to offer valuable new therapeutics till now. The metabolic mechanism of plants is the source of a vast array of chemicals having therapeutic action, Many researcher world-wide are concerned in this structure,the pyrazole compounds alkaloidal in nature and are very rare in nature. Being having wide range of biological activities the pyrazole moiety is considered as an important moiety with respect to the discovery of powerful biologyical actives. Scientist found pyrazole derivatives having diverse pharmacological activities ranging from anticancer, anti-inflammatroy. It is having a potential to act as a functional lead compound for designing derivatives were synthetically derived by using wide variety of chemical reactions route by considering various constituents using Vilsmeier–Haack reaction , one- pot synthesis etc. Although, pyrazole derivatives have been already established for their Anti-inflammatory effect, ant-cancer effect as well as their effect on nervous system since last five decades, they have been continuously explored for numerous other pharmacological activities to counter the existing and upcoming human aliments. With intention of the development of new derivatives of pyrazoles as a therapeutic agent at a faster pace there is a need to explore the updated available information related to the concerned nucleus through literatures to develop the correlation between its established pharmacological roles and desired newer therapeutic actions.
Keywords: Pyrazole derivative,Vilsmeier–Haack reaction, anti-flammatory, Anti-cancer activties.

GUMMIES OF LYCOPENE: BIOLOGICAL EFFECT, ANTIOXIDANT PROPERTIES AND BIOAVAILABILITY ON HUMEN

Amit Pal[1]*, Anuj Pathak[1]
[1]KIET Group Of Institutions Muradnagar Ghaziabd 201206, Uttar Pradesh, India
*Corresponding Email: Amit.2024bph1016@kiet.edu

Edible (chewable) Gummy pills are made up of sugar and gelling agents. It's a food supplement that is more adapted by consumers with fewer restrictions when seen against other dosage forms because it has an excessive level of antioxidants, nutrient content, minerals. Lycopene adding it to this dosage form has health benefits. Vitamin B2, zinc, calcium, magnesium, potassium, and vitamin C are all included in the multivitamin mix. With the intention of making individuals more likely to take them, gummy vitamins are made to be easier to swallow than regular vitamins. Lycopene is an acyclic, open-chain unsaturated carotenoid pigment of significant dietary importance that is mostly derived from sources of colorful plants. It is a phytochemical that is mostly present in red amaranth, tomatoes, watermelon, and other primarily red plants and fruits because of its biological qualities, it has gained notice as a different kind of antioxidants. Its safeguarding properties against advised toxic agent dosages, as well as toxicity and safety are also covered. It has been discovered that lycopene effectively reduces the risk of cancer recurrence, diabetes mellitus, oxidative stress-mediated malfunction, inflammatory events, and disorder of skin, bones, liver, reproductive system, and nervous system. Gummies infused with lycopene offer a fun and novel way to take advantage of lycopene's health advantages. These candies may prove to be a beneficial dietary supplement as research in this field advances, offering a tasty and convenient way to promote general health and wellbeing.

Keywords: Gummies, Lycopene, Chewable gummies, Antioxidant, Bioavailability, Infused, Convenient, Wellbeing

HERBAL PHYTOSOMAL GEL: A PROMISING THERAPEUTIC APPROACH FOR PSORIASIS MANAGEMENT

Ankit Kumar Yadav[1*], Pankaj Kumar Sharma[1]
[1]Raj Kumar Goel Institute of Technology (Pharmacy), 5th KM Stone Delhi-Meerut Road Ghaziabad U.P. 201003, India
*Corresponding Email: ankity2701@gmail.com

Psoriasis, a chronic immune-mediated inflammatory skin disorder, presents a significant challenge in terms of effective treatment due to its complex etiology and unpredictable exacerbations. Traditional pharmacotherapies often entail side effects and limited long-term efficacy, prompting the exploration of alternative remedies. Herbal formulations have gained attention for their therapeutic potential in mitigating psoriasis symptoms, offering a natural and holistic approach.

This abstract highlight the potential of an herbal phytosomal gel as an innovative and promising avenue in psoriasis management. The utilization of herbal extracts encapsulated in phospholipid complexes, known as phytosomes, enhances the bioavailability and efficacy of active phytoconstituents. These phytosomal formulations harness the synergistic therapeutic benefits of herbs with inherent anti-inflammatory, antioxidant, and immunomodulatory properties, addressing the multifaceted aspects of psoriasis pathogenesis.

The formulation's mode of action involves the targeted delivery of bioactive compounds to the skin layers, where they exert anti-inflammatory effects, regulate immune responses, and promote skin regeneration. Clinical trials and experimental studies have demonstrated the efficacy and safety profile of herbal phytosomal gel in ameliorating psoriatic lesions and reducing scaling, erythema, and pruritus while exhibiting minimal adverse effects.

Furthermore, the herbal phytosomal gel presents a promising prospect for combination therapies, complementing existing conventional treatments or serving as an alternative for individuals unresponsive to standard therapies. However, further comprehensive clinical investigations and long-term safety assessments are warranted to establish its full therapeutic potential, safety profile, and standardization protocols for more comprehensive clinical application.

In conclusion, developing an herbal phytosomal gel offers a novel and promising approach to managing psoriasis, potentially providing an effective, safe, and well-tolerated therapeutic option. Its utilization underscores the importance of exploring natural remedies and innovative delivery systems to improve psoriasis management strategies.

Keywords: Herbal, Phytosomal gel, Psoriasis, Skin disorder, Alternative therapy, Bioactive compounds, Anti-inflammatory, Antioxidant

ANTIMICROBIAL RESISTANCE: RESPONSIBILITY OF PHARMA SECTOR

Saurabh Kumar[1], Nishu[1]
Student, Hari College of Pharmacy, Saharanpur, Uttar Pradesh
*Corresponding Email: sk95487120@gmail.com

Antimicrobial resistance occurs when microorganisms such as - Bacteria (Mycobacterium tuberculosis), parasite (malaria), Virus (HIV) and Fungi (Candida) evolve and become resistant the drugs designed to kill them. AMR is a significant global health concern, as it can lead to ineffective treatment and the spread of the infection in response to this threat, the United Nations and the WHO have called for multisectoral, multidisciplinary action, recognizing that human, animals and environmental health are interdependent. Although the pharmaceutical industry clearly has a leading role in developing novel antimicrobials and vaccines, it is also active in many areas supporting antimicrobial stewardship (AMS). These programs aim to optimize the use of antimicrobials to treat infections and involve educating health care professionals and the public about the appropriate use of the antibiotics. Collaboration between pharma industry and healthcare providers, government and international organization is essential regulatory compliance in which pharmaceutical companies must adhere to regulation and guidelines related to the development of antimicrobials drugs. Addressing, antimicrobial resistance requires a collective effort from governments, healthcare professionals, the pharmaceutical industry, and the public. It's a complex challenge that necessitates a multifaceted and collaborative approach.

Keywords - Antimicrobial resistance, antibiotics, stewardship, pharmaceutical industry.

CANNABINOID (CB2) RECEPTOR AGONISTS MODULATOR IN CHEMOTHERAPY INDUCED NEUROPATHIC PAIN

Amit Kumar Bhatt[1], K. K. Sharma[1]
[1]Teerthanker Mahaveer college of Pharmacy (TMU) Moradabad-24400 Uttar Pradesh,India
*Corresponding Email: amitsln0330@gmail.com

Any pain that is brought on or brought on by a primary lesion or disease of the somatosensory nerve system is referred to as neuropathic pain. Increased prescription drug use and doctor visits are linked to neuropathic pain. Allodynia, hyperalgesia, and paresthesia are its defining features. In animal models of medically induced traumatic nerve or nervous system injury, it is primarily induced via spinal nerve ligation, partial sciatic nerve ligation (Seltzer Model), chronic constriction injury (CCI), and other nerve injuries (SNL). Chemotherapy-induced peripheral neuropathy (CIPN), one of the most prevalent neuropathies brought on by antineoplastic medications, is primarily brought on by chemotherapy with platinum-based therapies, taxanes, thalidomide, and ixabepilone. Opioids are the main treatment for CIPN, however they are known to lead to dependence. It is well known that the cannabinoid receptors (CB 1 and CB 2) release mediators that control inflammatory reactions. This prompted research into the use of cannabis for the treatment of neuropathic pain. This review emphasises the function of CB2 selective agonists in the treatment of CIPN and neuropathic pain. Itaconates and isatins, two more recent classes of chemicals, have been developed as CB2 agonists and studied in neuropathic pain. The review offers insight into the mechanism through which CB2 agonists decrease neuropathic pain.

Keywords: Neuropathic pain, Cannabinoids, Itaconate, isatin, ABK5, allodynia

CRYSTAL HABIT MODIFICATION OF APREMILAST: A COMPREHENSIVE REVIEW ON SONOCRYSTALLIZATION AND ANTISOLVENT METHODS

Ammar Khan[1]*, Dr. Swaroop Lahoti[1]

[1]Y. B. Chavan College of Pharmacy, Rafiq Zakaria Marg, Aurangabad 431001, Maharashtra, India.
*Corresponding Email: ammarkhan9960@gmail.com

The solubility challenge of Apremilast, a key pharmaceutical ingredient in treating inflammatory disorders, has spurred innovative approaches centered around crystal habit modification. In this study, we aimed to explore the efficacy of sonocrystallization and the antisolvent method in enhancing the solubility and therapeutic effectiveness of Apremilast. As a small-molecule phosphodiesterase 4 (PDE4) inhibitor, Apremilast shows promise in conditions like psoriatic arthritis, plaque psoriasis, and Behcet disease-related oral ulcers. However, its formulation into effective dosage forms is hindered by intrinsic solubility limitations.
The methods employed in our study included saturation solubility studies in various buffers, selection of organic solvents based on ICH Q3C guidelines, and the application of sonocrystallization and the antisolvent method for crystal habit modification. The sonocrystallization process utilized power ultrasound to influence crystal nucleation, growth, and fragmentation, while the antisolvent method involved the controlled addition of a non-solvent to induce precipitation and modify crystal habits.
Results from solubility studies indicated significant improvements, with the highest solubility observed in phosphate buffer (pH 6.8) after sonocrystallization and the antisolvent method. Shape alterations during sonocrystallization, such as needle-like crystals in isopropanol and circular shapes in acetonitrile, underscored the impact of these techniques on Apremilast's crystal habits.
In summary, our comprehensive exploration of crystal habit modification techniques provides a holistic understanding of their combined impact on Apremilast. The innovative approaches of sonocrystallization and the antisolvent method offer a synergistic strategy to overcome solubility challenges, potentially advancing the development of more effective dosage forms. This study contributes valuable insights for researchers and pharmaceutical scientists working on optimizing dosage forms for improved bioavailability and therapeutic efficacy of Apremilast in the treatment of inflammatory disorders.
Keyword: Apremilast (APM), Sonocrystallization, Antisolvent Method, Crystal Habit Modification, Inflammatory disorders, Psoriatic arthritis, Plaque psoriasis, Behcet disease.

SYNTHESIS OF NOVEL OXAZINE DERIVATIVES, ADMET AND EVALUATE ANTI-INFLAMMATORY ACTIVITY

Baby Rabiya Parveen[1]*, Sonu[2]
[1]Pharmacy Academy, IFTM University, 244001 Moradabad, India
[2]School of Pharmaceutical Sciences, IFTM University, 244001 Moradabad, India
*Corresponding Email: rabiyaparveen29@gmail.com

Abstract: A series of 3-methoxy acetophenone oxazine substituted derivatives were synthesized to evaluate their anti-inflammatory activity by in vivo carrageenan-induced paw edema method. It was revealed that these conjugates exhibited significant anti-inflammatory activity. The three R_6, R_7, R_4 compounds appeared to be moderate to extremely active. The docking studies of the synthesized compounds were performed towards the key Cyclooxygenase-2 (PDB ID: 4m11) by using Auto Dock Vina 4.2 version. The 3-methoxy acetophenone oxazine substituted derivatives R_6, R_7, R_4 have significant anti-inflammatory activity as cyclooxygenase-2 inhibitors.
Keywords: Chalcones, 1, 3 Oxazine, Molecular Docking, ADMET, Anti-in**fla**mmatory activity.

A BIGEL FORMULATION AND ITS EVALUATION FOR ANTIFUNGAL ACTIVITY

Aarti Sachin Zanwar[1]*, Ronak Sanathra[1], Dipti Gohil[1], Ashim Kumar Sen[1]
[1]Department of Pharmacy, Sumandeep Vidyapeeth Deemed To Be University, Vadodara-391760
*Corresponding Email: Aarti.zanwar@gmail.com

INTRODUCTION: WHO has declared that antimicrobial resistance is one of the top 10 global public health threats facing by humanity. The ability to form biofilm is widespread among pathogenic fungi which reduce the penetration of the anti-fungal drugs and so there is an increase in recurrence of disease.[1,2] Drug delivery formulation such as bigel containing antifungal drug agent and phytoconstituent (antibiofilm agent) can be the key target for the treatment as expected to result in a broadened drug activity spectrum, lower doses of toxic drugs, quicker antifungal action and reduced risk for the occurrence of fungal drug resistance. [3,4]
OBJECTIVES: To evaluate the synergetic effect of synthetic antifungal drugs along with some reported phytoconstituent antibiofilm agent like thymol, eugenol, etc with agar plate method against *Candida albicans*. To formulate and optimize topical bigel formulation from selected oil with emulsifier, penetration enhancer and compare the developed formulation with marketed formulation.
METHODOLOGY: The novel bigel was composed of the organogel phase (surfactants and antibiofilm agent) and hydrogel phase (antifungal drug). The prepared bigels were evaluated for organoleptic properties, percentage drug content, spreadability, viscosity, percentage in-vitro drug release, and antimicrobial efficacy.[5,6]
RESULTS: Zone of inhibition for the formulated bigel and the commercial formulation was found to be 35.3 mm and 23.6 mm, respectively. This indicates that the formulated bigel is more efficient than commercial against *Candida albicans*.
CONCLUSION: When compared to the commercial formulation of antifungal cream, the formulation of bigel with the combination of thereafore mentioned medications shown good anti-fungal activities against *Candida albicans*.
KEYWORDS: Bigel, luliconazole, eugenol, antifungal activity

PREPARATION AND CHARACTERIZATION OF AN OUTER PH AND INNER TIME DEPENDENT DOUBLE COATED MULTI-PARTICULATES FOR COLON TARGETED DRUG DELIVERY OF KETOPROFEN

Nikhil Kumar Singh[1], Debaprasad Ghosh[1], Ashu Mittal[1]
[1] KIET School of Pharmacy, KIET Group of Institutions, Ghaziabad-Meerut Highway (NH-58), Muradnagar, Ghaziabad - 201206, Uttar Pradesh, India.
*Corresponding Email: nksingh4544@gmail.com

The distribution of drugs targeted to the colon is advantageous for the management of a number of conditions connected to the colon, including Crohn's disease, irritable bowel syndrome, inflammatory bowel disease, colon cancer, etc. By doing this, the requirement for large dosages of the medication is also lessened in comparison to the standard dosage, which lowers dosage frequency and the associated undesirable toxicities, side effects, and expenses. A time-dependent release model, a pH-dependent model, or an enzyme-dependent release model based

on colonic bacteria can all be used to transport drugs to specific intestinal tracts. The goal of this study is to improve colon targeting over single coatings by using an outer pH-dependent and an inner time-dependent double coating on drug-loaded pellets of ketoprofen made using powder layering technology. Ethyl cellulose (EC 45) and hydroxypropyl cellulose (HPC-HXF) were mixed to create the inner time-dependent coating. FT-IR and DSC investigations have been conducted to observe the possibility of any drug-polymer incompatibility. The outer pH coating was completed by utilizing a mixture of pH dependent copolymers based on methacrylic acid and methyl methacrylate Eudragit L100 and Eudragit S100. Studies on the in-vitro dissolution of a specific formulation batch that is appropriate for the purpose and exhibits less than 10% drug release in the upper gastrointestinal tract (GIT) are also carried out. For drug-loaded pellets and coated pellets of the optimized batch both before and after dissolution, scanning electron microscopy surface topography data was acquired. In-vivo X-ray roentgenography was also performed on white New Zealand rabbits to observe the gastrointestinal passage of the coated pellets.
Keywords: ketoprofen, colon targeting, Eudragit L100, Eudragit S100, HPC-HXF, ethyl cellulose (EC45), New Zealand rabbits, powder layering technique

CHARACTERIZATION, AND MULTIFACETED APPLICATIONS OF SCHIFF BASE METAL COMPLEXES IN CATALYSIS FABRICATION

Piyush Kumar Singhal[1]*, Arvind Kumar[1], Bhuwanendra Singh[1]
[1]SD College of Pharmacy & Vocational Studies Bhopa Road, Muzaffarnagar, 251001, Uttar Pradesh, India.
*Corresponding Email: psinghal680@gmail.com

The conventional approach, which involves refluxing various ligands for 5–6 hours at 30–40°C while using ethanol as the solvent in synthesis, is used to build a complex of metals with Schiff bases using different ligands, which are 0.01 moles of aldehyde and amines, respectively. Aldehyde ketone and amino groups condense to form the complex N = C molecule known as Schiff base. Schiff bases include aryl or alkyl groups. The reaction with transition metals was carried out using this Schiff base following the production of the ligand, 4-(E)-[(4-chlorophenyl) methylidene] amino benzoic acid, 4-[(4-nitrophenyl) imino] methyl phenol. Several techniques have been used to evaluate the complexes, including TLC for purity testing and reaction confirmation, NMR, IR, and ICPMS for structure confirmation. All of the techniques used to prepare the metal complexes were effective and without any flaws. Swiss albino mice used in comparison research with a standard via p.o. route at 30 mg/kg are used to demonstrate anticonvulsant action.
Keywords: Complex, NMR, metals Schiff base, transition metals.

A REVIEW ON SYNTHESIS AND BIOLOGICAL ACTIVITIES OF QUINOLINE AND ITS DERIVATIVES

Km Anupam Verma[1]*, Sweta Shukla[1]
[1]Goel Institute of Pharmacy & Sciences, faizabad road near Indira canal, Lucknow 226028, Uttar Pradesh, India.
*Corresponding Email: anuverma885829@gmail.com

Quinoline is a volatile nitrogenous bicyclic heterocyclic compound having molecular formula C9H7N exist as a colourless liquid with a strong odour.. Quinoline created by distilling alkaloid and other compounds such as coal tar, petroleum. The initial production method for synthesis of quinoline and its derivatives developed in late 1800s. Quinoline has been generally synthesized by various named reaction Doebner-von miller, Friedlander, combes synthesis. Quinoline has been synthesized by Combes Quinoline synthesis by condensation of a primary aryl amine with a 1,3- diketone or β – keto aldehyde followed by cyclodehydration. Quinoline derivative quinine was isolated from bark of the cinchona tree in 1820. Literature survey revealed that compounds containing quinoline moiety possess wide variety of biological activity including antibacterial, antioxidant, anticancer, antimalarial, anti-inflammatory, antifungal etc. It is also reported to be used as preservatives, solvent, flovouring agent in medicine and as a colorant in dye and paints. The present review will give information of the biological activities of the quinoline and its derivatives.
Keywords- Quinoline, synthesis, Physical and chemical properties, Biological activity,

A REVIEW ON ISOCRATIC ELUTION IN HPLC METHODS FOR FLAVONOIDS

Pritam Chaudhari[1]*, Dr. Amit Tapkir[1]
[1]PES's Modern College of Pharmacy, Nigdi Pune, 411044, Maharashtra, India.
*Corresponding Email: Chaudharipritam@gmail.com

Flavonoids are more sub classified natural bioactive organic compounds of secondary metabolites with a diversified chemical structure of flavonoid bioactive phytoconstituents. They widely exist in plant sources such as roots, stems, leaves, flowers, and fruits, which have numerous categories and chemical structures. With a wide range of pharmacological and advantageous health effects on people, flavonoids are one of the major subclasses of small molecular secondary metabolites generated in the various plant parts. The analysis of flavonoids by HPLC is one of the most important steps. Isocratic elution is a straight forward, reliable mobile phase with identification for flavonoid analysis in robust chromatographic procedures. Only few of bioactive flavonoids such as querecetine, apigenin, luteolin, catcachin analysis by stable mobile phase, 1-2 min. flow rate in hplc method. This review will look at the application of flavonoids from the previous five years of research study, discussing the benefits of isocratic elution techniques. Review is done to analyze various factors, such as extraction, isolation, column selection, mobile phase composition, and so on. The objective of this review is to provide evidence of analytical techniques using the isocratic elution method used for different subclasses of flavonoids.
Keywords: Flavonoids, Bioactive, Isocratic elution, HPLC.

THE FUTURE OF PHARMACOLOGY, INTEGRATING ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

Piyush Mittal[1]*, Vishakha Mittal[1]
[1]Hari college of Pharmacy, Saharanpur, Uttar Pradesh
*Corresponding Email: Piyushmittal585@gmail.com

Artificial intelligence (AI) has transformed pharmacological research through machine learning, deep learning, and natural language processing. These advancements have greatly influenced drug discovery, development, and precision medicine. AI algorithms analyze vast biomedical data identifying potential drug targets, predicting efficacy, and optimizing lead compounds. AI has diverse applications in pharmacological research, including target identification, drug repurposing, virtual screening, de novo drug design, toxicity prediction, and personalized medicine. AI improves patient selection, trial design, and real-time data analysis in clinical trials, leading to enhanced safety and efficacy outcomes. Post-marketing surveillance utilizes AI-based systems to monitor adverse events, detect drug interactions, and support pharmacovigilance efforts.

Machine learning models extract patterns from complex datasets, enabling accurate predictions and informed decision-making, thus accelerating drug discovery. Deep learning, specifically convolutional neural networks (CNN), excels in image analysis, aiding biomarker identification and optimizing drug formulation. Natural language processing facilitates the mining and analysis of scientific literature, unlocking valuable insights and information. However, the adoption of AI in pharmacological research raises ethical considerations. Ensuring data privacy and security, addressing algorithm bias and transparency, obtaining informed consent, and maintaining human oversight in decision-making are crucial ethical concerns. The responsible deployment of AI necessitates robust frameworks and regulations.

The future of AI in pharmacological research is promising, with integration with emerging technologies like genomics, proteomics, and metabolomics offering the potential for personalized medicine and targeted therapies. Collaboration among academia, industry, and regulatory bodies is essential for the ethical implementation of AI in drug discovery and development. Continuous research and development in AI techniques and comprehensive training programs will empower scientists and healthcare professionals to fully exploit AI's potential, leading to improved patient outcomes and innovative pharmacological interventions.

Keywords: Personalized medicine, ai ethics, drug discovery, convoluted neural networks (CNN), machine learning, pharmacological research, artificial intelligence.

INVESTIGATION OF PHYTOCHEMISTRY, PHARMACOLOGY, AND PHARMACOLOGY OF THE LEAVES OF DIPTEROSTACHYS CINEREA WIGHT ET AL.

Aakash Gupta[1*], Harish Gupta[2], Chitranjan Nayak[1], Dusmanta Kumar Pradhan[1]
[1]Raigarh College of Pharmacy, Raigarh C.G.
[2]Raigarh College of Education Pharmacy, Raigarh C.G.
*Corresponding Email: guptaaakash170@gmail.com

Bioactive chemicals found in medicinal plants influence the systems of other species, and most of these molecules have demonstrated significant therapeutic potential in the management of a wide range of human and animal illnesses. Investigating the existence of pharmacognostical, phytochemical, and pharmacological effects of the uncommon medicinal plant Dichrostachys cinerea (Mimosaceae) was the goal of the current study. The leaves have laxative properties and are used to treat piles, gonorrhea, and epilepsy. It can also be used to treat stomach issues and get rid of snakebite venom. To guarantee that the genuine ingredients used in the creation of herbal formulations are employed, standardization of herbal medications is a crucial component.This study included standardization of the plant, including macroscopic, microscopic, physio-chemical, and HPTLC analyses of Dichrostachys cinerea leaves. Alkaloids, phytosterol, saponins, tannins and phenolics, gum and mucilage, and flavonoids were detected by phytochemical screening. The research demonstrated the alcoholic extract's anti-convulsant properties against convulsions generated by MES. The anti-convulsant effect of 400 mg/kg of alcoholic extract on female Wistar rats was comparable to that of the conventional medication phenytoin (100 mg/kg/p.o.). The results of this study indicate that Dichrostachys cinerea, a rare medicinal plant, may one day be used to treat epilepsy effectively in herbal formulations. Studies on phytochemistry and pharmacognosy can also be used as benchmarks for additional investigation.

Keywords: *Dichrostachys cinerea,* HPTLC, Bioactive compounds, Anti-convulsant activity, Phenytoin.

FORMULATION, CHARACTERIZATION AND EVALUATION OF FAST DISSOLVING FILMS (FDF) CONTAINING COMBINATION OF LISINOPRIL AND CARVEDILOL

KM Nandini[1*], Harish Gupta[2], Dusmanta Kumar Pradhan[1]
[1]Raigarh College of Pharmacy, Raigarh C.G.
[2]Raigarh College of Education Pharmacy, Raigarh C.G.
*Corresponding Email: kmnandini86@gmail.com

Angiotensin converting enzyme (ACE) inhibitors like lisinopril (LP) are mainly used to treat hypertension, congestive heart failure, heart attacks, and to prevent diabetic complications that affect the kidneys and retina. Congestive heart failure (CHF) can be managed with carvingilol (CR), a non-selective β-adrenergic blocking medication with α-1 blocking effect. It is typically used in conjunction with ACE inhibitors and diuretics. The goal of the current study is to formulate and assess fast-dissolving films that combine CR and LP. Utilizing a blend of various polymers, including HPMC E3, HPMC E5 LV, PVP, and PEG as plasticizer, the films were created via the solvent casting technique. Studies using FT-IR were conducted to look for any interactions between the medicine or drugs and the polymers. The films were assessed for physiochemical properties, including drug content homogeneity, weight, thickness, surface pH, folding endurance, tensile strength, and stability and kinetic release tests. FT-IR investigations revealed no interactions between the medicine or drugs and the polymers. The polymers HPMC E3, HPMC E5 LV, and PVP among all the formulations produced results that were adequate in terms of the proportion of medication released after 5 seconds and the in vitro disintegration time. It was discovered that first order kinetics accounted for the drug release mechanism of the fast release oral films. Studies on the short-term stability of a subset of strips revealed no discernible changes in the percentage of drug content released, drug breakdown, or both.

Keywords: Fast Dissolving Films (FDF), Lisinopril, Carvedilol, In vitro Drug release

ROLE OF VITAMINS IN MANAGEMENT OF CHRONIC WOUND

Priyanka Yadav[1]*, Sumit Kumar[1]
[1]Department of Pharmaceutical sciences, Central university of Haryana
*Corresponding Email: Priyanka222689@cuh.ac.in

Skin is the major part of human body, which play potential protective role for internal tissues from microbial infections, UV radiation, and extreme heat, mechanical damage. It has three main layers including epidermis, dermis and hypodermis. Epidermis contains sebaceous glands, glands for Sweat; hair follicles. A wound is defined as any break in the integrity of skin, mucous membranes, or organ tissue. There is a difference between simple wounds that are restricted to the skin and complex wounds that are deeper and entail injuries to muscles, nerves, and arteries. Wounds can be caused by thermal, mechanical, chemical, and radiogenic stress. Chronic wounds are characterised by pathologic processes such as persistent inflammation, infections, and necrosis. Chronic wounds begin as an acute wound but instead of proceeding through the typical stages of wound healing, they get stuck in a protracted inflammatory phase due to an excess of neutrophil infiltration. Chronic wounds, each with its own an aetiology, include ulcers from diabetes, ulcers from pressure, and venous ulcers. Healing of wounds can be hampered by inadequate nutrition, and various dietary components necessary for wound repair may increase healing time and injury result. It has been studied that nutrient like amino acids, omega-3 fatty acid and vitamins etc. in physiology of wound healing process. It has been observed that vitamin A, B, C, D and E plays important role in healing of wound.
keywords**:** Chronic Wound, Vitamins

IN-VITRO AND IN-VIVO ANTICANCER ACTIVITY OF E. LITTORALE

Zanwar Sachin[1]*, Patel Kirti[1]
[1]Department of Pharmacology, Faculty of Pharmacy, The MS University of Baroda, Vadodara, Gujarat, 390001, India
*Corresponding Email: sachin4res@gmail.com

Hepatocellular carcinoma (HCC) is a well-known liver cancer worldwide that ranks among the top cancer-related death causes. Currently available treatment options are associated with serious adverse effects. *Enicostemma littorale* (EL) Blume is a member of the Gentianaceae family and has been used for numerous ailments in traditional medicine and liver disorders[4]. The aim of this study was to investigate the anticancer activity of EL extract against HepG2 cells *in-vitro* and *in-vivo*. EL extract decreased the cell growth in a dose-dependent manner. Athymic nude mice with HepG2 xenografts were treated with extract showed a significant reduction in tumor growth compared to control group. These results show that the EL extract has a potential anticancer activity in HCC and can be used as adjuvant therapy.

NEUTRACEUTICALS: HEALTH BENEFITS AND REJUVENATING PROPERTIES

Manish G. Baheti[1]*
[1]School of Pharmacy, G H Raisoni University, Saikheda, M.P, India.
*Corresponding Email: bahetimanish11@gmail.com

Nutraceuticals are supplements having many physiological benefits on the health of people. They have the property to cure certain nutritional deficiency diseases. They are used to maintain nutritional balances and nutraceuticals are now in demand globally for many other health benefits on all body systems, including. the prevention and treatment of disease. Nutraceuticals may range from dietary supplements to genetically engineered foods, herbal products and processed foods. This article emphasizes extra health benefits and rejuvenating properties of Nutraceuticals.
keywords**:** Nutraceuticals, Health benefits, Rejuvenating properties.

INSIGHTS ON THE CAUSES, PATHOPHYSIOLOGY, DIAGNOSIS AND TREATMENT OF SCABIES

Shubham Kumar[1]*, Richa Goel[1]
[1]KIET School of Pharmacy, KIET Group of Institutions, Ghaziabad-Meerut Road, NH-58, Ghaziabad, UP-201206, India
*Corresponding Email: shubham.2024bph1067@kiet.edu

Scabies is a contagious skin condition known for its relentless itching, particularly at night. This condition is primarily transmitted through skin-to-skin contact, making close family and personal contact relationships high-risk factors. Scabies is a global concern, with an estimated 300 million infections annually, particularly affecting regions with poverty, inadequate hygiene, and homelessness. Children and young adults are more susceptible to scabies, leading to complications like abscesses, lymphadenopathy, and post-streptococcal glomerulonephritis in endemic areas. Scabies outbreaks can occur sporadically or institutionally in settings such as schools, healthcare facilities, and overcrowded environments in developed countries.
Scabies caused by infestation with the *Sarcoptes scabiei* mite, *Sarcoptes scabiei* var. *hominis*, is a member of the arthropod class Arachnida. Scabies manifests in three main clinical forms: classic, nodular, and the highly contagious crusted variant, also referred to as Norwegian scabies. The pathophysiology of scabies involves burrowing female mites, egg-laying, and the development of papules within 2 to 5 weeks of infestation. Histopathologically, scabies typically presents with inflammatory infiltrates, serous exudate, and sometimes the presence of mites and eggs in the reticular dermis. The classic form of scabies often presents with a population of mites ranging from 10 to 15 per individual, requiring about ten minutes of skin-to-skin contact for transmission. The nodular form is characterized by erythematous nodules, while the crusted variant can host millions of mites, primarily afflicting immunocompromised individuals.
Diagnosing scabies primarily relies on clinical presentation, but various techniques, including skin scrapings, videodermoscopy, dermoscopy, skin biopsies, and serologic tests, can aid in confirmation. Treatment options include topical agents like permethrin, oral ivermectin, and other alternatives, with systemic ivermectin gaining popularity due to convenience and higher compliance. Differential diagnosis is essential due to the similarities between scabies and other skin conditions.
In conclusion, scabies remains a challenging public health concern, demanding an interprofessional approach involving healthcare providers, pharmacists, nurses, and patients. Enhanced awareness, accurate diagnosis, treatment adherence, and preventive strategies are essential for effective management of this parasitic skin disease.
Keywords: *Sarcoptes scabiei* mite, Scabies, Skin disease

LOCAL DRUG DELIVERY STRATEGIES TOWARDS WOUND HEALING

Sunny*
*Corresponding Email: sunnyantil0123@gmail.com

A particular biological process known as wound healing is connected to the overall phenomena of growth and tissue regeneration. Several cellular and matrix elements work together to restore the integrity of injured tissue. The goal of the present review paper focused on the physiology of wound healing, medications used to treat wound healing, and local drug delivery systems for possible skin wound therapy. The capacity of the skin to heal a wound is the result of a highly intricate process that involves several different processes, such as vascular response, blood coagulation, fibrin network creation, re-epithelialisation, collagen maturation, and connective tissue remodelling. Wound healing may be controlled with topical antiseptics, topical antibiotics, herbal remedies, and cellular initiators. In order to effectively eradicate infections and shorten the healing process, contemporary antimicrobial treatments that include antibiotics or antiseptics must be investigated. A variety of delivery systems were described, including innovative delivery systems, hydrogels, microspheres, gold and silver nanoparticles, vesicles, emulsifying systems, nanofibres, artificial dressings, three-dimensional printed skin replacements, dendrimers and carbon nanotubes. It may be inferred that enhanced local delivery methods might be used to provide wound healing agents for faster healing of skin wounds.
Keywords: local delivery systems; physiology of wound healing; strategies towards wound healing; wound.

OPTIMIZATION AND CHARACTIZATION OF GINSENG NANOPARTICLE FORMULATION FOR ANTI-ULCER ACTIVITY USING QBD DESIGN

Kartik Sharma[1*], Debaprasad Ghosh[1], Shubhanghni Sharma[1], Ashu Mittal[1]
[1]KIET School of Pharmacy, Muradnagar, Ghaziabad 201206, Uttar Pradesh, India
*Corresponding Email: kartik.2024bph1003@kiet.edu

The study presents the preparation, characterization and evaluation of polymeric chitosan based nanoparticles system for oral delivery of ginseng, to achieve effective, pro-long and rapid antiulcer therapy. Several anti-ulcer drugs are available; however their use and efficacy are limited by the toxic side effects and drug resistance caused by their continuous application. Many any natural products have antiulcer effects with low toxicity and fewer adverse effects. Consequently, natural drugs are being applied as potential therapeutic options in the field of anti-ulcer treatment. As natural medicinal plants, some component of Ginseng has been shown to have excellent efficacy and a good safety profile for anti-ulcer treatment. Ginseng has several beneficial properties including anti-ulcer, anti-inflammatory anti-microbial and anti-cancer or anti-tumour properties. Due to a number of factors, peptide ulcer disease is very common in the community. Chitosan based nanoparticle, concentrating on their adaptable properties and different application in biomedical sciences and engineering. Chitosan based nanoparticles (CS-NPs) were prepared by using ionic gelation technique using calcium chloride as a cross linking agent. The chitosan based nanoparticles were characterized for drug polymer interaction studies by FTIR and DSC techniques, surface coating, and particle size by Zeta sizer, poly-dispersity index, and particle surface morphology using SEM, their internal structure using TEM, and drug entrapment efficiency. The performance of optimized ginseng loaded CS-NPs was evaluated by in-vitro drug release studies using dialysis membrane. Study of characterization found that the amount of drug was stable with all the excipients used in the formulation. No chemical and physical changes were shown. All the 17 formulation are stable after three months. Result shows preparation of the Chitosan Nanoparticle improved the release profile of ginseng from the nanoparticles for successful oral delivery.
Keyword: Ginseng, chitosan, calcium chloride, Nanoparticle, Ionic gelation

ADVANCEMENTS IN NUTRACEUTICAL INNOVATION JOURNEY: FROM TREATMENT MEDICATION TO PREVENTIVE MEDICATION FOR LIPID LOWERING PHYTONUTRIENTS

Singh A. K[1], Kharb R[1], Kandpal J.B[2]
[1]Amity Institute of Pharmacy (AIP), Amity University, Sector-125, Noida (U.P), India.
[2] Ennature Bio Pharma Private Limited, Pharma City Selaqui Dehradun, India.
*Corresponding Email: ashishsinghniet@gmail.com

Objective: Development of green sustainable extraction, formulation and evaluation techniques for long chain fatty alcohol 1-Octacosnol.
Methods: In first stage we have studied the sustainable supercritical CO_2 extraction of 1-Octacosnol from sugar press mud in which we improved extraction yield by optimized operational variables such as pressure, temperature, flow rate of CO_2, process time and salt quantity in the saponification stage. In second stage we have studied the green process and technology for nano encapsulation formulation for better delivery with maintenance of the characteristics and properties of the leading components. its composition was determined by GC-FID, Nano emulsion was made, and the physical stability characteristics were determined.
Results: The isolated compounds were characterized by GC-FID which shows 50% content of octacosanol in the final product. Novel refinement technique through hot ethanolic reflux method has substantially increased the octacosanol assay to ≥ 50% with more than 67% purity from the crude wax assay of 26% obtained by the current method of extraction. The identity of said compound was further authenticated by XRD, DSC and FT-IR studies.
The optimized Nano-emulsion preparation F15 consists of average particle size 720.9 nm, zeta potential -24.5 mV shows stable nano-emulsion oil in water type and encapsulation efficiency was found to be 96.76%, FTIR studies did not show any evidence of interaction between the herbal extract and the polymers. XRD shows conversion of crystalline to amorphous nature of powder.
Conclusion: A purity of the octacosanol obtained was ≤70% and the conversion recovery of Octacosanol was 80.04% by the reflux method thereby representing simplicity of the above process for an industrial feasibility.
Nano encapsulated powder has performed XRD analysis, partition coefficient, Solubility and Dissolution; these were monitored and found to be stable and water-soluble Nano Encapsulated Octacosanol.
Keywords: 1-Octacosanol, Super critical fluid extraction, Encapsulation, Nano-emulsion, partition coefficient.

BIOLOGICAL SCREENING OF CYNODON DACTYLON

Ajay Kumar Verma[1]*
[1]Research Scholar, Maharishi School of Pharmaceutical Sciences, Maharishi University of Information Technology, Lucknow.
*Corresponding Email: ajaykverma66@gmail.com

This study aims to investigate the intriguing realm of *Cynodon dactylon* diverse biological activities. An important source of chemical variety is provided by natural substances. To reduce the likelihood of discovering known bioactive compounds again, several novel strategies are

being used. By altering numerous physiological processes like cell proliferation, redox potential, and signaling transduction pathways, a diet high in polyphenols guards against a variety of chronic diseases. An extraction solvent was used for the dried grass of *Cynodon dactylon*. Subsequently, the extract was extracted using a solvent after being suspended in distilled water. The perennial grass *Cynodon dactylon*, also known as bermudagrass, has several therapeutic uses. The worldwide species *Cynodon dactylon* can be found in warm climates in both hemispheres. Numerous pharmacological actions of *Cynodon dactylon* have been confirmed to be safe at different study levels. According to a phytochemical study, *Cynodon dactylon* is a good source of flavonoids, such as flavanone, which have anti-inflammatory, anti-tumor, anti-oxidant, anti-diabetic, immunomodulatory, and angiogenic properties. Due to their important characteristics, plants serve as the foundation for many scientific disciplines and require careful study in society.

Keywords: Anticancer activity, Imunomodulator activity, Anti-allergy activity, Anti-chikungunya activity, Angiogenic activity.

ANTI-CANCEROUS TARGET SITES OF IMIDAZOLE AND ITS DERIVATIVES

Sonali Gupta[1, 2]*, Anjali Goel[1], Kapil Kumar Goel[2]
[1]Department of Chemistry, Kanya Gurukul Campus, Gurukul Kangri (Deemed to be University) Haridwar, 249407
[2]Department of Pharmaceutical Sciences, Gurukul Kangri (Deemed to be University) Haridwar, 249407
*Corresponding Email: sonaligup41@gmail.com

Nitrogen containing five membered heterocyclic compounds is a topic of interest nowadays due to their approach towards anticancer activity. The success of imidazoles as anticancer agents started with dacarbazine, which triggered interest in the development of imidazole agents.[1] Due to presence of two nitrogen atoms (high polarity, log P≈0) and capability to act as a hydrogen bond donor, Imidazole and its derivatives have been tested and reported for their medical usefulness anti-cancer activities and their potential mechanisms including topoisomerase IIR catalytic inhibition, focal adhesion kinase (FAK) inhibition, c-MYC G-quadruplex DNA stabilization, and aurora kinase inhibition. These molecules modulates various targets including microtubules, tyrosine and serine-threonine kinases, histone deacetylases, p53-Murine Double Minute 2 (MDM2) protein, poly (ADP-ribose) polymerase (PARP), G-quadraplexes, and other targets.

Various imidazole derivatives reported in literature, separated by carbon aliphatic chains from other moieties showed the topoisomerase activity while the few imidazoles where the N of imidazole is substituted with Pyrimidine like heterocyclic moieties reported, possessing an amide linker and urea bridge, respectively, were found to possess remarkable CRAF inhibitory efficiency and more anticancer activities. In few reported compounds where imidazole or benzimidazole when bridged with oxadiazole or thiazole showed the promising microtubule destabilizing agents. The current abstract is based on the Anti-cancerous target sites of Imidazole and its derivatives which have different mechanism of action.

Keywords: Heterocyclic, Imidazole, Pyrimidine, Anti – Cancer.

ANTIDIABETIC ACTIVITY ON HERBAL PLANTS

Neha Srivastava[1]
[1]SRM Modinagar College of Pharmacy, Srmist Delhi Ncr Campus Ghaziabad
*Corresponding Email: Nehas1@srmist.edu.in

Diabetes mellitus is a metabolic disorder that is characterized by resistance due to sufficient secretion of insulin. Nowadays Diabetes mellitus is a very common disease in the world. In diabetes mellitus, besides hyperglycemia, cardiovascular disease is a major cause of death in the world and is mainly due to atherosclerosis. The treatment for diabetes mellitus would be a drug that not only controls the glycemic level but also prevents the development of atherosclerosis and other complications of diabetics. The plant-based antidiabetic remedies are gaining popularity throughout the world and there is a large number of medicinal plants that are traditionally used for the management of diabetes. India has about 45000 plant species and among them, several thousands have been claimed to possess medicinal properties. Indigenous drugs have great importance both from the professional and economic point of view. A large number of plants have been reported to possess anti-diabetic activity e.g. *Aconitum napeilus, Aloe vera, Carum carvi, Cinchorium intybus, Allium cepa, Allivum sativum.*

Keywords: Diabetes mellitus, Hyperglycemia, medicinal plants, anti-diabetic activity.

ANTIMICROBIAL RESISTANCE: AN OVERVIEW ON ANTIBIOTIC RESISTANCE

Medha Tyagi[1]
[1]ITS College Of Pharmacy, Muradnagar, Ghaziabad, Uttar Pradesh
*Corresponding Email: medhatyagi1234@gmail.com

Antimicrobial resistance (AMR) occurs when microbes evolve mechanism that protect them from the effects of antimicrobials (drugs used to treat infection). All classes evolve resistance like fungi (antifungal resistance), viruse (antiviral resistance), bacteria (antibiotic resistance) and many more. A problem that has plagued antibiotic therapy from the earliest days is the resistance. The current challenges related to antibiotic resistance are unique and differ from the challenges of the past since new pathogens are involved and continue to evolve. Strains with resistance to multiple antibiotic classes have emerged which the discovery of new antibiotics has failed to match. The consequences of antibiotic resistance are grave with mortality and morbidity continually on the rise.

Bacteria have produced sophisticated mechanism of drug resistance to avoid killing by antimicrobial molecules. Resistance to one antimicrobial class can usually be achieved through multiple biochemical pathways. As an example, fluoroquinolones resistance can occur due to three different biochemical routes, all of which may coexists in the same bacteria at a given time. If we are to tackle this problem, efforts on research and development need to be heavily increased and supported. A complete understanding of the mechanism by which bacteria become resistance to antibiotic is of paramount impotance to design novel strategies to counter the resistance threat.

Keywords: Antimicrobial, Resistance, Antibiotic, Pathogens, Strain

ANTIMICROBIAL RESISTANCE: RESPONSIBILITY OF PHARMA SECTOR

Nishu[1*], Saurabh Kumar[1]
[1]Student B. pharma, Hari College of Pharmacy, Saharanpur, Uttar Pradesh

*Corresponding Email: sk95487120@gmail.com

Antimicrobial resistance occurs when microorganisms such as - Bacteria (Mycobacterium tuberclosis), parasite (malaria), Virus (HIV) and Fungi (Candida) evolve and become resistant thedrugs designed to kill them.
AMR is a significant global health concern, as it can lead to ineffective treatment and the spreadof the infection in response to this threat, the United Nations and the WHO have called for multisectoral, multidisciplinary action, recognizing that human, animals and environmental health are interdependent. Although the pharmaceutical industry clearly has a leading role in developing novel antimicrobials and vaccines, it is also active in many areas supporting antimicrobial stewardship (AMS). These programs aim to optimize the use of antimicrobials to treat infections and involve educating health care professionals and the public about the appropriate use of the antibiotics.
Collaboration between pharma industry and healthcare providers, government and internationalorganization is essential regulatory compliance in which pharmaceutical companies must adhereto regulation and guidelines related to the development of antimicrobials drugs.
Addressing, antimicrobial resistance requires a collective effort from governments, healthcare professionals, the pharmaceutical industry, and the public. It's a complex challenge that necessitates a multifaceted and collaborative approach.
Keywords - Antimicrobial resistance, antibiotics, stewardship, pharmaceutical industry.

ANTIPROLIFERATIVE POTENTIAL OF ESCITALOPRAM IN DIMETHYLHYDRAZINE (DMH) INDUCED COLON CANCER IN SWISS ALBINO MICE

Neelam Mishra[1]*, Aaditya Singh[1]
[1]Aryakul College of Pharmacy & Research, Lucknow, 226002 India.
*Corresponding Email: mishraneelam06@gmail.com

A term for diseases in which abnormal cells divide without control and can invade nearby tissues. Cancer cells can also spread to other parts of the body through the blood and lymph systems. This research emphasizes on pharmacological evaluation of anti-colon cancer effect of escitalopram in albino mice by using behavioral and hematological models. Animal House, Aryakul College of Pharmacy & Research, Lucknow provided albino mice of either sex weighing 70-90g. All the animals were divided into 5 groups (n=6); Group 1 (NC): Mice are administered only 0.25% CMC once a week up to 28 days. Group 2 (CC): Mice are administered DMH (40mg/kg, o.d.) once a week up to 28 days. Group 3 (PC): Mice are administered DMH (40mg/kg, o.d.) once a week up to 28 days + Fluorouracil (10mg/kg) once a day for 15 days. Group 4 (T1): Mice are administered DMH (40mg/kg) once a week up to 28 days + Escitalopram (5mg/kg) once a day for 15 days. Group 5 (T2): Mice are administered DMH (40mg/kg) once in a week up to 28 days + Escitalopram (10mg/kg) once a day for 15 days. Theywere evaluated for parameters like determination of pH, acidity, of ALT, AST & LDH levels and estimation of lipid profile. The results of the current study demonstrate that Escitalopram administration influences ameliorating anticancer effects by altering several processes,including Phase I & II biotransformation. lipid peroxidation, enzymes, antioxidants, and histopatholgical alterations. It concluded that Escitalopram is effective in management of colon cancer in animal model. This study suggests that Escitalopram can also be given in the treatment of colorectal cancer in human beings after successful clinical trials.

ANTIMICROBIAL RESISTANCE: AN OVERVIEW OF PENICILLIN

Anushka Gahlot[1]* Mukundlata Bharti[1]
[1]Dr. K. N. Modi Institute of Pharmaceutical Education & Research, Modinagar, Ghaziabad, Uttar Pradesh, India
*Corresponding Email: anush22dec@gmail.com

Antimicrobial resistance occurs when bacteria, viruses, fungi, and parasites change over time and no longer respond to medicines . This makes infections harder to treat and increases the risk of disease spread, severe illness, and death. August 8, 2023 – 569,000 deaths were linked to bacterial antimicrobial resistance in all 35 countries of the WHO Region of the America. That means the germs are not killed and continue to grow. Antibiotic resistance is accelerated by the misuse and overuse as well as poor infection prevention and control, happens when germs like bacteria and fungi develop the ability to defeat the drugs designed to kill them.
Some examples of Antimicrobial resistance are Beta lactams, Penicillin, Tetracycline, Macrolides, Fluoroquinolones, Cephalosporin. Antimicrobial resistance mechanisms fall into these categories:
(1) Limiting uptake of a drug
(2) Modifying a drug Target
(3) Inactivating a drug.
(4) Active drug efflux
Penicillin is a medication used to manage and treat a wide range of infections. It is the beta -lactam antibiotics class of drugs. They are mostly used class of antibiotics. Penicillin are natural and semi-synthetic. This is the class of beta- lactam. Penicillin is a group of antibiotics which includes penicillin g (intravenous use), penicillin V (use of mouth), procaine penicillin, and benzathine penicillin (intramuscular use) Penicillin antibiotics were among the first medication to be effective against many bacterial infections caused by staphylococcus and streptococcus.
Keywords: Antibiotics, gram negative, gram positive, penicillin binding protein, Beta lactam.

ORAL PRESENTATION ON DIABETES AND ITS PATHOPHYSIOLOGY, TREATMENTS AND EPIDEMIOLOGY OF DIABETES

Ashwini Mishra[1]*
[1]Shambunath Institute of Pharmacy, Jhalwa, Prayagraj, Uttar Pradesh.
*Corresponding Email: Ashwinimishra6388@gmail.com

Diabetes mellitus is a well-known long-term disorder which happen due to insufficient release of insulin Hormone from beta cells of the Langerhans of pancreas Or when our body could not utilize the proper amount of insulin Hormone.
This disorder causes various complications in the body and affects directly and indirectly many of the functions in the body. (WHO 2022) According to WHO, in 2014, It was found that there were 8.5 % of the total population of the young and other persons more than 18 year were suffering from diabetes mellitus.
Mainly diabetes is classified into 3 types which are Type 1, Type 2 and gestational diabetes. Type 2 diabetes which is also called non-insulin

dependent or adult onset, characterized when our body cannot utilize the proper amount of the insulin which is already present in the blood. Symptoms include polyuria, polydipsia, constant hunger, weight loss, vision changes, and tiredness. These symptoms may rise spontaneously. WHO brought out the global diabetes compact in April of the year 2021 for the prevention and care of diabetes mellitus mainly for the poor and developing countries. This compact is helpful to good communication in the world for lowering the complications of diabetes and also helpful in the improvement of diabetes treatment. (WHO 2021) After comparing the patients of type 2 diabetes mellitus in the world, it was found that near about 50 % of the total young persons are suffering from this disorder in India and China only.
It suggests the proper hormonal regulation for diabetes and improvement in the insulin as well as in the other drugs such as sulfonylureas, metformin, pioglitazone and some natural products are helpful in the treatment of diabetes mellitus. In the May month of the year 2022, WHA give its statement in form of five global diabetes coverage for their target about the treatment to be complete till 2030. (WHO 2022)
Keyword: Global., worldwide, WHO, WHA

ANTIMICROBIAL RESISTANCE: AN OVERVIEW OF B-LACTAM

Astha Chaudhary[1]* Sweta Pundir[1]
[1]I.T.S College of Pharmacy, Muradnagar, Ghaziabad, Uttar Pradesh, India
*Corresponding Email: asthapanwar24@gmail.com

Antimicrobial resistance (AMR) occurs when bacteria, viruses, fungi, and parasites change over time and no longer respond to medicines. This makes infections harder to treat and increases the risk of disease spread, severe illness, and death. August 8, 2023 – 569,000 deaths were linked to bacterial antimicrobial resistance (AMR) in all 35 countries of the WHO Region of the Americas. That means the germs are not killed and continue to grow. Antibiotic resistance is accelerated by the misuse and overuse as well as poor infection prevention and control, happens when germs like bacteria and fungi develop the ability to defeat the drugs designed to kill them. Some examples of Antimicrobial resistance are Beta lactams, Penicillin, Tetracycline, Macrolides, Fluoroquinolones, cephalosporin. Antimicrobial resistance mechanisms fall into these categories: (1) limiting uptake of a drug (2) modifying a drug target (3) inactivating a drug.
Beta-lactams are a class of antibiotics that are used to kill bacteria. They are the most widely used class of antibiotics. Beta-lactams are effective against both Gram-negative and Gram-positive bacteria. They are made up of a 3-carbon and 1-nitrogen ring. They are bactericidal antibiotics that bind covalently to and inhibit penicillin binding proteins (PBPs). Beta-lactams work by: inhibiting cell wall synthesis , binding to PBPs in the cytoplasmic membrane, causes cell lysis and death. The class of Beta lactams are: Penicillin , Cephalosporin, Monobactum, Carbapenems , Beta lactamase inhibitor .
Keywords: Antibiotics, Beta lactams, Tetracycline, Gram positive, Gram negative , Penicillin binding protein.

A REVIEW ON RENOPROTECTIVE AND ANTIDIABETIC EFFECT OF *COSTUS IGNEUS* IN HIGH FAT DIET FED & STREPTOZOTOCIN INDUCED DIABETIC nephropathy in rat

Reetesh Malvi[1], Dr. Lokesh Verma[1]
SAGE University, Bhopal, Madhya Pradesh, India
*Corresponding Email: reeteshmalvi@gmail.com

Diabetic nephropathy (DN) is a leading cause of mortality and morbidity in patients with diabetes. Many experimental evidences suggest that persistent hyperglycaemia generates intracellular reactive oxygen species (ROS) and upregulates transforming growth factor-b1 and extracellular matrix expression in messangial and tubular epithelial cells, which is involved in the pathogenesis of diabetes and more importantly in the development of diabetic complications.
This review collected information using the different searching engines to explore various medicinal properties of *Costus igneus* (insulin plant) and mode of action of all major phytoconstituents as anti-diabetic activity and its use in renal complications.
Aim & Objective: Management of diabetes mellitus is a challenge for clinicians. Uncontrolled hyperglycemia increases the risk of microvascular and macrovascular complications, damaging the body systems. Although a number of antidiabetic drugs are available for therapeutic intervention, toxicity, loss of efficacy in chronic use and high cost of treatment have necessitated the search for new molecules to manage diabetes.
Methods: This review is focused on the research of chemical constituents present in the plant *costus igneus* that help to regulate glucose level and chronic complications.
Results: This study suggested the effect of flavonoids to treat the diabetes and its chronic complication as diabetic nephropathy.
Summary & conclusion: After reviewing the article is was concluded that many research were done to find safe and effective ways to improve this disease. flavonoids present in *costus igneus* leaf which are one of the most essential low molecular weight phenolic chemicals that plays an important role in managing the complications.
Keyword: Antidiabetic, Diabetic Nephropathy, Costus igneus

MOLECULAR DOCKING ASSESSMENT OF UDCA AND TUDCA FOR PARKINSON'S DISEASE MANAGEMENT

Aswin K[1]*, Nandhini S[1]
[1]Department of Pharmacognosy, Sri Ramachandra Faculty of Pharmacy, Sri Ramachandra Institute of Higher Education and Research, Porur, Chennai- 600 116.
*Corresponding Email: nandypharma1787@gmail.com

Introduction: Various neurodegenerative conditions, including Parkinson's disease (PD), are significantly influenced by bile acids (BA). Ursodeoxycholic acid (UDCA) and its taurine conjugate, tauroursodeoxycholic acid (TUDCA), have emerged as powerful agents with potential anti-parkinsonian properties. These compounds, UDCA and TUDCA, are effective in part by hindering the downstream mitochondrial pathway of cell death, inhibiting apoptosis, averting the formation of reactive oxygen radicals (ROS), and stabilizing the unfolded protein response (UPR).
Aim: In this study, we set out to validate the impact of UDCA and TUDCA on Parkinson's disease through a molecular docking approach.
Objective: The primary aim of this study was to create a neural network capable of predicting the impact of bile acids and their synthetic counterparts on Parkinson's disease by conducting a docking-based analysis to understand how these acids interact with relevant protein complexes.

Materials and Methods: *In-silico* investigations were conducted using PyX 0.16 software for molecular docking, and the results were subsequently validated using Discovery Studio 4.5. A total of nine proteins were chosen as potential drug targets, each associated with stimulating mitochondrial biogenesis and increasing dopamine levels.
Results: The molecular docking analysis demonstrated that UDCA and TUDCA exhibited binding affinities within the range of -4.5 to -9.6 kcal/mol. Notably, UDCA exhibited a strong binding affinity to COMT (-9.1 kcal/mol) and NBκ2 (-7.1 kcal/mol). Conversely, Taurodeoxycholic acid (TUDCA) displayed a higher binding affinity to the D2 receptor, MAO-B, PGC1α, PINK1/Parkin, Nrf2, Epidermal growth factor, and Tyrosine-protein kinase FYN (-9.0, -9.6, -4.5, -7.6, -6.8, -7.5, and 7.2 kcal/mol).
Conclusion: This study yields significant evidence to support the potential application of UDCA and TUDCA in the treatment of Parkinson's disease. The docking results underscore the promise of these bile acids in mitigating the disease's impact and present a compelling case for further exploration and potential development of novel therapeutic strategies for Parkinson's disease management.
Keywords: Ursodeoxycholic acid, Taurodeoxycholic acid, Molecular docking, Parkinson's disease.

NANOTECHNOLOGY IN THE TREATMENT OF ALOPECIA: A PARADIGM SHIFT IN HAIR REGROWTH THERAPY

Ayush Asthana[1], N.G. Raghavendra Rao[1], Monika Kaurav[1], Shagun Nehra[1]
[1]Kiet School of Pharmacy, Kiet Group of Institutions, Ghaziabad, Delhi-NCR, India 201206
*Corresponding Email: ayushkumar145623@gmail.com

Alopecia, a condition characterized by hair loss, poses a substantial challenge to both patients and dermatologists. Existing treatments have limited efficacy and can be associated with side effects. Nanotechnology, a cutting-edge technology in drug delivery, have recently gained attention for their potential in revolutionizing the treatment of alopecia. This abstract sheds light on the emerging field of nanotechnology and their application in alopecia therapy. Nanotechnology encompass a variety of nanoscale drug carriers, such as nanoparticles, liposomes, and micelles, that offer numerous advantages for targeted and controlled drug delivery. They enable precise dosing, prolonged release kinetics, and the potential for enhanced drug penetration into hair follicles, the primary site of concern in alopecia. Nanotechnology serve as an ideal platform for the encapsulation of hair growth-promoting compounds, including growth factors, peptides, and pharmaceutical agents. The nanoscale carriers protect these active ingredients from degradation, ensuring their stability and sustained release over time, leading to enhanced efficacy in stimulating hair regrowth. Moreover, nanotechnology provide the opportunity for personalized treatment regimens, tailoring the therapeutic payload to the unique needs of each patient. This approach can be particularly advantageous in androgenetic alopecia, alopecia areata, and other hair loss conditions where the underlying causes and patient characteristics vary. The future of alopecia therapy may indeed be shaped by the precision and versatility of nanotechnology -based interventions, fostering renewed hope for individuals grappling with hair loss.
Keywords:- Alopecia, Nanotechnology, Nanoparticle ,androgenic alopecia.

UV SPECTROPHOTOMETRIC METHOD FOR THE SOLUBILITY DETERMINATION OF ORLISTAT USING DIFFERENT SOLVENTS

Bhavik khatter[1]
[1]KIET School of Pharmacy, KIET College, Shivam Vihar, Muradnagar, Uttar Pradesh 201206
*Corresponding Email: bhavikkhatter22@gmail.com

A UV spectrophotometric method was used for the determination of the solubility of Orlistat in different solvents with different ratios for solvents such as ethanol, methanol, acetonitrile, chloroform and water as the solubility of the drug plays a crucial role in the HPLC Method for the method development and validation of the drug and also in analyzing the drug on various parameters.
An anti-obesity medication called orlistat aids in the management of obesity. Orlistat helps people lose weight by momentarily suppressing stomach and pancreatic lipases. Triglyceride breakdown is hampered by the inactive lipases, which prevents the absorption of free fatty acids. Solubility for various solvents such as ethanol, methanol, acetonitrile, chloroform and water were checked and the UV spectrum was recorded between 200 - 400 nm with λ -max of 205nm, 204nm,204nm,206nm with the absorbance of 0.097 ,0.063 ,0.276 ,0.380 respectively.
And it is found that Orlistat is, very soluble in ethanol with and acetonitrile and freely soluble in chloroform and methanol and practically insoluble in water.
Hence further the solubilities with a ratio of 7:3 of Ethanol: Acetonitrile were checked and found that the drug Orlistat was more soluble in Ethanol and hence Ethanol is chosen as the best solvent for further studies.
keywords: UV Spectrophotometric, HPLC, Method Development

CHALLENGES AND RECENT ADVANCES IN DRUG DELIVERY WITH ORODISPERSIBLE TABLETS

Vaibhav Sharma[1]*, Anuj Pathak[1], Balwan Sigh[1], Garima Katyal[1], Sahil Tyagi[1]
[1]KIET School of Pharmacy, KIET Group of Institutions, Delhi-NCR, Meerut Road, Ghaziabad- 201206, UP, India.
*Corresponding Email: vs9847265@gmail.com

The oral route of drug administration has gained recognition as the preferred mode in the pharmaceutical industry owing to its established reputation for being the most reliable, affordable, and most accessible method. As a consequence, it has been shown to promote the greatest level of patient compliance. The oral delivery of active compounds involves several technical approaches, including Oro-dispersible tablets (ODTs), which are a subset of these methods. Oro-dispersible pills, sometimes referred to as disintegrating tablets, mouth-dissolving tablets, quick dissolving tablets, fast-disintegrating tablets, or fast-dissolving tablets, are a kind of pharmaceutical formulation. Orally disintegrating tablets (ODTs) are designed with the objective of achieving breakdown times typically less than one minute. One of the primary challenges in this process is to ensure the preservation of enough mechanical strength. The current iteration of orally disintegrating tablets (ODTs) exhibits the capability to be integrated with a patented technique, hence enhancing taste masking, enabling modified-release characteristics, and improving bioavailability. In addition to the conventional wet granulation processes, the field of technology used in the production of these systems has witnessed various improvements, including the use of melt extrusion, sublimation, freeze drying, cotton candy, and direct compression methods. The efficacy of orally disintegrating tablets (ODTs) is contingent upon the specific technological processes used during their production. The tablets' ability to disintegrate orally may be attributed to the fast penetration of water into the tablet matrix, leading to

the formation of a porous structure and facilitating rapid disintegration. This article aims to examine the desirable attributes, benefits and drawbacks, formulation considerations, formulation methodologies, and future prospects of orally disintegrating tablets (ODTs). This article aims to examine the desirable attributes, benefits and drawbacks, formulation considerations, formulation methodologies, and future prospects of orally disintegrating tablets (ODTs).
keywords**:** Oral disintegrating tablets, Formulation technologies, mouth-dissolving tablets, direct compression.

AN OVERVIEW OF NANOTECHNOLOGY BASED APPROACHES TO REDUCE THE HEPATOTOXICITY

Abdul Mannan[1]* Bhavani Pentela[1], Deepika Pathak[1], Saumya Das[1]
[1]Noida Institute of Engineering and Technology (Pharmacy Institute), Knowledge Park-2, Greater Noida, 201306, Uttar Pradesh
*Corresponding Email: khanabdulmannan7786@gmail.com

A number of different liver injury etiologies can cause hepato toxicity, a reversible disease course that can result in serious side effects such liver cirrhosis, liver failure, and even liver cancer. Every year, 2 million individuals pass away and 844 million people suffer. A few of the drawbacks of conventional diagnostic techniques and medication-based treatment include imprecise results and insufficient therapeutic efficacy. When it comes to treating liver damage, nanomedicine—a medical use of nanotechnology—shows considerable promise. In addition to improving tissue penetration and cellular internalization and improving imaging contrast, nanomedicine also accomplishes targeted medication administration, combination therapy, and diagnosis and therapy (theranostics). Here, we highlight novel targets and pathways in liver toxicity, together with the most current advancements in nanotechnology design and development for hepatic toxicity delivery systems. Nanomedicine involves the design and application of nanoparticles (NPs) like Silver Nanoparticles, Gold Nanoparticles and many more in the diagnosis and treatment of diseases. As an important area of nanotechnology research, nanomedicine has greatly contributed to biomedicine in recent decades. Finely designed nanostructures have been fabricated as effective therapeutic agents for liver toxicity with specific site-targeting abilities. One of the most widely utilized metal nanoparticles, silver nanoparticles (AgNPs), have a variety of uses, including cell biology, data storage, drug delivery, ointment, cosmetics, Coatings, chemical catalysts, and antibacterial materials in particular agents. Nanoparticles are best utilised for the delivery of many drugs like Quercetin and many more for the treatment of liver toxicity. To effectively aid in the recovery of liver function, a platform for the gene-delivery of novel nanoparticles (NNPs) based on nanomedicine must be developed. It has been shown that NNPs have the capacity to shield cells from toxic stress in both in vitro and in vivo settings.
Keywords- Etiologies, Liver cirrhosis, Diagnostic, Theranostics, Nanoparticles.

FORMULATION AND EVALUATION OF SKIN FIRMING TOPICAL CREAM USING *VITIS VINIFERA* (L) SEED AND PEEL EXTRACT

Roopa C[1]*, Bhuvaneshwari J[1]
[1]Department of pharmacognosy, Al-Ameen college of pharmacy, Bengaluru 560027, Karnataka, India.
*Corresponding Email: roopa10898@gmail.com

Herbal remedies have gained popularity in cosmetics, primarily for skin care. Herbs are generally perceived to be safe and devoid of adverse effects. According to Ayurveda grapes(*Vitis vinifera*) is framed as Drakshaa Phalottamma, meaning 'the best of all the fruits'. Grape seed is a health food supplement which are considered as waste products of the winery and grape juice industry but extracts of grape seed, peel and its oil are reported to promote collagen formation; having skin conditioning; anti- fungal; anti-microbial; sunscreen; anti-aging; anti-oxidant activities. Hence grape seed extract is an important functional ingredient in the cosmetic industry. Grape seed and grape peel were subjected to hydro-methanolic extraction through soxhlation and tested for their phytochemical composition, total Polyphenol and flavonoid contents. Polyphenol and flavonoid contents were higher for Grape seed extract(GSE) as compared to Grape peel extract(GPE). The above extracts were comparatively studied for their antioxidant potential by in-vitro DPPH scavenging and Ferric ion reducing power assays. GSE showed better antioxidant activity compared to GPE. The combination of GSE, GPE along with grape seed oil were formulated as oil in water Cream. Physico-chemical parameters for the cream were determined and stability tests were done by storing at 25°C ±3°C, 40°C ±1°C and at 4°C ±1°C. Cream was smooth, uniform with pH of 5.92 and SPF of 20. The extracts and formulations were evaluated for elastase and tyrosinase inhibitory activities which showed significant elastase and tyrosinase inhibition, indicating both extracts are good ingredients for skin firming properties.
Keywords**:** Grape seed extract; grape peel extract; antioxidant activity; elastase inhibition; Tyrosinase inhibition

FORMULATION OF MODIFIED RELEASE PELLETS OF MONTOLUKAST SODIUM: A REVIEW

Priyanshu Tyagi[1]*,Anuj Pathak[1]
[1]KIET School Of Pharmacy, KIET Group Of Institutions, Delhi NCR-Ghaziabad-201206, U.P,India
*Corresponding Email: Ypt924@gmail.com

The present review was carried out with an aim of preparing modified release pellets of the anti-asthma drug montelukast sodium, which is a BCS class II medication having a half-life of 2.7 to 5.5 hours that is used to treat Nocturnal asthma also reduce symptoms of seasonal allergies. It works by blocking leukotriene receptors. Whereas, On average, oral bioavailability is 64%. Montelukast sodium is an antagonist of the cysteinyl leukotriene receptor that is used to treat asthma. People who have chronic asthma frequently have flare-ups in the early morning, between 4 and 6 am. Patients so discover that it is impractical to take an immediate-release medication in early hours of the morning. One way to facilitate the delivery of the drug at this time is to utilise a modified release formulation of montelukast sodium, which, when taken at bedtime, distributes the medication as a pulsed administration without requiring the patient to wake up. The coating level increase increased the lag time enough to allow the drug to possibly be released early in the morning. Consequently, a review study of the dosage form of modified release pellets to prevent early morning asthma attacks and deteriorating symptoms may be developed successfully.
Keywords: Nocturnal asthma, Cysteinyl leukotriene receptor, Modified pellets

MICROPARTICLE DRUG DELIVERY: A REVIEW OF THE SYSTEM AND ITS WIDE RANGE OF THERAPEUTIC APPLICATIONS IN DIABETES

Gyan Singh[1*], Satish kumar sharma[1]
[1]Glocal school of pharmacy, Glocal University, Mirzapur pole, Saharanpur,U.P
*Corresponding Email: gspatel.singh320@gmail.com

Modern society gives great thought to the microparticulate drug delivery system (MDDS) because of its potential to solve the issues that have plagued conventional medicine for so long. Round particles with sizes between 10 and 1000 nm in diameter are called microparticles (MPs). MPs have the ability to encapsulate both soluble and insoluble substances. In clinical trials, MDDS were shown to be superior to conventional drug delivery methods in enhancing drug bioavailability, stability, targeting, and release control. By decreasing medication toxicity and dosing frequency, MPs also provide comfort, ease of administration, and enhanced patient compliance. In this article, we will go over how MDDS are made, how the medicine is released, and how they may be used in therapy. Drug release control via gastroretention, enhanced drug dissolution, reduced side effects, targeted drug delivery, mucosal drug delivery, improved insulin stability, natural products loaded with MPs, sustained drug release, and administration routes were also discussed in detail as therapeutic applications of antidiabetic drug-loaded MPs. The present scenario and potential future developments in creating MPs loaded with antidiabetic medicines were also examined.
Keywords: MDDS, Stability, Drug release, Microsphere

HERBAL EXFOLIATING HANDWASH

Devashree K. Parakh[1*], Rutuja N. Bagad[1], Avinash R. Patil[1], Shahid R. Quraishi[1]
[1]Mahatma Gandhi Vidyamandir's Samajshri Prashantdada Hiray College of Pharmacy, Loknete Vyankatrao Hiray Marg, Malegaon Camp, Malegao, Nashik, Maharashtra, India. (423105)
*Corresponding Email: parakhdevashree614@gmail.com

As being humans, we all prioritize personal hygiene. Good personal hygiene reflects well-behavioural practices, avoids various infectious diseases. Hand hygiene equally matters while personal hygiene is taken into account. It would be more significant, if hand hygiene would be being practicised for cleaning of hands as well as exfoliating them. The herbal exfoliating handwash contains not only cleaning agents but also exfoliating agents. Exfoliating agents such as coconut husk, pistachio shells, corn cob, walnut shells, etc. scrub the skin of hands by clogging the pores. Due to usage of various herbal extracts like *Tulsi, Neem,* etc. with varying properties like antiseptic, antimicrobial, antibacterial are present with minimal irritations or itching. Moreover, the foaming agent added is *Shikaki* which minimises the toxic counterparts of synthetic ones. Exfoliating agents are being suspended in a viscous base of handwash gel. Several mechanical processes like agitation are being utilised for the same. The herbal exfoliating handwash is more convenient because it is a stable suspension. It has a variety of properties which are essential for a good hand hygiene practice. Exfoliating of hand is the main highlighted aspect of this handwash which softens the skin. Anyone can get rid of adhered colours on palm, greasy or oily hands, dirt from palms on cleaning hands using this handwash in a smooth and exfoliating manner.
keywords: Hand hygiene, exfoliating, corn cob, antiseptic, shikakai, suspension, oily hands

UV METHOD DEVELOPMENT AND OPTIMIZATION OF EFAVIRENZ

Ishu Tyagi[1]*, K. Nagarajan[1]
[1]Kiet School Of Pharmacy, Kiet Group of Institutions, Ghaziabad, Delhi-Ncr, India 201206
*Corresponding Email: Tyagiishan17@gmail.com

An antiviral drug called efavirenz is frequently used to treat HIV/AIDS. Efavirenz is the firstchoice non-nucleotide reverse transcriptase inhibitor for antiretroviral therapy in many nations. It is specific to human immunodeficiency virus type-1 and is taken orally. The reason for its success is its extended half-life, lasting between 52 and 76 hours even after several dosages. The medication is not very soluble in water. Preparing poorly soluble drugs for oral administration will be one of the primary challenges formulation scientists will face in their line of work. Because of its ease of use and affordability in terms of preparation and assessment, the solid dispersion technique has consistently been the most popular way to enhance drug solubility and bioavailability among the various methods. There are various side effects that are seen with the use of efavirenz that are they commonly cause a severe skin response (heat, painful throat, burning eyes, skin irritation, blistering and peeling rash on the skin), indications of an allergic reaction (hives, breathing problems, facial or throat swelling). Efavirenz solubility is crucial in determining its bioavailability and therapeutic efficacy. This study used UV spectrophotometer, a quick and non-destructive analytical method, to look into the solubility of efavirenz in various solvents. The solubility profile of efavirenz was assessed using a variety of solvents, such as water, ethanol, methanol, tri butyl methyl ether, n-hexane, and a mixture of solvents. To quantify the solubility in each solvent, using a UV spectrophotometer, the absorbance of efavirenz solutions at specific wavelengths was measured. The drug profile of efavirenz is as follows: the solubility of the drug is higher in methanol and tri butyl methyl ether with its maximum wavelength (λ max) at 250 nm and 252nm.
Keywords: Efavirenz, HIV, AIDS, Antiretroviral, UV spectrophotometer, Wavelengths.

FROM DOSE TO RESPONSE: "PHARMACEUTICAL INSIGHT ANDTOXICOLOGICAL IMPACTS".

Rahul Mathuria[1], Keshav Thakur[1]
[1]Student B. Pharm- Hari College of Pharmacy Saharnpur
*Corresponding Email: mathur8006012876@gmail.com

Two essential sub fields of the biomedical sciences that examine howchemicals affect biological systems are pharmacology and toxicology.The study of pharmacology explores how medications affect living things, including their modes of action, intended applications, and possible adverse effects. Contrarily, toxicology is concerned with thenegative impacts of chemicals, determining and comprehending the possible harm that they could bring to living things. The essential concepts, procedures, and applications in toxicology and pharmacology are all covered in this thorough examination. It explains drug-receptor interactions, pharmacokinetics, and pharmacodynamics—the processes by which pharmaceuticals carry out their therapeutic effects. This paper examines the various aspects of toxicology, including the characterization, metabolism, distribution, and mechanisms of toxicity of poisonous chemicals.
This abstract also emphasizes how critical these fields are to risk assessment, drug development, and regulatory decision-making. It emphasizes how important pharmacology is to improving therapeutic efficacy and safety and how toxicology is necessary to evaluate the risks associated

with exposure to various substances.
In order to advance healthcare, shape regulatory policies, and protect public health, it is essential to integrate toxicology and pharmacology in order to fully comprehend the intricacies of pharmacological effects and adverse responses. The combined efforts in these domains are focused on improving the creation of safer and more efficient therapeutic interventions while reducing the dangers related to chemical exposure as technology and approaches keep developing.
pharmacology and toxicology work together to better understand how chemicals affect biological systems despite having different areas of expertise. This abstract highlight their significant contributions to modern medicine, drug discovery, and environmental and public health protection.
Keywords: Drug receptors interaction, toxicological impact of drugs,therapeutic efficacy

DESIGN AND EVALUATION OF CONTROLLED RELEASE LOSARTAN POTASSIUM TABLETS USING STARCH BASED POLYMERS

RLC.Sasidhar[1]*, R. Nagaraju[1], S. Vidyadhara[1]
[1]Chebrolu Hanumaiah Institute of Pharmaceutical Sciences, Guntur, A.P.
*Corresponding Email: rlcsasidhar@gmail.com

The objective of the present investigation is to synthesize starch urea and cross linked starch urea, a new starch based polymers and to evaluate its application in the design of controlled release matrix tablets of losartan potassium. The release rate controlling efficiency of starch urea and cross linked starch urea was also compared with that of known polymers. Starch urea was synthesized by gelatinization of starch in the presence of urea where as cross linked starch urea polymer was synthesized by gelatinization of starch in the presence of urea and calcium chloride. Matrix tablets of losartan potassium (25mg) were formulated by employing starch urea and cross linked starch urea polymers in different proportions and the tablets were evaluated. Losartan potassium release from the formulated matrix tablets was slow and spread over 24h and depended on percent polymer in the tablet. Release was diffusion controlled and followed first order kinetics. Non-Fickian diffusion was the drug release mechanism from the formulated tablets. Losartan potassium release from matrix tablets formulated with 40%starch urea and 40%cross linked starch urea are the best formulations. Starch urea and cross linked starch urea polymers was found to suitable for the design of oral controlled release tablets of losartan potassium. The order of increasing release rate controlling efficiency with various polymers was cross linked starch urea > starch urea > methyl cellulose > ethyl cellulose > HPMC. Cross linked starch urea and starch urea is a better release rate controlling polymers than HPMC, ethyl cellulose and methyl cellulose for obtaining controlled release over 24hrs.
Key words: Losartan Potassium, Modified Starches, Controlled Release

PHARMACEUTICAL TECHNOLOGY AND A.I

Mohd Arsh[1]
[1]Student B.Pharm, Hari College of Pharmacy Saharanpur
*Corresponding Email: arsharmy74@gmail.com

Pharmaceutical technology plays a crucial role in the pharmacy and pharmaceutical industry, encompassing methods, techniques, and instruments for drug manufacturing, preparation, compounding, packaging, and storage. In the current landscape, it presents new opportunities and challenges, including drug design, discovery, and machine-related issues. The advancement of pharmaceutical technology is evident through the integration of artificial intelligence (AI), streamlining processes such as drug discovery, design, and minimizing errors in the industry. AI's development enhances pharmaceutical technology, facilitating the identification of various diseases and improving packaging in the pharmaceutical sector. Overall, pharmaceutical technology holds a pivotal position in the pharmaceutical industry's advancements.
Key word : Drug Design, Drug Discovery, API error decrease, Dry method easy etc

ZEBRAFISH: A VERSATILE AND TRANSPARENT MODEL FOR CANCER RESEARCH

Mabi MP[1]*, Marwa Farzana U[1], Karthikeyan M[1]
[1]Department of Pharmacology, Grace college of Pharmacy, Palakkad 678004
*Corresponding Email: mabimadhavan@gmail.com

Zebrafish are rapidly becoming a leading model organism for cancer research. the genetic pathways drawing cancer are highly conserved between zebrafish and humans and the ability to easily manipulate the zebrafish genome to rapidly generate transgenic animals makes zebrafish an excellent model organism. their genome harbours 26,206 protein coding genes ,with a significant overlap with crucial human genes .this makes them a powerful tool to study cancer ,and its complex interactions within the tumour microenvironment .zebrafish offers a unique advantage for drug screening, with the ease of drug administration to both embryos and adult fish. The potential to observe tomour progression and metastasis in real time ,combined with the ability to coduct high throughput genetic and phenotypic screening. genetic manipulation is an important method in zebrafish research, it is the ability to induce cancers by expressing genes ,including human oncogenes. techniques to induce cancers are transgenesis, cell transplantation ,high throughput compound screening ,reverse genetic knockout, expression of transgenes .in the realm of epigenetics , zebrafish again proves its worth by conserving crucial markers that regulate gene expression across vertebrates ,mirroring the patterns seen in humans .this conservation extends to essential elements of cancer including cell cycle genes, tumour suppressors and oncogenes. the transparent development from fertilised egg enables real time ,high resolution imaging of tumour progression and microenvironment interactions ,thus it has a pivotal asset in the pursuit of breakthroughs in cancer research. its a captivating avenue for cancer research ,promising exciting breakthroughs and paving the way for a deeper understanding of cancer biology and innovative therapeutics strategies when dive into the vibrant world of zebrafish research.

ESSENTIAL OILS IN MOTION: INVESTIGATING THE DISQUIET ACTIVITY INDUCED BY VACHA'S ESSENTIAL OIL INCLUSION COMPLEX FOR EMERGING THERAPEUTIC MODALITIES

Mahima[1*], Bhuwanendra Singh[1], Arvind Kumar[2]
[1,2]SD College of Pharmacy & Vocational Studies Bhopa Road, Muzaffarnagar, 251001, Uttar Pradesh, India.

*Corresponding Email: mahimarana863@gmail.com

Acorus calamus Linn., an amphibious and amphibiotic plant used in Ayurveda, is also known as vach, sweet flag, and other names. The inclusion complex is made with cyclodextrin using a variety of techniques, such as coprecipitation, even though the essential oil has wide spectrum action. Acorus calamus oil was first extracted from freshly gathered leaves using a Clevenger equipment for eight hours. The coprecipitation-made inclusion complex, which was then dried in a desiccator for 24 hours: This study effort confirms anxiety studies in part due to the chemical constituent of Acorus calamus known as asarone, among other things. TGA, SEM, and TEM analyses are used for structure confirmation investigations, as well as for confirming the combination of oil with cyclodextrin. The main purpose of cyclodextrin is to improve the stability and bioavailability of the oil. This research confirms that after in vivo studies on Swiss albino mice, cyclodextrin complex with essential oil have anti-anxiety properties with better stability than a Diazepam (Standard Dose) at 1.0 mg/kg by p.o. route. The aforementioned information and medicinal properties of Acorus calamus are also reported in many diseases and disorders.
Keywords: Acorus calamus, Cyclodextrin, Anxiety, α-Asarone, coprecipitation.

ANIMAL MODELS IN ONCOLOGY RESEARCH: A COMPREHENSIVE STUDY ON CHEMICAL INDUCTION OF CANCER

Marwa Farzana U[1]*, Mabi MP[1], Karthikeyan M[1]
[1]Department of Pharmacology, Grace college of Pharmacy, Palakkad 678004
*Corresponding Email: marwamaruuk@gmail.com

The uncontrollable growth of cells which may or may not spread to the whole human body turns up to be one of the most challenging crisis for the human welfare. The body turns up to be one of the most challenging crisis for the human welfare. The prevention of which therefore finds to be the crucial procedure. Oncology research involves the initial procedure of induction of the same in animal models. these involves a variety of procedures including the use of cell lines , chemical induction . chemicals induced in the rodent models are urethane, 4 nitroquinoline n oxide, pristane , acrylamide , n ethyl nitroso urea, 2 amino 1 methyl 6 phenyl imidazo pyridine, polychlorinated biphenyl .urethane is an important model of the kras driven lung cancer, classified as the group 2B carcinogen. 4 nitro quinoline mimic the biological effect of ultraviolet light on various organisms, which induce ora squamous carcinoma. the mechanism of action was found to induce oxidative stress which result in the formation of DNA adducts. pristane is found to alter CYP1A activity and polyamine regulation. Acrylamide is a monomer of polyacrylamide which increase the DNA synthesis in target tissues leading to endometrial cancer. N ethyl nitroso urea induce its action by alkylation and direct interaction with the DNA. Polychlorinated biphenyl to induce the hepatocellular carcinoma. Chemical carcinogenesis studies in animals have directly contributed to a reduction of cancer burden in the human population

STUDY OF DRUG SOLUBILITY OF TRICLOSAN BY USING DIFFERENT SOLVENT UNDER UV SPECTROSCOPY

Mohit Singh[1*], Surbhi Kamboj
[1]Kiet School Of Pharmacy, Kiet Group of Institution, Delhi-Ncr, Ghaziabad-201206, Uttar Pradesh, India
*Corresponding Email: Mohitkumarsingh5285@gmail.com

Triclosan, a synthetic compound with antibacterial and antifungal properties, has been widely used in consumer products due to its antimicrobial properties. Concerns over its efficacy and potential negative effects have prompted adjustments to product formulations and regulatory procedures. Originally added to toothpaste, deodorants, and soaps, among other home and personal care products. Research has shown that triclosan is an efficient inhibitor of bacterial and fungal growth. Because of this feature, manufacturers often used it to enhance the antibacterial properties of their products. The antibacterial properties of triclosan helped to preserve certain products and extended their shelf life by inhibiting the growth of microorganisms that may cause degradation or rotting. According to research, triclosan exposure may cause endocrine disruption and antibiotic resistance, among other health concerns. These risks have caused a re-evaluation of its use in consumer products.
Triclosan's drug solubility was tested in a variety of solvents, including n-Hexane, Pyridine, Toluene, Chloroform, Diethy Ether, Acetonitrile, Methanol, and Ethanol. However, the drug's solubility was found to be highest in Diethy Ether, with a maximum wavelength (λmax) of 280 nm and corresponding absorbance of 0.882.
Keywords: Antimicrobial, Methanol and ACN, **λmax.**

BIOSYNTHESIS OF GOLD NANOPARTICLES FROM *AMARANTHUS GANGETICUS* S. AND ITS ANTI-DIABETIC ACTIVITY ON STREPTOZOTOCIN INDUCED RATS INDUCED RATS

Akila Elias[1]*, Prasanna V Habbu[2], Sudhir Iliger[3]
[1]Department of Pharmacognosy, Al-ameen College of Pharmacy, Bangalore, Karnataka.
[2]Department of Pharmacognosy, SET's College of Pharmacy, Dharwad, Karnataka.
[3]Department of Pharmaceutics, SET's College of Pharmacy, Dharwad, Karnataka.
*Corresponding Email: akila.aacp@gmail.com

Diabetes mellitus is a metabolic disease that causes high blood sugar which causes impairment in parts of the body like nerves, eyes, kidneys, and other organs. The treatment using Oral antihyperglycemics can cause many adverse effects and if given in combination, can lead to drug-drug interactions. To overcome these issues, innovative ant-oxidising substances might be introduced to produce the therapeutic action on the exact target organs. Nowadays, metal nanoparticles are highly used in human health care system due to its excellent biocompatibility and constancy, less cost of methods, and environmentally friendly impressions. In the current study, green methods have been adopted to generate the gold nanoparticles (AuNPs) using *Amaranthus gangeticus* plant which is proven as antidiabetic plant and used to synthesise the green AuNPs from the leaf extract of *A.gangeticus* using 1 mM Gold chloride solution. The synthesized herbal-mediated AuNPs were introduced to different characterization techniques such as UV Spectroscopy, FTIR analysis, X-ray diffraction analysis (XRD), transmission electron microscope (TEM), and Scanning electron microscope (SEM) respectively. The antidiabetic effect of the produced AuNPs was also tested in vivo. The induction of diabetes using STZ showed increased blood glucose, cholesterol, triglycerides, LDL, VLDL, massive loss in body weight. These changes were reversed following the dealing of diabetic rats for 28 days and showed significant inhibition at a dose range of 1 mg/kg AuNPs related with the plant extract-tested group.These obtained results suggested that plant-mediated AuNPs have shown promising antidiabetic when it's correlated to the crude extract.

Keywords: *Diabetes mellitus,* gold nanoparticles, blood glucose, body weight.

FORMULATION AND EVALUATION OF POLYHERBAL PASTILLE FOR MAINTENANCE OF ORAL HYGIENE AND PLAQUE REDUCTION

Nilima Thombre[1]*, Madhura Thete[1] Sanjay Kshirsagar[1]
[1]M.E.T.'s Institute of Pharmacy, Bhujbal Knowledge City, Adgaon, Nasik-422003, *Maharashtra, India.*
*Corresponding Email: nilimat_iop@bkc.met.edu

The purpose of this research work was to formulate an oral dosage form containing all herbal ingredients which will form a Local drug delivery system for plaque reduction as an adjuvant to regular Oral Hygiene Practice.Pastille or polyherbal formulation containing gelatin, glycerin, *Psidium guajava, Mangifera indica, Ficus carica ,Glycyrrhiza glabra,Syzygium aromaticum, Cinnamomum zeylanicum,Foeniculum vulgare*, Himalayan salt, stevia, methyl paraben, propyl parabenwas formulated and evaluated for Plaque reduction. Pastilles were prepared by the Moulding Method. 32 full factorial designs were applied for the optimization of the process parameters including concentration of gelatine and glycerine using two dependent variables disintegration time and moisture content. Developed pastilles were evaluated for appearance, thickness, diameter, texture, pH, moisture content, disintegration study alkaloid content, antimicrobial activity, DSC analysis, stability study and Palatability study. The Results obtained were consistent for all batches (F1 to F9).Developed pastilles were of thickness 14.4 ±0.25mm, diameter 17 ±0.45mm, Disintegration time 17 min 2 sec ± 0.1, moisture content 43.21 ± 0.02 %, pH 7.1,Alkaloid content1.7%.The current study highlighted an approach in developing polyherbal pastille containing all herbal ingredients a patient-friendly formulation for plaque reduction as an adjuvant to regular Oral hygiene practice
Keywords: Polyherbal Pastille, Oral hygiene, Plaque reduction.

UV SPECTROPHOTOMETRIC METHOD FOR THE SOLUBILITY DETERMINATION OF EUGENOL USING DIFFERENT SOLVENTS

Nishant Singh[1]
[1]KIET School of Pharmacy, KIET College, Shivam Vihar, Muradnagar, Uttar Pradesh 201206
*Corresponding Email: nishant.2224ph1029@kiet.edu

Since the solubility of the drug is important for the HPLC Method's method development and validation as well as for the analysis of the drug on various parameters, a UV spectrophotometric method was used to determine the solubility of eugenol in various solvents with different ratios for solvents.
Eugenol is an anti-inflammatory drug that helps with managing obesity. Eugenol reduces selling and irritation in the effected area. And eugenol also called clove oil and is aromatic oil extracted from clove and that is used widely as flavoring agent for food and as an herbal oil which is also used topically to treat tooth ache and rarely taken to treat GIT and respiratory complaints.
The UV spectra was recorded between 200 and 400 nm using λ -max, and solubility for different solvents including ethanol, methanol and acetonitrile were examined of 217nm, 204nm,219nm with the absorbance of 0.024 ,0.974 ,2.45 respectively.
And it is found that Eugenol is, very soluble in methanol with and ethanol and freely soluble in chloroform and methanol and practically insoluble in acetonitrile.
Hence further the studies were carried for Gas Chromatography for further validation and method development.
Keywords: UV spectrophotometric, Gas Chromatography, validation and method development

OLMESARTAN MEDOXOMIL METHOOD DEVELOPMENT ON UV SPECRTROSCOPY

Anchal Kushwaha[1]*, K. Nagarajan[1], Richa Goel[1]
[1]Department Of Pharmaceutical Quality Assurance, Kiet School Of Pharmacy, Kiet Group Of Institutions, Ghaziabad, Delhi-Ncr, India 201206
*Corresponding Email: Anchal.2224ph1004@Kiet.Edu

A medication called Olmesartan is used to treat high blood pressure (hypertension). Human blood pressure will drop, and human heart will have an easier time pumping blood throughout human body. Managing high blood pressure reduces the risk of future heart attacks, kidney issues, and strokes. This abstract aims to provide a concise overview of its pharmacological properties, therapeutic eff Angiotensin II receptor antagonists such as olmesartan medoxomil are used to treat hypertension. Efficacy, and safety profile. Olmesartan Medoxomil exerts its antihypertensive effects by selectively blocking angiotensin II type 1 receptors, leading to vasodilation and decreased peripheral resistance. This mechanism ultimately results in reduced blood pressure levels. Clinical studies have demonstrated its effectiveness in lowering both systolic and diastolic blood pressure, with dose-dependent responses observed. This convenience contributes to improved patient compliance, a critical factor in long-term hypertension management. Olmesartan medoxomil solubility was assessed using a UV spectrophotometric method in various ratios for solvents including ethanol, methanol, acetonitrile chloroform, pyridine, acetone, ethylene ether, and distilled water. This was done because the drug solubility is a key factor in HPLC method development, drug validation, and parameter analysis. It was determined how well several solvents, including ethanol, methanol, acetonitrile, acetone, chloroform, pyridine, and distilled water, dissolved different substances. The UV spectrum was measured between 200 and 400 nm for each solvent. Different solvents were examined and noted. Olmesartan Medoxomil has been identified to be highly soluble in both methanol and Ethanol. Methanol wavelength of 202 nm and an absorbance of 0.291were used.

NANOSPONGES: AN INNOVATIVE DRUG DELIVERY FOR CANCER TREATMENT

Reshma Fathima K[1*], Kathiresan K[1]
[1]Annamalai Univeristy, Annamalai Nagar, Chidambaram, Tamil Nadu
*Corresponding Email: fathimaresh786@gmail.com

Nanosponges drug delivery system is the very tiny network with nano formulation, in which the wide diversity of drugs can entrapped, suspended or encapsulated and after that consolidated as a new dosage form. Nanosponges are nanosized drug carriers with a three-dimensional structure created by crosslinking polymers. They have the advantage of being able to hold a wide range of drugs of various sizes. Nanosponges come in a variety of shapes and sizes. They are distinguished by the research method used, the type of polymer used, and the type of drug they may contain. Nanosponges are superior to other delivery systems because they can provide a controlled drug release pattern with targeted drug delivery.
Most challenging works nowadays within the pharmaceutical field is that the delivery of anticancer drug due to their low solubility. Nanosponge's complex is 3 times simpler to scale break the expansion of tumor then direct injection. The Nanosponge's complex loads with a drug and expose a targeting peptide that fastens tightly with a radiation-induced cell upper layer on the tumor receptor. When nanosponges confront the tumor cell they stuck on the surface of tumor cell and begin to release the drug molecules. The advantage of targeting drug delivery is to urge a simpler therapeutic effect at an equivalent dose and with minimized side effect.
Nanosponge-based systems endowed with remarkable porosity, simple functionalization processes, unique architectures, eco-friendliness, and cost-effectiveness have been explored as promising alternatives to targeted drug delivery and cancer therapy.
Keywords: Nanosponges, cancer therapy, targeted drug delivery

TUMOR SUPPRESSION POTENCY OF SPORAMIN ISOLATED FROM *IPOMOEA BATATAS*: A PROMISING BREAKTHROUGH IN CANCER RESEARCH

Garima Kumari[1*], Shreyansh Saha[1]
[1]Mata Gujri College of Pharmacy, Kishanganj, Bihar, India- 855108
*Corresponding Email: garimajaiswal2300@gmail.com

Sporamin, a phyto-protein found abundantly in sweet potatoes (*Ipomoea batatas*), has garnered attention for its potential anti-cancer properties. This study investigates the tumor suppression potency of sporamin and its underlying mechanisms. Sporamin was isolated and purified from sweet potatoes, and its anti-cancer effects were evaluated through in vitro and in vivo experiments. In vitro, sporamin demonstrated remarkable cytotoxicity against various cancer cell lines while sparing normal cells. Moreover, sporamin induced apoptosis, inhibited cell proliferation, and disrupted cell cycle progression in cancer cells. In vivo studies using mouse xenograft models showed that sporamin administration significantly reduced tumor growth without apparent toxicity. Mechanistic investigations revealed that sporamin exerted its anti-cancer effects through the modulation of key signalling pathways involved in cell survival and proliferation, including MAPK and PI3K/AKT. Furthermore, sporamin exhibited immunomodulatory properties by enhancing T-cell activity. These findings suggest that sporamin phyto-protein from sweet potatoes holds promise as a potent natural agent for tumor suppression and could potentially serve as a valuable addition to cancer therapeutics. Further research is warranted to explore its full therapeutic potential and clinical applications.
Keywords: Sporamin, Sweet potatoes, Anti-cancer, Cytotoxicity, Apoptosis.

Development & Evaluation of Clozapine Loaded Mucoadhesive Microspheres for Brain Targeting

Priyanka Sambhaji Nangare[1]*, Dr. Uttamsingh Baghel[1]
[1]Career Point University, Kota, Rajasthan, India.
*Corresponding Email: priyasnangare@gmail.com

In the present work, mucoadhesive nasal microspheres containing clozapine were formulated and evaluated for increasing its bioavailability at cerebrospinal fluid (CSF). Clozapine is antipsychotic agent which is of BCS class II, hence need to improve its bioavailability at central nervous system (CNS). To make the drug delivery system safer, natural polymer and crosslinker were used. Clozapine loaded cross-linked starch microspheres (CSMs) were successfully developed for intranasal (IN) delivery for CNS targeting using single emulsion cross-linking method. The CSMs formulation was optimized by Taguchi factorial design considering polymer concentration, surfactant concentration and cross-linker concentration as the independent variables and corresponding response variables being % entrapment efficiency and % mucoadhesive strength. The optimized batch exhibited entrapment efficiency 92.45% and mucoadhesive strength 93.46%. The prepared CSMs were evaluated for physical characteristics such as particle size, particle shape, surface morphology, drug entrapment efficiency, in vitro and in vivo bioavailability studies. The particle size of the prepared microspheres was in the range of 58-92 µm, which was suitable for nasal administration. In-vivo studies showed increased relative bioavailability with nasal route as compared to the oral route. IN route has helped to attain significant therapeutic levels of the antipsychotic drug in the CSF by surpassing the BBB and hepatic first pass effect.
Keywords: Clozapine, mucoadhesion, starch, Citric acid, Bioavailability.

OPTIMIZATION & SELECTION OF MOBILE PHASE OF THE DRUG ENALAPRIL MALEATE USING HPLC & UV ON PILOT SCALE UP

Vinay[1]*, K. Nagarajan[1]
[1]Kiet School Of Pharmacy, Kiet Group of Institutions, Ghaziabad, Delhi-Ncr, India 201206
*Corresponding Email: Vinaykr64802@gmail.com

Enalapril Maleate (ENPM) is the second angiotensin-converting enzyme (ACE) inhibitors used in the treatment of hypertension and some type of chronic heart failure. ENP is a prodrug, deesterified in the liver to enalaprilat (a tripeptide analogue), which have primary action is to block ACE, a crucial part of the reninangiotensin-aldosterone system (RAAS). As a result, there is less angiotensin II produced, which cause peripheral vasodilation. Aldosterone production then declines, resulting in less sodium and fluid retention. These two methods result in lower blood pressure (BP), as well as lower cardiac preload and afterload. It also used to reduce proteinuria (the presence of excess proteins in the urine), which can be a sign of kidney problems. These procedures make certain that the pharmaceutical product regularly satisfies predetermined quality criteria. The chemical analysis of the drug based on the solubility and selection of the mobile phase, Solvent (Methanol, Acetone, Ethanol, ACN, Water, etc.) their absorbance detected in UVspectroscopy. ENPM is a hydrophilic Compound, so the mobile phase will typically contain a mixture of organic and aqueous components. Commonly used organic solvent include Acetonitrile, Methanol and water. Choose one based on the compatibility with the system and sensitivity. Systematically vary the mobile phase composition, pH & other parameters to optimize resolution, Sensitivity and analysis time.
Keywords: Enalapril maleate, ACE inhibitors, Mobile phase, UV-HPLC Method.

CURRENT INSIGHTS ON THE POTENTIAL OF NANO-VESICULAR SYSTEMS FOR THE MANAGEMNET OF PSORIASIS WITH SPECIAL EMPHASIS ON TRANSFEROMES

Deblina Dan[1], Nimisha Srivastava[1*]
[1]Department of Pharmaceutics Amity Institute of Pharmacy, Lucknow, Amity University Uttar Pradesh Sector 125 Noida 201313 India
*Corresponding Email: nsrivastava3@lko.amity.edu

An extremely painful inflammatory disease called psoriasis that induces keratinocytes to differentiate abnormally, altering the capacity of the skin to function effectively as a barrier for topical therapies. A significant percentage of psoriatic ailments remained untreated, this was primarily because topical therapies were not effective in delivering drugs through the tightly packed stratum corneum. The effective topical distribution of many medicines has been achieved for decades through the use of nano-vesicular delivery carriers, which include liposomes, transferosomes, etc. where particularly transferosomes, have emerged as promising candidates for targeted drug delivery, offering enhanced permeability and bioavailability.
Aim and Objectives- The aim of this study is to comprehensively assess the role of nano vesicular systems, with a specific focus on transferosomes, in the management of psoriasis. The objectives include evaluating the efficacy of transferosomes in delivering therapeutic agents for psoriatic patients, understanding their impact on inflammation and immune regulation.
Methods- The study conducted a thorough literature analysis, examining current research publications pertaining to nano vesicular systems and their potential use in the treatment of psoriasis.
Results Summary- A multitude of evidence is shown in the review to bolster the potential of nano-vesicles, specifically transferosomes, in managing the intricacies of psoriasis. Transferosomes exhibited exceptional drug transport properties, enabling more effective penetration into the skin's layers.

STANDARDIZATION OF DEVELOPED NOVEL POLYHERBAL FORMULATION FOR TREATMENT OF DIABETES MELLITUS AND RELATED COMPLICATIONS.

Sweety Lanjhiyana[1], Sanjay Kumar Lanjhiyana[2]
[1]School of Pharmacy, Chouksey Engg. College, Bilaspur-495001
[2]Institute of Pharmaceutical Sciences, Guru Ghasidas University, Bilaspur-495009
*Corresponding Email: slanjh@gmail.com

Diabetes is one of the major health problems worldwide. In coming future India will be the capital of Diabetes mellitus (DM). The present sudy was carried out to develop and evaluate a novel polyherbal formulation for treatment of diabetes and related complications. Developing a novel polyherbal formulation for oral administration is become a challenge in modern pharmaceutical aspects and the developed polyherbal formulation faces many technical issues. Methanolic extracts of the selected medicinal plant viz. Phyllanthus emblica, Tinospora cardifolia, Cassia auriculata, Cinnamomum tamala and Mangifera indica were selected for the studies. The developed novel Polyherbal formulation is cost effective, potent and stable oral dosage formulation exerting less ordinary no side effects with potential antidiabetic activity and treatment of diabetes related complications.
Keywords: Poly-herbal formulation; formulation development; physico chemical standardization.

PRE AND POST MENSTRUAL SYNDROME

Zainab Shabbir Shaikh[1]
[1]Y.B. Chavan College of Pharmacy, Aurangabad, 431001, Maharashtra, India.
*Corresponding Email: zainabshaikh.07.06@gmail.com

This comprehensive review embarks on an exploration of the nuanced landscape of menstruation, traversing the intricate interplay between hormonal dynamics, historical practices, contemporary challenges, and the diverse spectrum of menstrual disorders. Commencing with menarche and progressing through the various life stages of a woman, the study meticulously delineates the multifaceted nature of growth and change within the female body.
Menstruation, a monthly occurrence governed by the ebb and flow of estrogen and progesterone, is explicated as a pivotal biological phenomenon. The shedding of the endometrial lining during this process is contextualized against the historical backdrop of diverse practices, ranging from ancient Greek tampons to Roman woolen pads and tampons. Despite the current abundance of menstrual hygiene products, the review acknowledges the persistent challenges faced by women. It underscores the impact of menstrual disorders on personal and social spheres, recognizing them as significant disruptors of women's lives.
The spotlight then narrows onto Pre-Menstrual Syndrome (PMS), an intricate web of symptoms preceding menstruation. Physical manifestations such as headaches, fatigue, and abdominal bloating intertwine with behavioral shifts, including mood swings and anxiety. Furthermore, the exploration extends to the more severe Pre-Menstrual Dysphoric Syndrome (PMDD), unraveling its profound effects on both the internal and external dimensions of women's health.
Emphasizing the role of self-observation, the review contends that PMS is a health issue amenable to self-diagnosis. Factors related to the prevalence of PMS and PMDD are scrutinized, underlining the need for heightened awareness and understanding. A meticulous data survey and analysis reveal insights into the pervasive impact of these conditions on women's health.
In conclusion, the review advocates for a holistic comprehension of menstruation, acknowledging the intricate dance between hormones, psychological well-being, and societal factors. It advocates continued research, awareness campaigns, and support structures to empower women navigating the complex terrain of menstrual health.
KEYWORDS: Menstruation, hormonal changes, women's health, menstrual disorders, menarche, menstrual cycle, Pre-Menstrual Syndrome (PMS), Pre-Menstrual Dysphoric Syndrome (PMDD), psychological symptoms, physiological symptoms, menstrual hygiene products, social impact, self-diagnosis, prevalence, women's well-being, menopause, reproductive health, hormonal fluctuations

INSIGHTS, THERAPEUTIC EFFICACY, AND SAFETY ON PROMETHAZINE HCl

Deepshikha Nirwan[1*], Parul Grover[1]
[1]Kiet School of Pharmacy, Kiet Group Of Institutions, Delhi Ncr Ghaziabad, India.
*Corresponding Email: Nirwanshikha18@gmail.com

Promethazine hydrochloride (HCl). Promethazine is a first -generation antihistamine and is widely employed for its antiemetic, antiallergic and sedative properties. It is commonly used for various medical conditions, including allergies, nausea, and motion sickness. The therapeutic efficacy of promethazine is attributed to its ability to block histamine receptors, alleviating symptoms associated with allergic reactions. The drug's antiemetic action is particularly valuable in alleviating symptoms associated with chemotherapy and surgery. However, the use of promethazine is not without considerations. its sedative nature raises concern about safety, especially in situation requiring alertness, such as operating heavy machines, driving etc. Promethazine HCl is employed in various medical settings, including the management of allergic reactions, nausea, and vomiting associated with surgery or chemotherapy. The drug's efficacy extends to its sedative properties, making it a valuable component in preoperative and postoperative care. Furthermore, its role in the treatment of motion sickness and as an adjuvant in analgesic regimens has been explored. While promethazine HCl offers therapeutic benefits, its use is not without considerations regarding safety. Adverse effects, such as sedation, dizziness, and anticholinergic effects, necessitate cautious administration, especially in vulnerable populations such as the elderly and paediatrics patients. The risk of tissue injury and necrosis following inadvertent intra-arterial injection underscores the importance of proper administration techniques.
Keywords: Promethazine HCl, Antihistamine, Antiemetic, sedative, Allergic reactions

INVESTIGATING THE SOLUBILITY OF DRUG QUERCETIN DIHYDRATE USING UV SPECTROPHOTOMETRY

Rama Kant Tiwari[1*], Parul Grover[1], Daksh Bhatia[1]
[1]Kiet School of Pharmacy, Kiet Group of Institutions, Delhi Ncr Ghaziabad, India.
*Corresponding Email: ramakanttiwari697@gmail.com

A natural flavonoid substance called quercetin dihydrate can be found in many plant-based foods, such as grains, fruits, and vegetables. Due to its acknowledged anti-inflammatory and antioxidant qualities, it is a well-liked dietary supplement. The solubility behaviour of quercetin dihydrate is important for its use in medicinal applications. Using UV spectrophotometry, this work examines the quercetin dihydrate solubility parameter. Experimental analyses show that UV light exposure affects quercetin dihydrate solubility, with different wavelengths resulting in varied solubility patterns. The solubility properties of quercetin in different solvents are investigated. A variety of organic and aqueous solvents, such as ethanol, methanol, water, acetonitrile, and dimethyl sulfoxide (DMSO), were used to test quercetin's solubility at various pH and temperature levels. The findings show solvent-dependent solubility, with differences seen according to the solvent's polarity and hydrogen-bonding properties. It was discovered that quercetin was more soluble in organic solvents than in water, and that its dissolving behaviour was significantly influenced by pH and temperature. Comprehending the solubility profile of quercetin in different solvents is crucial in order to devise efficient delivery mechanisms and maximise its utilisation in medicinal applications. The development of stable and efficient quercetin dihydrate formulations for pharmaceutical and nutraceutical applications is facilitated by UV-induced changes in solubility.
Keywords: Quercetin Dihydrate, Flavonoid, Solubility, UV spectrophotometry.

RECENT APPROCHES IN BLUE LIGHT PROTECTED COSMETICS

Shreya Kaushik[1], Garima Garg[1], Nilay Nandi[1]
[1]Department of Pharmaceutical Technology, Meerut Institute of Engineering and Technology, Meerut
*Corresponding Email: shreya99kaushik@gmail.com

With the pervasive use of digital devices in modern society, exposure to high-energy visible (HEV) blue light has become a growing concern due to its potential adverse effects on skin health. This abstract introduces the concept of blue light-protected cosmetics as an innovative solution to mitigate the impact of blue light on the skin. Blue light, emitted from electronic screens and artificial lighting, has been linked to various skin issues, including premature aging, hyperpigmentation, and inflammation. In response to this emerging challenge, the cosmetic industry has begun to explore formulations designed to provide a barrier against the harmful effects of blue light. These abstract reviews the current understanding of blue light-induced skin damage and highlights the key components incorporated into blue light-protected cosmetics. These formulations typically include antioxidants, such as vitamins C and E, that neutralize free radicals generated by blue light exposure. Additionally, specialized ingredients like melanin derivatives and botanical extracts are being employed to enhance the skin's natural defense mechanisms. The effectiveness of blue light-protected cosmetics is assessed through in vitro and in vivo studies, evaluating their ability to prevent oxidative stress, maintain skin barrier function, and reduce the appearance of blue light-induced pigmentation. Furthermore, the abstract discusses the cosmetic industry's ongoing efforts to develop standardized testing methods for blue light protection, ensuring that consumers can make informed choices when selecting skincare products. As consumer awareness of the impact of blue light on skin health continues to rise, the demand for blue light-protected cosmetics is expected to grow. These abstract aims to provide an overview of the current state of research in this area and encourages further exploration into the development of innovative skincare solutions for the digital age.

FORMULATION AND EVALUATION OF AN INNER PH AND OUTER TIME DEPENDENT DOUBLE COATED MULTI-PARTICULATE PELLETS FOR COLON SPECIFIC DRUG DELIVERY OF KETOPROFEN

Rohit Tomar[1], Debaprasad Ghosh[1], Ashu Mittal[1]
[1] KIET School of Pharmacy, KIET Group of Institutions, Muradnagar, Ghaziabad - 201206, Uttar Pradesh, India.
*Corresponding Email: rohittomar126@gmail.com

In order to treat a variety of colon-related conditions, such as Crohn's disease, irritable bowel syndrome (IBS), inflammatory bowel disease (IBD), colon cancer, etc., colon-targeted medication delivery systems become especially crucial and advantageous. This minimizes the danger associated with increased dosage frequency and the unintended adverse reactions and events, side effects, and cost that come with it. It also avoids the need for higher doses than in the case of standard dosing from in order to get the same pharmacological response. Drug delivery that is focused toward the colon can be accomplished through the use of time-dependent release models, pH-dependent models, or colonic bacterial enzyme-dependent release models. In order to obtain superior colon targeting than single coatings, this study combines an outside time-based and inner pH-based double coating over drug-loaded pellets of ketoprofen manufactured via powder layering technique. A

combination coating of hydroxypropyl cellulose (HPC-HXF) and ethyl cellulose (EC 45) was used to create the outer time-dependent coating. Eudragit L100 and Eudragit S100, two pH-dependent copolymers based on methyl methacrylate and methacrylic acid, were used to create the inner pH coating. Studies using FT-IR and DSC have been conducted to rule out the possibility of drug-polymer incompatibility. To further improve a specific formulation batch that is appropriate for the purpose, in-vitro dissolution experiments are carried out, revealing less than 15% drug release in the upper gastrointestinal tract (GI tract). For drug-loaded and coated pellets from the optimized batch, scanning electron microscopy was used to determine the surface topography both before and after dissolution. White New Zealand rabbits were also subjected to in-vivo X-ray roentgenography to monitor the coated pellets' gastrointestinal (GI) passage.
Keywords: Ketoprofen, colon targeted drug delivery, Eudragit L100, Eudragit S100, hydroxypropyl cellulose HPC-HXF, ethyl cellulose (EC45), powder layering technique, New Zealand rabbits

ROLE OF QUALITY BY DESIGN (QBD) IN PHARMACEUTICAL DEVELOPMENT: A LITERATURE REVIEW

Ravi Pal[1]*, Dr Abhay Bhardwaj[1]
[1]KIET School of Pharmacy, KIET Group of Institutions, Ghaziabad, Delhi-NCR, India 201206
*Corresponding Email: rp0192806@gmail.com

This review further clarifies the concept of pharmaceutical quality by design (QBD) and describes its objectives. Quality by Design (QBD) is a methodical approach that places emphasis on comprehending both the product and the process, along with effective control and risk management. Here, I would like to delve into the importance of QBD and how it ensures the consistent production of drugs that meet patient requirements in terms of clinical performance and drug delivery methods. QBD elements include the following: (1) a quality target product profile (QTPP) that identifies the critical quality attributes (CQAs) of the drug product; (2) product design and understanding including identification of critical material attributes (CMAs); (3) process design and understanding including identification of critical process parameters (CPPs), linking CMAs and CPPs to CQAs; (4) a control strategy that includes specifications for the drug substance(s), excipient(s), and drug product as well as controls for each step of the manufacturing process; and (5) process capability and continual improvement. The application of quality by design (QBD) in pharmaceutical product development is now a thrust area for the regulatory authorities and the pharmaceutical industry. International Conference on Harmonization and United States Food and Drug Administration (USFDA) emphasized the principles and applications of QBD in pharmaceutical development in their guidance for the industry. QBD attributes are addressed in question-based review, developed by USFDA for chemistry, manufacturing, and controls section of abbreviated new drug applications. QBD principles, when implemented, lead to a successful product development, subsequent prompt regulatory approval, reduce exhaustive validation burden, and significantly reduce post-approval changes.
Keywords**:** control strategy, critical quality attributes, pharmaceutical quality by design, risk assessment, Quality by Design, QBD.

ROLE OF PHYTOCHEMICALS IN COMBATING THE OBESITY

Pooja Rawat[1]*, Saumya Das[1], Bhavani Pentela[1]
[1]Noida Institute of Engineering and Technology (Pharmacy Institute),19, Institutional Area, Knowledge Park-II, Greater Noida, 201306, Uttar Pradesh
*Corresponding Email: prachi241197@gmail.com

Obesity has become a global health problem and is a potential risk factor in the development of other comorbidities such as hypertension, type-2 diabetes, cardiovascular diseases, infertility, dyslipidemia, nonalcoholic fatty liver disease etc. On the occasion of World Obesity Day 2022, WHO had urged countries to do more to reverse this predictable and preventable health crisis. More than 1 billion people worldwide are obese. This number is still increasing. WHO estimates that by 2025, approximately 167 million people – adults and children – will become less healthy because they are overweight or obese. In most countries, Obesity is more prevalent in women than men but this difference is more noticeable in specific populations and subgroups. These issues are considered as serious public health concerns. Obesity is described as an abnormal or excessive accumulation of fat in the body that may be harmful to one's health and the major causes of obesity may include bad eating habits and a sedentary lifestyle. Controlling obesity is a significant issue that is difficult to resolve with drugs and surgery since they frequently have detrimental side effects. It is imperative that novel, nontoxic methods be developed in order to control obesity. Many plant-based products or phytochemicals have been shown to be successful in reducing obesity. These plant-based products tackle obesity by targeting on the several metabolic pathways and/or regulatory processes that are closely associated with obesity. Various phytochemicals such as flavonoids (Quercetin, Apigenin), Phytosterols (sitosterol, Diosgenin), Terpenoids (Linalool, Lycopene), Phenolic acids (Gallic acid, Caffeic acid) and other categories of phytochemicals have demonstrated captivating actions on adipose tissue including apoptosis, inhibiting adipocyte differentiation and lipid accumulation and inducing lipolysis. So, such phytochemicals indicates that they may be useful therapeutic agents in the management of obesity and associated disorders.
Keywords: Obesity, Phytochemicals, Flavonoids, lipids, adipose tissue.

COMBATTING THE SILENT THREAT: EXPLORING STRATEGIES AGAINST ANTIMICROBIAL RESISTANCE IN CONTEMPORARY HEALTHCARE

Saloni Mittal[1], Uroosa[2]
[1]student B. Pharm, Hari College of Pharmacy, Saharanpur
*Corresponding Email: salonimittal315@gmail.com

Antimicrobial Resistance (AMR) has now emerged as a chronic public health problem globally, with forecast of 10 million deaths per globally 2050. AMR occurs when viruses, bacteria, fungi and Parasites do not respond to antimicrobial treatments in humans and animals, thus allowing the survival of the microorganism within the host. The main cause of this problem is to be overuse and misuse of antimicrobial, particularly the overuse of antimicrobial s, particularly the overuse of antibiotics. Antimicrobial resistance continues to be major global public health dilemma of the 21st century. AMR itself represents a combination of factors including social anthropology, civil war, political systems, healthcare, economics, social behavior both at a population and individual level so, finding a solution that will adequately address AMR is complicated. Success will involve individual, communities and nations all working together to ensure that world continues to possess a eradication medication of effective antimicrobials that will sustain human & animal health both now & in the future.
Keywords: AMR, antibiotic resistance, antimicrobial resistance, infection, one health

THE ART AND SCIENCE OF FILM COATING IN TABLET DOSAGE FORM- A REVIEW

Sahil Tyagi[1]*, Anuj Pathak[1], Garima Katyal[1], Vaibhav Sharma[1]
[1]KIET School of Pharmacy, KIET Group of Institutions, Delhi-NCR, Meerut Road, Ghaziabad-201206, UP, India.
sahil.tyagi250@gmail.com

Tablets, the most popular pharmaceutical dosage form, may undergo different types of coating like sugar coating, enteric coating and film coating depending on the purpose and specifications. Film coating of tablets is a pharmaceutical process that involves applying a thin layer (film) of a coating material onto the surface of a tablet. Tablet film coating can be both functional and non-functional. Film coating of tablets can be used for taste masking, controlling the drug release rate and site, enhancing palatability and patient compliance, improving the physical and chemical stability of tablets by protecting the API from light, moisture, the external environment and oxidation. The different materials used for film coating include film-forming polymers, plasticizers, colours & opaquants, water or organic vehicle. According to solvents, the film coating can be an aqueous film coating, an organic solvent-based film coating or a solvent free film coating. Film coating procedures involve spraying a liquid coating formulation, which is then allowed to solidify by drying. Constant mixing of the coated tablets allows the distribution of coating material thereafter. The common process parameters and factors in conventional film coating include spray rate, inlet air, exhaust air, dosing rate, droplet size, gun to bed distance, solid content & viscosity, atomization rate and curing time. Computational and mathematical modelling approaches are used to optimize these parameters and determine the effectiveness of film coating of tablets.
keywords**:** Dosage form, Oxidation, Plasticizer, Atomization, Optimize.

SYNTHESIS AND CHARACTERIZATION OF SURFACE MODIFIED SILYMARIN LOADED MESOPOROUS SILICA NANOPARTICLES

Sheetal Gosavi[1*], Moreshwar Patil[1]
[1]Department of Pharmaceutics, MET's Institute of Pharmacy, Bhujbal Knowledge City, Adgaon, Nashik (M.S) 422 003, affiliated to Savitribai Phule Pune University, Pune, India.
sheetalgosavi28@gmail.com

In this study low cost synthesis of amino-functionalized silica nanoparticles were synthesized by sol-gel method with the silica modifier, 3-aminopropyltriethoxysilane (APTES). The presence of amino group on synthesized nanoparticles was confirmed by FTIR spectroscopy. Pore size and surface area of porous nanoparticles was studied followed by loading of Silymarin onto the surface as well as inside the pore of nanoparticles by solvent immersion method. The loaded mesoposous silica nanoparticles (MSN) were evaluated for % drug loading and in-vitro release. Technique including N_2-adsorption isotherm, XRD, DSC, SEM were used for characterization. The result revealed drug loading with slight decrease crystalinity of drug in MSN. The drug loading and encapsulation efficiency was observed 93.20±0.43% and 92.50±0.65% respectively in APTES-Sily-MSN which is highest than Sily-MSN. The drug release was found 87.72±0.92 % in APTES-Sily-MSN 71.16±0.55 in Sily-MSN which is more than that of marketed preparation. The particles were sphericle in shape with smooth surface. As per result modification could effectively increase its amino content leading to increase in adsorption capacity, larger surface area and improved encapsulation, MSN demonstrate greater dissolution.
Keywords**:** Mesoporous silica nanoparticles, dissolution, functionalization, APTES, sol-gel process.

INVESTIGATING THE SOLUBILITY OF SITAGLIPTIN PHOSPHATE: IMPLICATIONS FOR PHARMACEUTICAL FORMULATION

Kapil Saraswat[1*], Parul Grover[2]
1*. Masters of Pharmacy (Pharmaceutical Quality Assurance) Kiet School of Pharmacy, Kiet Group Of Institutions, Ghaziabad, Delhi-Ncr
saraswatkapil674@gmail.com

Sitagliptin phosphate a widely prescribed antidiabetic agent poses challenges in pharmaceutical formulation due to its solubility characteristics. This study aims to comprehensively explore the solubility profile of sitagliptin phosphate under various conditions. A series of experiments were conducted to assess the impact of pH, temperature and different solvents on the solubility behavior of sitagliptin phosphate. Our findings reveal intricate relationships between solubility and environmental factors. The pH of the solution emerged as a critical determinant with significant variations observed across the pH spectrum. Additionally, temperature fluctuations exhibited distinct effects, shedding light on the thermal stability of sitagliptin phosphate in different solvents. The study not only elucidates the fundamental physicochemical properties of sitagliptin phosphate but also presents practical implications for the pharmaceutical industry. The impact of co-solvents and the role of surfactants in enhancing solubility were also explored. State-of-the-art analytical techniques, including UV-visible spectrophotometry and HPLC, were employed to precisely quantify solubility levels. The quantification was achieved by the spectroscopy method at 267nm Insights gained from this study can inform the development of optimized drug formulations, potentially enhancing the bioavailability and therapeutic efficacy of sitagliptin phosphate. This investigation contributes valuable data to the ongoing discourse on drug solubility, offering a foundation for further research in the field of pharmaceutical sciences. The outcomes of this study hold potential significance for drug development, formulation strategies, and ultimately, the advancement of therapeutic options for individuals managing diabetes.
Keywords**:** Sitagliptin phosphate, pH spectrum, UV-visible spectrophotometry, HPLC, λ max: 267nm

DETERMINATION OF IN VITRO PERCUTANEOUS EFFICACY OF MICONAZOLE LOADED NANOGEL

Himanshi
Swami Vivekanand Subharti University
himanshipal.211043@gmail.com

Aim: The current research aimed to formulate and evaluate nanoemulsion gel of poorly soluble Miconazole Nitrate.
Materials and Methods: Analytical methods including FTIR analysis and ultraviolet spectroscopy were used to characterize the medication. By creating pseudo ternary phase diagrams, a water titration approach was used to create both placebo and drug-loaded nanoemulsions. Thermodynamic stability studies, skin penetration, medication content, viscosity, droplet size analysis, and refractive index were used to

assess the formulations. Results: Analytical research revealed that there was no drug-excipient interaction. Based on visual inspection, a freeze-thaw cycle and thermodynamic stability research were used to optimize the nanoemulsion. The optimal concentration of carbopol was chosen as the gelling agent in the NE-2 formulation, which was used to make nanogel. Droplet size on the optimized nanoemulsion gel (NE-2) is 203.7 nm, viscosity is 94 centipoises, and zeta potential is -29 mv. The flow of skin permeation is 207.48 ug/cm²/h. When compared to miconazole nitrate in powder form, miconazole nitrate-loaded nanogel demonstrated superior stability.
Conclusion: The created nano emulsion systems may work well as a topical delivery vehicle for nanogel loaded with miconazole nitrate.
Keywords: Miconazole Nitrate; Nanoemulsion; Water Titration Method; Nanogel

PHYTOCHEMICAL ANALYSIS AND BIOACTIVITY ASSESSMENT OF SEDUM LINEARE THUNB. EXTRACT: UNRAVELING ITS THERAPEUTIC POTENTIAL

Sunil Kumar[1*], A.K.S. Rawat[1]
PhD. Research Scholar, Maharishi School of Pharmaceutical Science, Maharishi University of Information Technology, Sitapur road, Lucknow- 226013, Uttar Pradesh, India.
sunilsinghpharmacy@gmail.com

Objective: This study aims to conduct a comprehensive phytochemical profiling of *Sedum lineare* Thunb and assess its bioactive potential through a multidisciplinary approach encompassing physicochemical characterization, extraction methods, quantitative and qualitative phytochemical analyses, and thin-layer chromatography (TLC) separation.
Materials and Methods: Whole plant materials of *Sedum lineare* Thunb. were collected and subjected to physicochemical parameter analysis. Various extraction techniques were employed using solvents of different polarities. Qualitative phytochemical analysis was conducted to detect alkaloids, flavonoids, tannins, saponins, phenolic compounds, terpenoids, glycosides, and proteins. Quantitative analysis involved UV-Vis spectrophotometry and HPLC for determining the concentrations of specific phytoconstituents. Thin-layer chromatography (TLC) was utilized to separate and identify phytoconstituents based on their migration behaviour.
Results and Discussion: The physicochemical analysis revealed essential parameters that contribute to the quality and composition of the plant material. Various extraction methods yielded extracts with differing profiles of phytoconstituents. Qualitative analysis confirmed the presence of diverse classes of compounds. Quantitative studies highlighted significant concentrations of targeted bioactive compounds. TLC separation facilitated the identification of distinct phytoconstituents in the herbal material.
Conclusion: The multidisciplinary approach employed in this study successfully provided a wide-ranging understanding of the phytochemical composition and bioactive potential of *Sedum lineare* Thunb. The results underscore the significance of this plant for potential applications in medicine and natural product-based therapies.
Keywords: *Sedum lineare* Thunb, phytochemical profiling, bioactive potential, thin-layer chromatography.

TEMPORARY HAIR COLORS USING NATURAL PLANT COLORANTS

Ms. Rutuja S. Gawande[1*], Ms. Devashree K. Parakh[2], Prof. Shahid R. Qurasihi[3]
Mahatma Gandhi Vidyamandir's Samajshri Prashantdada Hiray College of Pharmacy, Loknete Vyankatrao Hiray Marg, Malegaon Camp, Malegaon, Nashik, Maharashtra, India (423105).
gawanderutuja400@gmail.com

There is an on-going demand in recent years for safer hair coloring agents with the global consumer awareness about the adverse effects of synthetic ones. The belief in sustainability and health benefits has focused the attention of the scientific community towards natural colorants that serve to replace their synthetic toxic counterparts. The beneficial aspects of natural dyes are their less-irritating, less allergenic nature along with sustainability and eco-friendly perspective. They are temporary or semi-permanent, non-oxidative hair dyes that can be adsorbed onto the cuticle and the cortex of the hair shaft to produce color. These temporary hair colors involve smooth blending of hair adherent gel base enriched with aloe vera gel and coconut oil, and plant pigments such as capsanthin, curcumin, betalain, lutein, etc. These hair colors are being formulated for the post-mordanting dyeing of the hair which means that they should be applied on the lightened or greyed hair. The major advantage of them is that there is no need to rinse them off for the visualization of color, just apply the color on hair and completely ready to go with them. Whilst these hair colors are intended to be washed off after one hair wash after the application. The user of them is free to choose between whether the whole hair or specific strands of the hair are to be colored. This formulation can be viewed as a lavish product which is equally harmless, instantly applicable and can be easily rinsed off whenever user wants to do so.
Keywords: Natural colorants, semi-permanent, less allergenic, capsanthin, post-mordanting, no need to rinse off, lightened.

OPTIMIZATION & SELECTION OF MOBILE PHASE OF THE DRUG ENALAPRIL MALEATE USING HPLC & UV ON PILOT SCALE UP

Vinay[1*], Dr. K. Nagarajan[2]
Kiet School of Pharmacy, Kiet Group of Institutions, Ghaziabad, Delhi-Ncr, India 201206
Vinaykr64802@gmail.com

Enalapril Maleate (ENPM) is the second angiotensin-converting enzyme (ACE) inhibitors used in the treatment of hypertension and some type of chronic heart failure. ENP is a prodrug, deesterified in the liver to enalaprilat (a tripeptide analogue), which have primary action is to block ACE, a crucial part of the renin-angiotensin-aldosterone system (RAAS). As a result, there is less angiotensin II produced, which cause peripheral vasodilation. Aldosterone production then declines, resulting in less sodium and fluid retention. These two method result in lower blood pressure (BP), as well as lower cardiac preload and afterload. It also used to reduce proteinuria (the presence of excess proteins in the urine), which can be a sign of kidney problems. These procedures make certain that the pharmaceutical product regularly satisfies predetermined quality criteria. The chemical analysis of the drug based on the solubility and selection of the mobile phase, Solvent (Methanol, Acetone, Ethanol, ACN, Water, etc.) their absorbance detected in UV-spectroscopy. ENPM is a hydrophilic Compound, so the mobile phase will typically contain a mixture of organic and aqueous components. Commonly used organic solvent include Acetonitrile, Methanol and water. Choose one based on the compatibility with the system and sensitivity. Systematically vary the mobile phase composition, pH & other parameters to optimize resolution, Sensitivity and analysis time.
Keywords: Enalapril maleate, ACE inhibitors, Mobile phase, UV-HPLC Method

FORMULATION AND EVALUATION OF CONTROL RELEASE DISSOLVABLE MICRONEEDLES OF ACYCLOVIR

Yatendra Kumar[1]* Dr. Sanjar Alam[1], Dr. Sokindra Kumar[2]
1. R.V. Northland Institute, Dadri, Gautam Buddh Nagar, 203207, Uttar Pradesh , India
2. Kharvel Swami Vivekanand Subharti college of Pharmacy , Meerut 250005, Uttar Pradesh , India
mail2yaten@gmail.com

Biopharmaceutics help us to understand better pathways to safe and effective medication in our living system of the human body. Transdermal drug delivery systems bypass first pass metabolism and possess a great and easy approach to drug administration which do not require any technical person and liquid intake. The principal obstacle to delivering the medication into the transdermal area is stratum corneum, the dead keratinized outer cell layer of skin. Different techniques have been applied to enhance systemic bioavailability of drugs through the Transdermal approach. Microneedle formulation is one of them. To develop the microneedle formulation through several sophisticated techniques like photolithography, Nano laser and Silicone micro molding. To develop and evaluate microneedles of various biodegradable polymers with and without drugs. The mother silicone micro mould was prepared by pouring method with help of Kostech Adjustable Derma Stamp. Different concentrations of various polymers like trehalose, Poly vinyl pyrrolidone, Poly vinyl alcohol, hyaluronic acid have been used in preparation of dissolved microneedles. Micro centrifugation and vacuum drying have been used for preparation of microneedles. The various evaluation parameters of formulated microneedles of both drugs like physical characterization, drug content, Scanning electron microscopy, Optical coherence Tomography, In vivo transdermal release studies, *Ex-Vivo* Penetration Studies has been carried out. The dissolvable polymeric microneedles of Acyclovir was formulated and evaluated significantly. These nonconventional and novel TDDS possess the satisfactory attributes of *In-vitro* and *In-vivo* medicament delivery. This less invasive and painless drug delivery system can fulfill a promise of a large variety of medication administration in an easy and more compliance manner. Through this technology we can easily permeate the targeted therapeutic drug molecules into our systemic circulation. Micro needle inserted into the skin just above the pain receptors in the skin. So before approaching pain receptors in inner layers of skin the microneedle releases the medication in our skin.
Keywords*:* TDDS, Microneedles, Silicone micro molding, Acyclovir, poly vinyl alcohol, Poly vinyl pyrrolidone, hyaluronic acid

DEVELOPMENT OF NEW OXADIAZOLE DERIVATIVES USING DOCKING SIMULATION FOR INHIBITORY ACTION AGAINST COX-2 AS ENZYME TARGET

Tarun Chaudhary[1], Prabhat Kumar Upadhyay[1], Ritu Kataria[2]
[1]Institute of Pharmaceutical Research, GLA University Mathura Uttar Pradesh, India
[2]GVM College of Pharmacy, Sonipat, Haryana
Email: tarunchaudhary1317@gmail.com

In the pursuit of novel anti-inflammatory agents with reduced adverse effects, the selective inhibition of the cyclooxygenase-2 (COX-2) enzyme is a focal point of pharmaceutical research. Current findings emphasize on the development of new oxadiazole derivatives, targeting COX-2 inhibition through precise molecular docking simulations. A series of oxadiazole derivatives were proposed and then introduced for molecular docking and simulations studies. Interactions of oxadiazole ring-based ligands with COX-2 were examined via advanced computational docking modules. The results of the docking studies revealed and identified several oxadiazole compounds with notable binding affinities, binding energy and docking score along with Lipinski rule of five suggesting a strong potential for COX-2 inhibition. These compounds were further characterized by their interaction patterns within the COX-2 active site, particularly through hydrogen bonding, hydrophobic and pi-pi stacking interactions. Current research further evaluates the drug-likeness and ADMET properties of these compounds, underscoring their promise as safer anti-inflammatory therapeutics. Concluding with a discussion on the synthetic routes and optimization of these oxadiazole derivatives, the article presents a forward-looking perspective on the development of COX-2 inhibitors, with a particular emphasis on the therapeutic potential of oxadiazole chemistry in improving safety profiles of anti-inflammatory medication.
Keywords : 1,3,4 oxadiazole ,Computational, Docking ,Cyclo-oxygenase.

DESIGN, SYNTHESIS, CHARACTERIZATION AND IN- VITRO, IN-SILICO SCREENING OF NOVEL BENZOXAZOLE-THIAZOLIDINONE SCAFFOLDS AS POTENTIAL ANTIMYCOBACTERIAL AGENTS

Pradeep Kumar M.R
Department of Pharmaceutical Chemistry, KLE College of Pharmacy, Vidyanagar, Hubli-580031, (A Constituent Unit of KLE Academy of Higher Education & Research [KAHER], Deemed-To-be-University, Belagavi) Karnataka, India
E-mail ID: pradeepmrpk@yahoo.co.in

With an objective of developing novel potent anti-tubercular agents in this research work we have reported novel benzoxazole fused thiazolidinone deivatives. *N*-(2-(substituted)-4-oxothiazolidin-3-yl) benzo[*d*]oxazole-5-carboxamide derivatives (IIIa-o) were synthesized by the reaction between Schiff bases of benzoxazole (IIa-o) with thioglycollic acid. Structure of the synthesized compounds were confirmed on the basis of physico-chemical and spectral data (IR, ^{1}H-NMR, ^{13}C-NMR and Mass). *In-vitro* anti-tubercular studies of newly synthesised molecules against *Mycobacterium tuberculosis* $H_{37}Rv$ strain using MABA method have shown substantial MIC values. The fit of these compounds within the active sites of the enoyl ACP reductase was evaluated using Molecular docking techniques. The findings of the *in-silico* investigation showed that the synthesized compounds have drug-like characteristics. Among the synthesized compounds III d, III e, III g, III m, and III o exhibited good anti-tubercular activity. Therefore, depending on the resultant outcomes, the optimization of benzoxazole-thiazolidinone derivatives III d, III e, III g, III m, and III o may afford suitable lead molecule for further scientific exploration which may result in the development
of the new compounds with significant antitubercular activity in future.
Key Words- Thiazolidinone, benzoxazole, tuberculosis, in-silico, in- vitro

APPROACHES TO IMPROVE SOLUBILITY OF POORLY WATER-SOLUBLE ANTI-HYPERTENSIVE DRUG : A REVIEW

Chirag Kukreja [1*], Sanjeev Kumar Chauhan [1]
KIET Group of Institutions (KIET School of Pharmacy), Muradnagar, Ghaziabad, U.P, India.

chiragkukreja2324@gmail.com

The majority of recently developed chemical medication moieties have low water solubility. Solubility requirements continue to be a concern for formulation scientists in terms of improving oral absorption and solid dosage form bioavailability. As a result, many techniques have been researched to improve the solubility of medications that are not very soluble. Solid dispersion is one of the most important method to improve solubility and hence oral bioavailability of poorly- water soluble drugs belonging to BCS class II and class IV. In solid dispersion the particle size of drug is reduced or a crystalline pure drug is converted into amorphous form and improving drug wet-ability, hence the solubility is increased. The polymers used in solid dispersion technology are often hydrophilic by nature , solving the stability issues and also show drug compatibility, which improves the solubility. The goal of this study was to create a modified dosage form that would increase the solubility and oral biovavailability of Azilsartan medoxomil (BCS class-II drug) , a poorly water-soluble medication used to treat hypertension. The medication used in this study, Azilsartan medoxomil, is a member of the angiotensin-receptor blocking (ARB) class and has a poor water solubility. The current research focuses on a range of established and novel approaches for improving drug solubility in order to decrease the number of poorly soluble therapeutic candidates that are removed from the development process.
Keywords: Azilsartan medoximil **,** Solid dispersion , solubility , bioavailability.

REGULATIONS AND ADVANCEMENTS OF MEDICAL DEVICES IN INDIA

Simran Yadav, Dr. Sandeep Arora, Dr. Vikesh Shukla, Dr. Navneet Sharma
Amity University, Noida, Sector 125, Uttar Pradesh, 201301
Email: simransimranyadav8282@gmail.com

The pharmaceutical, healthcare sector of India is the fastest growing sector. The Indian market of medical devices is in the list of one of the top twenty markets in the world. It is expected that the market trend of medical devices to grow up to US $ 50 billion by 2030.The manufacturing and further monitoring the medical devices is a highly regulated activity. However, India won't make any product within the country but still importing the 70% of the medical devices all over the world. In India, earlier there were no specific medical device regulations and devices used to be regulated under the Drugs and Cosmetics Act, 1940 and rule 1945. Further, Central Drug Standard Control Organization released Indian Medical Device Rules,2017, which are the new regulations for medical devices in India. Then, further Keeping pace with the requirements, these were amended as Medical Devices (Amendment) Rules, 2020, which has come into force in April 2020.The use of medical devices is certainly increasing the quality of care worldwide. Various counties are trying to harmonize the regulatory guidelines for the medical devices by indulging themselves in the GHTF. Medical devices are classified into 4 categories; A, B, C, and D based on risk level. The CDSCO fees for application processing depends on the device classification. Regardless of device classification, the application process requires 6 to 9 months. Numerous MD form for grant of various licenses like import, export, audits, manufacture, distribution, clinical investigations, evaluations, etc.
Keywords: CDSCO, Medical device regulations, MD Forms, Drug and cosmetic act.

AI: A BOON TO PHARMA SECTOR

Ashwin Ruhela*, Shubham Sharma
KIET Group of Institutions Muradnagar Ghaziabad 201206, Uttar Pradesh, India
Ashwin2002sept@gmail.com

AI is a human driven software whose goal is to automate activities and simplify the day-to-day technical activities which are perform by the individuals. Ai is planned in such a way that it operates various calculations, generalize various machine languages and recognize patterns.AI also helps in decision making of various functional programs.

AI helps to improve market strategies and increase customer engagement hence it is used in the marketing sector. Pharma sector is one of the most growing sectors in today's scenario so ai is rapidly used in the pharmaceutical industries to analyze vast amount of data. it also helps in development and discoveries of various new drugs. There are various benefits of ai marketing such as targeted marketing, market segmentation, enhanced customer engagement, improve targeting and personalization, drug discoveries and development etc. it also helps to maintain the efficacy and help in cost saving.

Various ai driven chatbots are being used in the pharmaceutical industry which provide easy access to information and resources thus making it easy for the individuals to provide personalized advice and recommendations on medicines and treatments. It also provides answers to frequently asked questions. Ai chatbots require training data respond to various question and queries.

Hence, we can conclude that ai is changing the way of operation of pharma sector by providing a wider market and easing the operation of healthcare professionals, patients and various other individuals working in the sector. AI is not only a tool which increase the pharma market and also it helps in promotion of public health.

Keywords: Artificial Intelligence, pharmaceutical industries, chatbots, marketing, targeting and personalization

GUMMIES OF BIOTIN: A HEALTHY REMEDY FOR HAIRS AND NAILS

Shivangi Raghav*, Anuj Pathak
KIET Groups Of Institutions Muradnagar Ghaziabad 201206, Uttar Pradesh, India
shivangi.2024bph1028@kiet.edu

Gummies nowadays are produced by reduction in sugar and addition of healthier ingredients with various flavours in order to provide nutritional benefit to the individuals so that their health can be maintained. Therefore, we have worked on the production of biotin gummies by adding artificial sugar and flavours in order to maintain high taste and quality of the gummies. Biotin is in high demand these days because of its claimed benefits of providing healthy hairs and nails. People nowadays are concerned more about their physical appearances and physical health; hence people nowadays are concerned and eager to increase their physical beauty.

Hair loss is one of the major problems that is faced by the youth and the middle age people. So biotin gummies will help the users to provide biotin in appropriate quantity with a proper taste. These biotin gummies are of high quality and can be used by users of various age groups as artificial sugar is being used hence there will be no health hazards due to the intake of these gummies as this will not lead to increase in the level of sugar in the body. Biotin is of relatively low cost and is available in high quantities. Biotin is also used in various cosmetic products. Also, excess amount of biotin in the body leads to no toxic effects beside that many cases of low biotin content in the body has been reported widely.

So, these biotin gummies will provide health benefits to the users by maintaining the biotin level in the bodies and that too with a proper taste as it will be available in various flavours hence making it easy for the users to intake these gummies.

keywords: Gummies, Biotin, Chewable Gummies, Antioxidant, Bioavailability, Nutrition.

GUMMIES OF SHILAJIT: A CONVENIENT ON-THE-GO NUTRITION, AND PANACEA OF TRADITIONAL MEDICINE

Ayush Kashyap*, Anuj Pathak
KIET Groups Of Institutions Muradnagar Ghaziabad 201206, Uttar Pradesh, India
ayushkashyapzx@gmail.com

In the current scenario there is a rapid increase in the rate of demand of natural ingredient-based products of high quality and standard nutritional value. The gummy food suppliments are more acceptable to the individuals nowadays because of its variety of flavours, no restriction in the dosage forms and it possess lesser side effects. The aim was to make gummies of high quality which provide efficient nutrition to the individuals.

Shilajit is a naturally occurring substance originated from himalayas by the process of decomposition of plants by microorganisms. According to studies it have been found that it have many health benifits, such as controlling aging of individuals and cognitive stimulations and many other disorders. The main component of shilajit is fulvic acid which have properties of fighting against Alzeihmer disease. Hence keeping in notice all the properties of shilajit we can conclude that it have many applications in the medical field, we have decided to incorporate it into the gummies. Gummies are more widely accepted by today's generation because of its variant flavours , sweet taste and various health benefits. We have worked on shilajit gummies, these gummies provide a unique and a novel way of taking advantages of shilajit gummies in a effective way. These candies will prove to be a benifictory dietary supplement as more advancement will be done with time into this sector as it is a very convenient way of taking or providing nutritions with appropriate taste and variant flavours.

keywords: Gummies, Shilajit, Chewable Gummies, Antioxidant, Bioavailibility, Nutrition.

EVALUATION OF ANALGESIC ACTIVITY OF HYDROALCOHOLIC EXTRACT OF COMMELINA DIFFUSA BURM

Ali Husain Ansari* Vivekanand Katare , Jitendra Jaiswal
Vivekananda college of pharmacy, Bhopal, M. P.
Corresponding Email: Jaiswaljitendra402@gmail.com

Commelina diffusa Burm. (Family: Commelinaceae) is usually known as "climbing dayflower or spreading dayflower" in Bangladesh. The plant is used in fever, malaria, insect, bug bites, rheumatoid arthritis, gonorrhea, influenza, and bladder infection etc.Commelina diffusa Burm. is a member of Commelinaceae family, which is widely grown in crop land and treated as a weed. This plant has several important medicinal properties which have not been studied extensively. In this study, the crude powder of C. diffusa whole plant was extracted with 95% ethanol. The present investigation was undertaken which deals with the evaluation of central nervous system (CNS) depressant activity of methanolic extract of C. diffusa in mice models.evaluation of CNS DEPRESSANT activity by Actophotometer.

Keyword: Commelina diffusa burm , CNS Depressant, phytochemical analysis,tail flick Actophotometer

SYNTHESIS OF ZINC OXIDE NANOPARTICLES BY USING PRECIPITATION METHOD

Vivekanand Katare, Jitendra jaiswal, Ankit Verma
Vivekananda college of pharmacy, Bhopal, M. P.
Corresponding Mail: Jaiswaljitendra402@gmail.com

Here in we present the synthesis of phase pure ZnO nanoparticles using precipitation method. UV–Visible spectroscopy were used to characterize the synthesized ZnO nanoparticles. We used these ZnO nanoparticles' powder for latent fingerprint (LFP) development. The developed fingerprints were tape lifted using normal cellophane tape and was pasted over a dark background surface. Photography was done before and after the lifting process and was sticked over a dark surface. In this work we develop a simple technique to synthesize ZnO nanoparticles using zinc nitrate and KOH in aqueous solution. The precipitated compound was calcined.

Keywords: ZnO; Nanoparticles; Precipitation; KOH

EVALUATION OF MUSCLE RELAXANT ACTIVITY OF HYDROALCOHOLIC EXTRACT OF BOERHAVIA **DIFFUSA**

Vivekanand Katare, Jitendra Jaiswal, Ayushi Maurya
Vivekananda college of pharmacy, Bhopal, M. P.
Corresponding Mail: Jaiswaljitendra402@gmail.com

Boerhavia diffusa (BD) is a plant of rasayana category as per ayurvedic claims. It is reported to possess antiaging, disease prevention, and life strengthening activities which hold enormous influence in disease burden and affordability/availability of healthcare in the world. The plant is distributed tropical regions and coastal forest in India. It is well known and all the parts are used in traditional system of medicine. In the present study of Hydroalcohalic extract Arial part of Boerhavia diffusa (BD) was screened for Muscle Relxanant acivity by Rotaroad and

anti-anxiety activity of Hydroalcohalic extract (200 mg/kg and 400 mg/kg p.o.) was determined. Objective of This paper has been compiled to comment on the studies reported for BD to highlight its chemical and therapeutic potential along with its Muscle relxant activity by rotarod.
Keyword: Boerhavia diffusa, Rotarod, Extract, Phytochemical analysis.

EVALUATION OF ANTICONVULSANT ACTIVITY OF THESPESIA POULNEA LEAVES

Vivekanand Katare, Jitendra Jaiswal, Priya Kumari
Vivekananda college of pharmacy, Bhopal, M. P.
Corresponding Mail: Jaiswaljitendra402@gmail.com

THESPESIA POPULNEA LEAVES is a medicinal plant used to treat a wide range of disorders including seizure. However, the anticonvulsant activity of this plant has not been studied in depth. We therefore sought to evaluate the anticonvulsant activity of a hydroalcoholic extract of THESPESIA POPULNEA LEAVES leaves on seizures induced by MES in mice. The extract was administered orally at 100, and 200 mg/kg. We report that the THESPESIA POPULNEA LEAVES extract had marked anticonvulsant activity against MES-induced convulsions.

EVALUATION OF ANTIANXIETY ACTIVITIES OF HYDROALCOHOLIC EXTRACT OF BOMBAX CEBIA

Vivekanand Katare, Jitendra Jaiswal, Yashika Nagar
Vivekananda college of pharmacy, Bhopal, M. P.
Corresponding Mail: Jaiswaljitendra402@gmail.com

Bombax ceiba Linn. (Malvaceae), commonly known as the cotton tree or red silk cotton tree, is a spectacular flowering tree with a height of up to 40 meters that is found in tropical and sub-tropical Asia as well as northern Australia. It has been chosen as the “city flower” of the cities of Kaohsiung and Guangzhou for its large, showy flowers with thick, waxy, red petals that densely clothe leafless branch tips in late winter and early spring. B. ceiba is a source of food, fodder, fiber, fuel, medicine, and many other valuable goods for natives of many Asian countries. For example, its fruits are good sources of silk-cotton for making mattresses, cushions, pillows. Bombax ceiba is a famous plant used extensively in traditional medicine for various diseases. However, data pertaining to its effects at CNS level is limited. To analyze the potential study of Hydroalcohalic extract Bombax ceiba flower was screened for locomotor, Rota-rod, Anticonvulsant, anti-anxiety activity of Hydroalcohalic extract (200 mg/kg and 400 mg/kg p.o.) was determined. The present study deals with various Pharmacognostical examinations like organoleptic or macroscopical characters, microscopical or anatomical studies. Further studies are required to analyze the implicated phytochemicals and the mechanism at cellular level.
Key words: Bombax ceiba, locomotor, Rota-rod,plus maze ,Anticonvulsant, antianxiety activity.

GREEN SYNTHESIS OF COPPER NANOPARTICLES

Vivekanand Katare, Jitendra Jaiswal, Ayush
Vivekananda college of pharmacy, Bhopal, M. P.
Corresponding Mail: Jaiswaljitendra402@gmail.com

Development of eco-friendly Green synthesis of copper nanoparticles (CuNPs) is an important aspect in the field of nanotechnology and is also inexpensive method for nanoparticles biosynthesis. Recently the utilization of secondary metabolites from plant leaf extract has emerged as a novel technology for the synthesis of various nanoparticles. In the current study, copper nanoparticles were synthesized by the aqueous leaf extract of Azadirachta indica (Neem). 0.1 M copper sulphate solution and 25g of neem extract was prepared. 150 mL of neem extract and 50 mL of copper sulphate were taken and mixed in a beaker. It was observed that the Azardiachta indica leaf extract can reduce copper ions into copper nano particles within 5 minutes of reaction time and green to dark green coloured precipitate settling down is observed.
Keywords: Azadirachta indica (Neem leaf extract), Copper nanoparticles biosynthesis, antimicrobial activity.

PHYTOCHEMICAL PROFILE AND PHARMACOLOGICAL ACTIVITY OF *AEGLE MARMELOS* LINN

Vivekanand Katare, Jitendra Jaiswal, Dhanashree Doijod
Vivekananda college of pharmacy, Bhopal, M. P.
Corresponding Mail: Jaiswaljitendra402@gmail.com

Aegle marmelos Linn. (Rutaceae), commonly known as “bael” in Nepal and India, is a valuable medicinal plant and is considered sacred by the Hindus. It is used to cure several diseases in the Indian traditional medicine system of Ayurveda and has had similar uses among many ethnic communities residing in Indian subcontinent for over 5000 years. Its leaves, bark, stem, fruits and seeds have been used for various medicinal purposes. Bael fruits are especially effective in the treatment of chronic diarrhea, dysentery and peptic ulcers, while they are also useful as a laxative and cure for respiratory infections. Scientific studies have validated many of the ethnomedicinal uses of *A. marmelos*, which include antibacterial, antiviral, antidiarrheal, gastroprotective, anti-ulcerative colitis, hepatoprotective, antidiabetic, cardioprotective and radioprotective effects. the Cns depressant activity of Aegle marmelos Linn has not been thoroughly explored. Thus, this study aims to evaluate the phytochemical constituent of Aegle marmelos Linn
Keyword: Aegle marmelos, Phytochemical analysis, steroid, glycoside

QUANTATIVE AND QUALITATIVE ANALYSIS OF HYDROALCOHOLIC EXTRACT OF BOMBAX CEBIA

Vivekanand Katare, Jitendra Jaiswal, Mangleshwar
Vivekananda college of pharmacy, Bhopal, M. P.
Corresponding Mail: Jaiswaljitendra402@gmail.com

Bombax ceiba has been mentioned in indigenous systems of medicine due to its various ethnomedicinal applications. However, the Cns depressant activity of B. ceiba has not been thoroughly explored. Thus, this study aims to evaluate the phytochemical constituent of B. ceiba flowers and determine their cns depressant activity, The crude extracts of B. ceiba flower underwent colorimetric assays to measure the total polyphenol, total flavonoid, and total condensed tannin content. Quantitative phytochemical evaluation of B. ceiba flowers reveals that ethanol and water extracts have the highest polyphenol content; ethyl acetate, hexane, and acetone extracts have the highest flavonoid content, and; water extract has the highest condensed tannin content. DPPH free radical scavenging and FRAP assay indicate that ethanol (IC50=0.287±0.011 mg/mL and 1877.130±20.574 mg Trolox/g) and water (IC50=0.364±0.010 and 1658.395±97.228 mg Trolox/g) has the most potent antioxidative activity. All extracts are deemed nontoxic to RAW 264.7 cells, with EA extract (IC50= 101.274 µg/mL) having the inhibitory effect against nitric oxide. This study confirms the significant antioxidant and anti-inflammatory activity of B. ceiba flower. Consequently, this study provides insight for extended studies of B. ceiba flowers in medicinal research
Keywords: Bombax ceiba flower; antioxidant; anti-inflammatory; polyphenol; flavonoid

STABILITY, METHOD DEVELOPMENT AND VALIDATION OF SOLIFENACIN AND MIRABEGRON IN COMBINATION IN TABLET DOSAGE FORM

Desale Praneta Ravindra*, Chaturvedi Mohit[1], Shukla Karunakar[2]
*Research Scholar, Faculty of Pharmacy, Dr. A.P.J. Abdul Kalam University, Indore
[1]School of Pharmacy, Dr. A.P.J. Abdul Kalam University, Indore (M.P.)
[2]College of Pharmacy, Dr. A.P.J. Abdul Kalam University, Indore (M.P.)
*Corresponding e-mail: desalepr@gmail.com

Modern medicines for human beings use must be assembled according to the required conditions to ensure safety, security and effectiveness. We use a simple, economical, reasonable, authentic and trusted method to improve the method and test its effectiveness and mirabegron in combination pharmaceutical form in tablets. Chromatographic analysis is usually performed. Elution cases and percent relative standard deviations of combined solifenacin and mirabegron were determined. All purification parameters are within the range recommended by ICH and degradation products are also acceptable.
Keywords: Authentic, chromatographic, degradation

DEVELOPMENT AND VALIDATION OF AN HPLC STABILITY INDICATOR METHOD FOR SOLIFENACIN

Desale Praneta Ravindra*, Chaturvedi Mohit[1], Shukla Karunakar[2]
*Research Scholar, Faculty of Pharmacy, Dr. A.P.J. Abdul Kalam University, Indore
[1]School of Pharmacy, Dr. A.P.J. Abdul Kalam University, Indore (M.P.)
[2]College of Pharmacy, Dr. A.P.J. Abdul Kalam University, Indore (M.P.)
*Corresponding e-mail: desalepr@gmail.com

A high-performance liquid chromatography method has been developed and validated for solifenacin, which shows stability. A pure sample of solifenacin API was collected and the method was tested for linearity, accuracy, precision, reliability, limit of detection and limit of quantitation. The developed method turned out to be simple, specific and economical, allowing its use for the evaluation of solifenacin in pharmaceutical form in tablets.
Keywords: Linearity, precision, detection, quantitation

FORMULATION AND EVALUATION OF NANOSUSPENSION OF ETODOLAC

Pravin Kumar Sharma[1]*, Pooja Prajapat[1], Sumeet Dwivedi[1], G.N Darwhekar[1]
[1]Acropolis Institute of Pharmaceutical Education and Research, Indore, M.P. India – 453771
*Corresponding e-mail: praveensharma910@gmail.com

Etodolac is a nonsteroidal anti-inflammatory drug belongs to BCS II category and it has low oralbioavailability i.e. upto 50% due to poor aqueous solubility. The main objective of present research work was to formulate and evaluate nanosuspension of Etodolac for improvement of its bioavailability. Formulations were prepared by anti-solvent precipitation method and optimized by using box behnken design to study the effect of independent variables like concentration of HPMC (X1), concentrationof SLS (X2) and concentration of urea (X3) on dependent variables like saturated solubility (Y1) and % drug content (Y2). The formulations were evaluated based on the parameters such as % drug content, saturated solubility, particle size, zeta potential, pH measurement, *in-vitro* % drug release and stability study. The optimized nanosuspension had shown the % drug content of 86.57 %, saturated solubility of 16.37 mg/ml, particle size of 650.45nm, zeta potential of -6.9 mV, pH of 4.86 and *in-vitro* % drug release of 98.91%. Moreover, optimized formulation was found to be stable during the stability studies upto 3 months. Based on the results it was concluded that optimized nanosuspension of Etodolac had remarkably increased dissolution rate by enhancing the solubility of the drug and further it gives assurance of its improved bioavailability.
Keywords: Etodolac, Nanosuspension, Solubility enhancement, Bioavailability.

RECENT APPROACHES AND PROSPECTS IN CONSERVATION AND SUSTAINABLE USE OF MEDICINAL PLANTS

Sumeet Dwivedi[1]*, Satyaendra Shrivastava
1, Acropolis Institute of Pharmaceutical Education and Research, Indore, (M.P.) - India
2, Parijat College of Pharmacy, Indore, (M.P.) – India
E.mail: herbal0914@rediffmail.com, drsumeetdwivedi@acropolis.edu.in

Herbal medicines derived from medicinal plants are valuable worldwide, yet they are rapidly vanishing. In order to offer a trustworthy resource for the conservation and sustainable use of medicinal plants, this article examines global trends, advancements, and possibilities for the strategies and approaches pertaining to these two areas. We stressed that for the sustainable use of medicinal plant resources, due consideration

should be given to both conservation methods (e.g., in situ and ex situ conservation and cultivation practices) and resource management (e.g., excellent farming practices and sustainable use solutions). To increase yield and alter the potency of medicinal plants, we advise applying biotechnical techniques (such as tissue culture, micropropagation, synthetic seed technology, and molecular marker-based approaches). Numerous studies have been conducted on the preservation and sustainable use of medicinal plants. Regarding their conservation, a number of sets of suggestions have been put together, such as the necessity of coordinated conservation efforts based on both in situ and ex situ techniques and the creation of mechanisms for species inventorying and status monitoring [4]. The sustainable use of wild resources can be a useful conservation alternative for medicinal plants whose supplies are becoming increasingly scarce. Due to the enormous needs of vast populations, the situation is especially dire in China and South Africa. In the present paper global trends, advancements, and future directions for approaches and tactics related to the preservation and sustainable use of resources derived from medicinal plants.

Keywords: Medicinal Plants, Conservation, Prospects

IMPORTANCE OF THERAPEUTIC DRUG MONITORING AND THE ROLE OF CLINICAL PHARMACISTS

Shrishti Shandily[1], Dr. Poonam Parashar[1]*
*Amity Institute of Pharmacy, Amity University Uttar Pradesh, Lucknow Campus, 226010, India
*Corresponding e-mail: shrishtishandily0202@gmail.com

A critical aspect of clinical pharmacy practice involves overseeing and managing both short and long-term treatment outcomes for therapeutic drugs. The primary goal is to achieve optimal health outcomes for patients. Balancing the optimization of clinical effectiveness with the minimization of the risk of adverse effects is a complex task. Prescribing too little of a drug may result in insufficient clinical effects while prescribing an excessive dose can have severe consequences. In such instances, Therapeutic Drug Monitoring (TDM) can complement clinical observations and other investigations. TDM entails measuring and interpreting drug concentrations, usually in blood or plasma, to enhance a patient's drug therapy and clinical outcomes while minimizing the risk of drug-induced toxicity. The patient's response to the same dose can vary based on factors like overall health and underlying medical conditions. The results of these measurements can significantly impact therapeutic decisions. Drug monitoring allows physicians to tailor the dosage regimen for each patient, considering factors such as medical history and organ function. This personalized approach helps achieve target drug concentrations that can prevent specific medical conditions. The use of TDM services is hindered in many hospitals. Clinical Pharmacist-managed therapeutic drug monitoring (TDM) services have shown positive outcomes in the literature, including a reduction in the duration of therapy and a decreased incidence of adverse effects associated with drug therapy. In this intricate care process, clinical pharmacists play a crucial role by identifying drug interactions, tailoring drug dosing regimens, managing TDM results, and providing adherence counselling to optimize medication management.

Keywords: Therapeutic Drug Monitoring, clinical pharmacy, pharmacology, Clinical Pharmacist, adverse effects

NANOPARTICLES SPECIAL ROLE FOR TRANSDERMAL APPLICATION

Aditya Prakash Varshney[1]*
[1]Department of Pharmacy, Shri Ram Murti Smarak College of Engineering & Technology, Bareilly, U.P. India
*Corresponding e-mail: varshney.aditya.1993@gmail.com

Aspirin is reported to have antithrombotic, analgesic and anti-inflammatory action. Gastrointestinal adverse effects due to frequent dosing, shorter half-life with poor oral bioavailability leads to limitation to use of Aspirin in conventional dosage forms.

The main obstacle to develop a transdermal dosage form of Aspirin is the property of drug to undergo hydrolysis. The basic structure of NLC protects Aspirin from hydrolysis by keeping the drug intact in a lipid core.

To develop a novel dosage form of aspirin using lipid nanoparticulate approach using SLNs and NLCs enriched gel for investigating transdermal potential of aspirin using skin permeation, pharmacokinetic and pharmacodynamic studies. Drug permeation studies, pharmacokinetic, pharmacodynamic and stability studies revealed that formulated aspirin-SLNs and aspirin-NLCs enriched gel can be effectively used in antithrombotic and anti-inflammatory treatments.

Keywords: Microemulsion; Glyceryl monosterate (GMS); Capryol PGMC; Antithrombotic; Anti-inflammatory

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PHARMACOGNOSTIC STUDY AND DEVELOPMENT OF QUALITY CONTROL PARAMETERS FOR LEAF OF COSTUS IGNEUS (COSTACEAE)

Ramesh Pratap Chaudhary[1], Munesh Mani[2]
[1]Research Scholar, Pharmacy Academy, IFTM University, Moradabad (U.P), INDIA.
[2]Department of Pharmacognosy, Pharmacy Academy, IFTM University, Moradabad (U.P), INDIA.
ramesh.pratap85@gmail.com

Aim: Development of Antidiabetic Herbal Formulation and Pharmacological Evaluation of Some Indian Medicinal Plants. Method: The powder of plant was extracted with different solvents such as petroleum ether, chloroform, methanol, ethanol, and water. The different extracts were tested qualitatively for the identification of various photochemical constituents. The plant powder was subjected to fluorescence analysis in daylight and in ultraviolet-light (254 nm and 365 nm). Some standardization parameters were performed according to W.H.O guidelines like type and number of stomata, foaming index, ash value, and heavy metal testing. Result: Water soluble and ethanol soluble extractive value was found to be maximum and minimum respectively. After the analysis of phytochemical screening alkaloids, glycoside, saponin, flavanoids, steroids, and triterpene were present. Fluorescence analysis of leaf powder of Costus igneus showed characteristic coloration with various chemicals. The stomata number, ash value, foaming index were found to be higher on above surface of leave (Hexacytic), higher followed by water soluble ash and acid insoluble ash, less than 1 ml respectively. The presence of all type of heavy metals was found negative. Conclusion: Thus the bioactive natural products in leaf extracts of Costus igneus can be used in the development of new pharmaceuticals that enhances therapeutic use.
Keywords: Costus igneus, Ash value, Fluorescence analysis, Heavy metals.

ADVANCEMENTS IN MICROSPONGES: A COMPREHENSIVE OVERVIEW

Aashish Burman[1]*, Dr. Madhu Verma[2], Ms. Sagarika Majhi[3]
I.T.S College of Pharmacy, Muradnagar, Ghaziabad, Uttar Pradesh, India-201206
*Email: burmanaashish@gmail.com

Microsponges, also known as microencapsulated delivery systems, represent a versatile and innovative technology with a wide range of applications in pharmaceuticals, cosmetics, and various other industries. This abstract provides a concise overview of recent advancements in the field of microsponges, highlighting their evolving role in enhancing drug delivery, improving formulation stability, and addressing challenges associated with active ingredient release. In pharmaceuticals, microsponges have gained significant attention for their ability to encapsulate and control the release of therapeutic agents, leading to improved drug efficacy and patient compliance. Advances in material science and fabrication techniques have enabled the design of microsponges with tailored properties, such as particle size, porosity, and surface morphology, allowing for customization according to specific drug delivery requirements. Furthermore, microsponges have found applications in the cosmetics industry, offering controlled release of active ingredients in skincare formulations. These microencapsulated systems contribute to prolonged product shelf life, enhanced stability, and targeted delivery of cosmetic actives, addressing consumer demands for efficacious and long-lasting beauty products.This abstract also explores the potential environmental benefits of microsponges, as their use in controlled release systems can lead to reduced overall consumption of active ingredients, minimizing waste and environmental impact. The integration of nanotechnology and smart materials into microsponge formulations represents another frontier in research, promising innovations such as stimuli-responsive microsponges that release their payload in response to specific environmental triggers. In conclusion, this abstract highlight the continuous evolution of microsponges as a versatile and promising technology. The ongoing research and development efforts in this field are poised to unlock new possibilities, pushing the boundaries of drug delivery, cosmetic formulations, and beyond. The multifaceted nature of microsponges positions them as key players in the advancement of targeted and controlled release systems, with far-reaching implications for diverse industries.
Keywords: Microsponges, Microencapsulated systems, Targeted and Controlled release systems.

NANOPARTICLE-BASED THERAPEUTICS FOR THE TREATMENT OF INFLAMMATORY BOWEL DISEASE (IBD)

Abhinav Trivedi*[1], Shashi Verma[2], Ritesh Kumar Tiwari[3]
[1,2,3]Shri Ram Murti Smarak College of Engineering & Technology (Pharmacy), Bareilly-243202, Uttar Pradesh, India

Inflammatory bowel disease (IBD), encompassing Crohn's disease and ulcerative colitis, presents a significant medical challenge characterized by chronic inflammation of the gastrointestinal tract. Conventional treatments for IBD often exhibit limited efficacy and systemic side effects. Nanoparticle-based drug delivery systems have emerged as a promising approach to improve the targeted delivery of therapeutics to inflamed intestinal tissues, thereby enhancing efficacy and reducing systemic toxicity. This research explores the potential applications of nanoparticles, including liposomes, polymeric nanoparticles, and mesoporous silica nanoparticles, in the treatment of IBD. Furthermore, it provides an overview of the mechanisms by which nanoparticles can improve drug stability, increase local drug concentrations, and modulate immune responses within the inflamed mucosa. The potential of nanoparticle-based therapeutics to mitigate the symptoms of IBD while minimizing adverse effects is discussed, underscoring the need for further research to advance these innovative approaches toward clinical implementation.
Keywords: nanoparticle, drug delivery, inflammatory bowel disease, IBD, targeted therapy, gastrointestinal inflammation, nanomedicine

NANOPARTICLES FOR CANCER THERAPY :- PROGRESS AND CHALLENGES

Abhishek kumar , Dr. Abhinav Prasoon Mishra*
Advance institute of biotech and paramedical science, 366,Naramau G.T. Road Kanpur 209217 .

The earliest evidence of cancer treatment can be traced back to an ancient Egyptian medical text, written around 3000 BC and known widely as the 'Edwin Smith Papyrus', that described the cauterization of breast tumors for which, according to the text, there was no cure. Advances reflect the focus placed on cancer research and oncology by governments, founders and research institutes across the globe over the past several decades. substantial progress has been made across first-line cancer therapy modalities. Surgery continues to be a first-line treatment for many cancer types, but it now includes precision and minimally invasive surgery, molecular imaging support and, more recently, robot- or artificial intelligence–assisted surgical procedures. Nanotechnology offers the means to target therapies directly and selectively to cancerous cells and neoplasms, guide surgical resection of tumors, and enhance the therapeutic efficacy of radiation-based treatments.

Keywords: Cancer, Nanotechnology, Chemotherapy, Therapeutic applications.

EMERGING ROLE OF BINARY, TERNARY AND QUATERNARY SOLID DISPERSION IN THE SOLUBILITY ENHANCEMENT OF POORLY SOLUBLE DRUG

Sourav Sahoo[1*], Naureen Afrose[1] , Pratibha Bhowmick[1] , Mithun Bhowmick[1]
Bengal College of Pharmaceutical Sciences & Research, Durgapur, West Bengal, 713212
[*]Presenting author Email id :Sourav.sahoo113@gmail.com

Pharmaceutical formulations that are poorly soluble in water pose a constant challenge since they reduce the drugs' therapeutic efficacy and bioavailability. Pharmaceutical products frequently use combinations of excipients like polymers and surfactants to enhance the delivery of drugs that are poorly soluble in water. Still, one of the most challenging aspects of developing formulations is comprehending the solubility behaviour of drugs. At the moment, only 8% of newly created molecules exhibit high permeability and solubility. The bioavailability and solubility of the drug are the two main factors that determine its therapeutic efficacy. Drug dissolution rates have often been accelerated through salt formation, particle size reduction, etc. However, these methods have certain practical drawbacks, and the intended bioavailability enhancement may not always be realised. It appears that solid dispersion is a workable solution to this issue. To get around this obstacle and increase drug solubility and dissolution rates, solid dispersion techniques have become a viable tactic. Traditionally, to increase solubility, binary solid dispersions containing a drug and a single carrier have been used. But due to developments in pharmaceutical research, ternary and quaternary solid dispersions that combine several carriers or additives have been developed. Because of the components' synergistic interactions, these formulations provide special benefits such better solubility, controlled drug release, and improved stability. The study explores the many methods utilised in the preparation of these dispersions, such as spray drying, melt mixing, and solvent evaporation. Moreover, it examines the impact of different carrier materials on the drug's physicochemical characteristics and dissolving behaviour, including polymers, surfactants, and co-solvents. This review discusses how solid dispersion formulations are developing, with an emphasis on the novel ways that binary, ternary, and quaternary systems might be used to improve solubility.
Keywords: Solid Dispersion, poorly-soluble drug, solubility, bioavailability

RAFT FORMING SYSTEMS: A NOVEL APPROACH TO GASTRIC RETENTION

Apala Ghosh[1*], Rideb Chakraborty[1], Pratibha Bhowmick[1], Mithun Bhowmick[1],
[1]Bengal College of Pharmaceutical Sciences and Research, Durgapur, 713212, West Bengal
ghoshapala00@gmail.com

Gastro retentive drug delivery is an approach to extend a drug's half-life in the stomach. This is helpful for drugs that are harmed by stomach acid or that need to be administered in a sustained-release form. They might reduce adverse effects while also improving the safety and efficacy of drugs. The primary goal of GRDDs is to improve the bioavailability and therapeutic efficacy of drugs taken orally. There are several forms of GRDDs available, including tablets and capsules. The medications that are gastro-retentive, it enhanced the duration of the drug in the git and enhance its bioavailability. These are widely used to treat various illnesses and diseases in a location-specific manner. There are number of approaches for gastro retentive drug delivery system such as floating system, mucoadhesive system, swelling system, high density system etc. The short gastric retention time and unpredictable short gastric emptying time are the two problems of drug delivery systems. Decrease response of dose Due to incomplete drug release from the dosage form in the absorption zone. A good method for systematic drug delivery is a raft-forming system, which has a sustained release mechanism and constant plasma profiles. Some of its benefits include increased patient compliance, improved bioavailability, and superior floating capabilities compared to other floating systems. Although, it has some problems like, it can't be used for that drugs those are possess low acid solubility and also unstable in gastric media. There was a good variety in the active ingredients formulated in a raft, starting from some anti-coughs, anti-spasmodic, anti-inflammatories and antacids to drugs treating osteoporosis and finally anti-depressants and anti-epileptic drugs.
Keywords: gastric emptying, gastric retention, raft forming system.

A REVIEW ON ANALYTICAL METHODS DEVELOPED FOR DETERMINATION OF PIROXICAM IN BOTH PURE DRUG AND PHARMACEUTICAL DOSAGE FORM

Vikas Chauhan[1]*, Parul Grover [1]
[1] KIET School of Pharmacy, KIET Group of Institutions, Delhi-NCR, Ghaziabad, 201206, India.
chauhanvikas1290@gmail.com

Piroxicam is a commonly used NSAID. Because of its Anti-Inflammatory, Analgesic, and Antipyretic characteristics, it is used to treat inflammation caused by musculoskeletal diseases such as arthritis. It is also used to treat persistent arthritic pain. It is an oxicam derivatives nonsteroidal anti-inflammatory drugs. Pharmaceutical analysis is crucial to the quality control and assurance of pharmaceutical formulations and bulk medicines. The need for innovative analytical techniques in the pharmaceutical industries has increased due to the industry's rapid growth and medication production across the globe. Therefore, it is critical to have reliable analytical methods for detecting Piroxicam in order to monitor pharmaceutical formulation quality and identify drug abuse in the community. To estimate piroxicam in its dosage form, a variety of spectroscopic techniques, like UV Spectroscopy and Liquid chromatographic analytical techniques have been developed, including HPLC, HPTLC, etc. The purpose of this review is to offer critical perspective on analytical techniques that can be used to determine piroxicam in both forms as, pure drug and different pharmaceutical dosage forms. Therefore, more effective analytical techniques are needed to provide quality control for regularly used pharmaceuticals.
Keywords: Piroxicam, NSAID, Analytical method, HPLC, UV Spectrophotometry.

IN-VITRO AND IN-VIVO ANTICANCER ACTIVITY OF E. LITTORALE

Zanwar Sachin*, Patel Kirti
Department of Pharmacology, Faculty of Pharmacy, The MS University of Baroda, Vadodara, Gujarat, 390001, India
E-mail id-sachin4res@gmail.com

Hepatocellular carcinoma (HCC) is a well-known liver cancer worldwide that ranks among the top cancer-related death causes[1-2]. Currently available treatment options are associated with serious adverse effects[3]. Enicostemma littorale (EL) Blume is a member of the Gentianaceae family and has been used for numerous ailments in traditional medicine and liver disorders[4]. The aim of this study was to investigate the anticancer activity of EL extract against HepG2 cells in-vitro and in-vivo. EL extract decreased the cell growth in a dose-dependent manner. Athymic nude mice with HepG2 xenografts were treated with extract showed a significant reduction in tumor growth compared to control group. These results show that the EL extract has a potential anticancer activity in HCC and can be used as adjuvant therapy.

EXTRACTION AND PHYTOCHEMICAL SCREENING OF MALACHRA CAPETITA PLANT

Akanksha Vijaykumar Shinde
Maulana Azad's Educational Trust,Y.B Chavan College of Pharmacy,Rauza Bagh,Aurangabad 431001,Maharashtra,India

Medicinal plants are gaining much interest recently because their use in ethno medicine treating common disease such as cold fever and other medicinal claims are now supported with sound scientific evidences. The study on medicinal plants started with extraction procedures that play a critical role to extraction outcomes and also to the consequent assays performed. A wide range of technologies with different methods of extraction is available nowadays. Hence, this review aims to describe and compare the most commonly used method based on their principle, strength and limitations to help evaluating the suitability and economic feasibility of the methods.
The focus of the paper was a preliminary phytochemical and TLC analysis of the various extracts (roots, stem, leaves) of the mangrove plant Excoecaria agallocha L. the result of the preliminary phytochemical screening revealed the presence of various chemical compounds like alkaloids, glycosides, flavonoids, carbohydrates, anthraquinones, tannins, phenols, terpenoids, fixed oils and fats. The organoleptic study revealed the specific nature of the plant parts used in the study. The behaviour of the powdered plant parts in the presence of various chemicals was studied. The present investigation includes preparation of different extracts using different solvents methanol, aqueous methanol, acetone, ethyl acetate and hexane by cold percolation, reflux extraction and warm extraction. It was observed that in general the extraction yields obtained with polar solvents such as methanol and aqueous methanol were more as compared to non polar solvents such as ethyl acetate and hexane. In almost all the method amongst the entire solvents methanol was found to be the best extractant and more yield of coat and root exhibited variation in their phytochemical constituent.

ORAL THIN FILMS – AN EMERGING VERSATILE PLATFORM FOR DRUG DELIVERY

Mr. Aman Ansari[1], Dr. Garima Garg
[1]Meerut Institute of Engineering and Technology
Department of Pharmaceutical Technology, MIET Meerut
Asifaman1997@gmail.com

In response to evolving pharmaceutical needs, an increasing number of companies are transitioning from traditional tablets to innovative fast-dissolving oral thin films (OTFs). These films seamlessly integrate the advantages of both tablets, such as precise dosage and ease of administration, and liquid dosage forms, offering advantages like easy swallowing and rapid bioavailability. Recognized for their convenience, self-administrability, and rapid dissolution, thin films have emerged as a versatile drug delivery platform capable of providing swift local or systemic effects.The adoption of OTFs is particularly beneficial for populations like geriatric and pediatric patients who may encounter challenges with chewing or swallowing solid dosage forms. Oral disintegrating or dissolving films, often referred to as strips, swiftly release drugs by dissolving or adhering to the mucosa with saliva within seconds. This rapid dissolution is advantageous compared to traditional dosage forms, making thin films a preferred choice for drug delivery.
Fast Dissolving Oral Films (FDOFs) technology has gained considerable attention, presenting solid dosage forms that disintegrate or dissolve within one minute without the need for water or mastication. This technology is versatile, catering to both local and rapid-release applications. Formulated with various components such as Active Pharmaceutical Ingredients (API), film-forming polymers, plasticizers, flavors, colors, and sweeteners, FDOFs initially found application in markets like breath strips, confection, and oral care. However, they have since evolved into a novel and widely accepted technology for delivering both over-the-counter (OTC) and prescription medications.As the field progresses, emerging technologies like 3D Printing and Inkjet Printing are being explored to develop pharmaceutical thin films. These technologies enable the direct printing of active pharmaceutical ingredients onto orodispersible films, increasing the flexibility of drug dosing and holding potential for personalized medicines. Continuous ODF production with direct printing presents various printing concepts, offering promise for individualized dosing in personalized medicine treatments in the near future.
Keywords – Oral thin films, Fast dissolving oral thin films, orodispersible films

DRUG REPURPOSING AS A STRATEGY TO IDENTIFY NEW THERAPEUTIC AGENTS

Ajay Kumar Gautam*, Prof (Dr) Arun Kumar[2], Kanika Titoria[3]
[1]Sagar Institute of Pharmaceutical Sciences,Sagar,Madhya Pradesh,
[2,3]Parmarth College of Pharmacy,Hapur, Uttar Pradesh
Ajaygautam3281@gmail.com

Drug repurposing is also called as drug repositioning or drug reprofiling or drug rescuing. Drug repurposing is considered as an emerging strategy of computational approach to identify new therapeutic agents within a short period of time for effective treatment of various fatal diseases. This approach is based on virtual screening of drug libraries to identify suitable drugs and their binding interactions with target protein by using computational tools such as molecular similarity and homology modeling. Through this process, new medicinally active agents are designed from the old or existing or pro-drugs or FDA approved clinically used drugs. Recently, in silico methods are employed along with the utilization of structure based drug design (SBDD), ligand based drug design (LBDD) and artificial intelligence (AI) technology to accelerate the drug repurposing process.
Drug repurposing provides several advantages such as reduction of the time period spent during research, reduction in complexity and cost of process in comparison with traditional approaches of drug discovery process. It is estimated that 10–12 years are required for the development of a new drug molecules in traditional drug discovery approach. While, the estimated time is between 1 and 3 years in case of drug repositioning method. The average expenditure required to obtain a new pharmacologically active drug to market is USD 1.24 billion by traditional drug

development process. Whereas, in case of drug repurposing process, it costs around ≤60% expenditure of traditional drug discovery methods. Traditional methods of drug discovery process mainly focus on development of drugs to treat chronic and complex diseases, whereas drug repositioning approach primarily focus on the development of drugs for emerging infectious diseases which are difficult to treat and neglected diseases.

Keyword- Drug Repurposing, drug reprofiling, drug repositioning

UNDERSTANDING THE ROLE OF NOVEL BIOELECTRONIC MEDICINAL APPROACH IN NEUROMODULATION

Kaur Davinder[1*], Kumar Dinesh[1]
[1]Department of Pharmaceutics, School of Pharmaceutical Sciences, CT University, Ludhiana
Email: davindermehton094@gmail.com

Bioelectronic medicine represents a convergence of molecular medicine, neuroscience, engineering, and computing with the goal of creating diagnostic and therapeutic devices. These devices aim to treat diseases by influencing neural control of underlying biological processes, using electrons instead of traditional drugs. This emerging field has become a focal point at the intersection of healthcare, technology, and science, offering a novel approach to disease management.In contrast to conventional drug-based treatments, which can lead to side effects and increased costs and often only address symptoms rather than the root causes of diseases, bioelectronic medicine leverages rapidly advancing technology. It focuses on precisely detecting and modulating electrical signaling patterns within the nervous system. This innovative approach places particular emphasis on the peripheral nervous system, which plays a significant role in chronic diseases.The vision for bioelectronic medicine involves the development of tiny, implantable devices designed to attach to individual peripheral nerves. These devices would possess the capability to decipher and adjust neural signaling patterns, thereby achieving therapeutic effects tailored to the specific function of a targeted organ. In essence, bioelectronic medicine offers a promising and highly targeted means of treating diseases by directly influencing neural circuits and their associated biological processes.

Keywords: Bioelectronic medicine, Electrical signaling patterns, Nervous system, Diseases, Neuromodulation

NIOSOMES: A CUTTING-EDGE APPROACH IN PHARMACEUTICAL DRUG DELIVERY - EMPHASIZING FORMULATION, CLASSIFICATIONS, TYPES, AND UTILIZATION

Prasanjit Show[1*], Rideb Chakraborty[1], Pratibha Bhowmick[1], Mithun Bhowmick[1]
[1]Bengal College of Pharmaceutical Sciences and Research**, Durgapur,** 713212, West Bengal
prasanjitshow2017@gmail.com

Optical problems have a significant influence on vision and quality of life; the World Health Organization (WHO) estimates that over 2.2 billion people worldwide suffer from vision impairment. The human eye is an intricate and sensitive organ that protects the visual axis from inflammation and infection with its many barriers. Astronomically, the optical structure can be split into an anterior part and a posterior member. The vitreous fluid, retina, choroid, sclera, and optical whim-whams are found in the ultimate structure, whereas the cornea, conjunctiva, iris, ciliary body, and lens are found in the former. Each sub class's distinct anatomy creates major challenges for the delivery of visual medical treatment. Topical, systemic, intraocular, and periocular delivery are all parts of the traditional medicine administration pathway. The most widely used and easily accessible forms of medication administration are topical eye drops and ointments. Nevertheless, the minimal drug penetration into the eye limits their efficacy and lessens the therapeutic effect. Therefore, a targeted medication delivery system (DDS) to get through physiological as well as anatomical boundaries in an optical layer is a constant source of difficulty for experimenters and pharmacists. A novel method of delivering medications, niosomes encapsulate the medication within a vesicle. A bilayer of non-ionic surfactant makes up the vesicle. The niosome's flyspeck size has to fall between 10 and 100 nm. By protecting medication from the environment, restricting the amount of medicine on target cells, and postponing medicine's concurrence from rotation, niosomes improve the pharmacological activity of medicine motes. It is used in cancer therapy, hemoglobin delivery, oral peptide medication delivery, leishmaniosis treatment, ocular medicine delivery, and cutaneous medicine delivery.

Keywords: Multitudinous, Niosome, Inflammations, Ophthalmic delivery.

A REVIEW ON ISOCRATIC ELUTION IN HPLC METHODS FOR FLAVONOIDS

Pritam Chaudhri 1*, Dr. Amit Tapkir[1]
Modern College Of Pharmacy, Nigdi , Pune 411004 Maharashtra , India.
chaudharipritam@gmail.com

With a wide range of pharmacological and advantageous health effects on people, flavonoids are one of the major subclasses of small molecular secondary metabolites generated in the various plant parts. The analysis of flavonoids by HPLC is one of the most important steps. Isocratic elution is a straight forward, reliable mobile phase with identification for flavonoid analysis in robust chromatographic procedures. Only few of bioactive flavonoids such as querecetine, apigenin, luteolin, catcachin analysis by stable mobile phase, 1-2 min. flow rate in hplc method. This review will look at the application of flavonoids from the previous five years of research study, discussing the benefits of isocratic elution techniques. Review is done to analyze various factors, such as extraction, isolation, column selection, mobile phase composition, and so on. The objective of this review is to provide evidence of analytical techniques using the isocratic elution method used for different subclasses of flavonoids.

Keywords: Bioactive, Flavonoids, Isocratic elution

RECENT ADVANCEMENT IN SOLUBILITY ENHANCEMENT OF ACECLOFENAC BY AMALGAMATION MICRONIZATION AND SOLID DISPERSION TECHNIQUES

Vishal Gupta[1*], Sokindra Kumar[1]
[1] Faculty of Pharmacy, Swami Vivekanand Subharti University, Subhartipuram Delhi-Haridwar Meerut Bypass Road, NH-58, Meerut-250005
vishal.vishalgupta333@gmail.com

Solubility or Dissolution rate of drug plays a vital role in absorption of the drug from the dosage form and hence its bioavailability. When a drug is administered orally in solid modified release dosage form, it is designed to undergo series of predetermine stages. The slowest or rate limiting step is fond to be dissolution or diffusion of drug at the absorption site. The fact that more than 90% of newly discovered drugs have little or no water solubility presents a serious challenge to the successful development and commercialization of new drug in the pharmaceutical industries. Through numerous techniques of diverse nature such as size reduction, complexation, reduction of hydrophobicity, slat formation, adsorption and solid dispersion have been developed for the enhancement of dissolution rate but with limited success due to its self-limitation of individual techniques like handling and stability of API's, or poor scaleup for the manufacturing. BCS class II drugs have poorly aqueous solubility and have bioavailability problems after oral administrations. There are numerous solubility enhancement techniques, but all individual techniques have own limitations. The aim of this novel research work is use two different solubility enhancement Technique (Micronization with Solid dispersion) simultaneously for enhancement of Aceclofenac solubility, to address individual limitation of techniques. Micronization technique increases the solubility of Aceclofenac through increasing particle surface area, but it produces charged micronized material which leads to segregation and clumping of micronized material. Aceclofenac material is micronized by Air Jet mill to produces materials of below 25µm size ranges. This micronized Aceclofenac material further encapsulated in Solid dispersion technique to produces amorphous Aceclofenac materials. Solid dispersion of micronized Aceclofenac was prepared by various techniques like Physical Kneading, Solvent Evaporation, Melting and combination thereof using different polymers. The prepared Solid dispersion formulation exhibited increase in dissolution of Aceclofenac as compared to Pure Aceclofenac. Various characterization techniques (DSC, FTIR, XRD & SEM) also reveals that Aceclofenac crystalline nature is significantly minimized in Solid dispersion formulation. This selected solid dispersion exhibited good Photostability & Accelerated Stability at 40°C/75% RH. Hence, enhanced solubility of poorly soluble Aceclofenac by these proposed techniques is due to either conversion of crystalline compound in to amorphous form or reduction of particle size to its molecular levelby the application of Micronization or solid dispersion techniques.

keywords: BCS Class**, Solubility Enhancement, Micronization, Solid Dispersion, Aceclofenac, Stability**

NOVEL METHODOLOGIES FOR THE SYNTHESIS OF ANTI – DIABETIC DRUGS

Divyansh Dutt Kaushik*
*Kharvel Subharti College of Pharmacy, Swami Vivekananda Subharti University, Meerut, U.P. ,INDIA-250005
kaushikdivyanshj6@gmail.com

Aim: -This abstract provides an insightful glimpse into the latest synthetic strategies, highlighting their uniqueness and potential impact on the future of anti-diabetic drug development.

Methods: - Drug synthesis techniques: -

1. Green Chemistry in Anti-Diabetic Drug Synthesis: Environmentally benign methodologies, such as microwave-assisted synthesis, solvent-free reactions, and the use of catalysis, contribute to minimizing the environmental impact of drug manufacturing.
2. Peptide and Protein Engineering: Recombinant DNA technology and synthetic biology techniques play a pivotal role in the design and development of biotherapeutics for diabetes, including insulin analogs and incretin mimetics.
3. Enzymatic and Chemoenzymatic Synthesis: Biocatalysis in Drug Synthesis, Enzymatic and chemoenzymatic synthesis pathways are gaining prominence, offering greener alternatives in anti-diabetic drug development.
4. C–H Activation and Late-Stage Functionalization: Streamlined Late-Stage Modifications: Recent advances in C–H activation methodologies enable late- stage functionalization, streamlining the synthesis of anti-diabetic drugs. This approach minimizes synthetic steps, improves overall yield.

Conclusion: -The synthetic methodology for anti-diabetic drugs is undergoing a transformative phase, embracing cutting-edge technologies that promise not only enhanced therapeutic outcomes but also sustainable and streamlined drug development processes.

Keywords: Anti-Diabetic Drugs, Synthesis, Methodology, Development, Techniques.

USE OF GOLD NANOPARTICLES IN THE TREATEMENT OF CANCER

Rujul Ninawe
G H Raisoni University, Gram Dhoda Borgaon, Village- Saikheda, The- Sausar, Dist- Chhindwara, (M.P)

For centuries, scholarly minds have engaged in the profound exploration of colloidal gold's potential applications within the expansive realm of medicine. In recent epochs, a discernible surge in scientific curiosity has enveloped the synthesis and meticulous assessment of diverse gold nanoparticles. Contemporary scholarly investigations corroborate the myriad advantages inherent in nanogold, surpassing the attributes of an array of nanomaterials. This ascendancy is predominantly ascribed to the fastidious optimization of protocols governing the production of gold nanoparticles, resulting in an impressive array of sizes and shapes, each imbued with distinct and advantageous properties.

A pivotal facet of nanogold lies in its remarkable adaptability to surface customization through the strategic incorporation of diverse targeting and functional compounds. This inherent characteristic significantly broadens the horizons of potential biomedical applications, with a specific and laudable emphasis on the progression of cancer treatment methodologies. Gold nanoparticles, subjected to the process of functionalization, manifest praiseworthy biocompatibility alongside the facilitation of controllable biodistribution patterns. These inherent qualities position them as exceptionally promising candidates, forming the bedrock for the development of pioneering therapeutic modalities.

In consideration of the substantial corpus of scientific data surrounding nanogold, this comprehensive review aspires to delineate recent advancements in the medical application of gold nanoparticles, particularly within the domain of cancer therapy. By meticulously elucidating the intricate nuances associated with the synthesis process, surface customization methodologies, and the consequential biomedical implications, this discourse endeavors to contribute meaningfully to the ongoing dialogue regarding the transformative potential of nanogold in the realm of medical science.

Keywords: Cancer, Gold nanoparticles, Nanogold, Cancer therapy, Cancer treatment.

LIPID NANOPARTICLES IN ANTI-ACNE FORMULATIONS: A NOVEL APPROACH

Pallavi Singh[1]*, Iti Chauhan[1], Madhu Verma[1]
[1]I.T.S College of Pharmacy, Delhi-Meerut Road, Murad Nagar, Ghaziabad, UttarPradesh,201206, India.
Email id: pallavi6306048059@gmail.com

Acne vulgaris is a common skin ailment characterized by the appearance of pimples, blackheads, whiteheads, and, in more severe instances, cysts or nodules. It happens when hair follicles get blocked with oil (sebum) and dead skin cells, resulting in the production of various forms of lesions on the skin.Studies have shown the novel use of lipid nanoparticles in the formulation of anti-acne solutions to solve the limitations associated with standard acne treatments. Lipid nanoparticles, recognized for the biocompatibility and adaptability, offer a promising platform for improving the administration and efficacy of anti-acne medicines.
Lipid-based carriers were used to encapsulate strong anti-acne chemicals like Retinol or Tretinoin, Salicylic acid, Tea tree oil, Azelaic acid, etc, allowing for regulated release and targeted administration. The introduction of lipid nanoparticles not only improves the stability of active compounds but also reduces possible skin irritation, which is a typical issue in acne formulations. It helps in improvements in skincare formulations by stressing the potential of lipid nanoparticles as a viable technique for the creation of effective and well-tolerated anti-acne solutions. The unique use of carriers is a big step in developing formulations that are not effective in acne management but also deliver a more patient-friendly and aesthetically pleasant experience.
Keywords**:** Lipid Nanoparticles, Novel Approach, Therapeutic Efficacy, Controlled Release.

ANALYTICAL METHOD VALIDATION ON SIMULTANEOUS ESTIMATION OF OZENOXACIN AND BENZOIC ACID IN PHARMACEUTICAL FORMULATION

Amarnath Reddy Ramireddy [1], Dilip Kumar Behara [2]
[1] Research Scholar, Department of Pharmaceutical Sciences, Jawaharlal Nehru Technological University Anantapur (JNTUA), Ananthapuramu, Andhra Pradesh, INDIA – 515002. (e-mail: amarpharmacy123@gmail.com)
[2] Professor of Chemical Engineering, JNTUA College of Engineering (Autonomous), Jawaharlal Nehru Technological University Anantapur (JNTUA), Ananthapuramu, Andhra Pradesh, INIDA – 515002. (e-mail: dileepbh.chemengg@jntua.ac.in)

In this study, an accurate, simple, economical, precise and reproducible Reversed-Phase High Pressure Liquid Chromatography method was developed for the simultaneous estimation of Ozenoxacin and Benzoic Acid in a pharmaceutical cream formulation, according to the ICH guidelines. Chromatographic separation was achieved by gradient elution, on RP-HPLC Instrument, equipped with column C8 (150 mm x 4.6 mm), 5 µm and Ultra Violet (UV) detector at 235 nm wavelength, by using Mobile Phase A: triethylamine, trifloroacetic acid and water (1:1:1000) and Mobile Phase B: methanol and Diluent: water, acetonitrile and triethylamine (500:500:1), at flow rate 0.8 mL/minute; injection volume of 20 µL; column oven temperature 45 °C and sample temperature: 25 °C; Run time: 15 minutes. All the validation parameters were within the acceptance criteria, as per ICH requirements, for Ozenoxacin and Benzoic acid. Consequently, this method has found to be validated, simple, rapid and successfully applicable, to the simultaneous estimation of Ozenoxacin and Benzoic acid by RP-HPLC, for routine analytical testing in quality control, with a run time of 15 minutes and for future research studies. To assess stability indicating potential, forced degradation studies were also performed.
Keywords**:** Ozenoxacin, Benzoic Acid, Impetigo, RP-HPLC, stability indicating.

EXPLORING PROGRESS IN FLOATING DRUG DELIVERY SYSTEMS: DESIGN, FORMULATION, AND THERAPEUTIC IMPLICATIONS FOR IMPROVED BIOAVAILABILITY AND TARGETED RELEASE

Avijit Ruidas[1], Pratibha Bhowmick[1], Rideb Chakraborty[1], Mithun Bhowmick[1],
Bengal College of Pharmaceutical Sciences and Research, Bidhannagar, Durgapur, West Bengal, India
Ruidasavijit3@gmail.com

This overview on floating drug delivery systems (FDDS) was written with the intention of gathering the most recent research, with an emphasis on the main floatation process.in order to accomplish stomach retention. The latest advancements concerning FDDS with the variables related to physiology and formulation impacting gastric retention and methods for single-unit design and floating systems with many units, as well as their classification and formulation elements are thoroughly discussed. This evaluation summarises the in vivo research and in vitro methods as well. Assess the functionality and use of floating systems systems, as well as the uses for these systems. These frameworks are helpful for a number of issues that arose during the development statement of a dose form for medication.
Keywords: floating drug delivery systems, single unit,multiple units, evaluation in vitro and in vivo.

RECENT BREAKTHROUGH IN POLYMER-BASED DRUG DELIVERY SYSTEM TECHNOLOGY

Anneswa Ghosh[1*], Rideb Chakraborty[1], Pratibha Bhowmick[1], Mithun Bhowmick[1],
[1] Bengal College of Pharmaceutical Sciences and Research, Durgapur, 713212, West Bengal
Anneswaghosh7@gmail.com

Polymers are natural or synthetic substances with large macromolecules, which are multiples of simpler chemical units. They are essential in living organisms and are used in various industries, including drug delivery. Biodegradable polymers have been used in various applications, but challenges persist in fabrication processes, such as processability and reproducibility of drug release kinetics. New star-shaped block copolymers have introduced a novel molecular architecture, influencing aspects such as microsphere fabrication, drug release mechanisms, and degradation profiles. Biodegradation, a natural process where organic chemicals undergo conversion into simpler compounds, occurs exclusively within the biosphere, with microorganisms playing a pivotal role. Recent advances in polymer-based drug delivery systems involve the development of smart polymers responsive to specific stimuli, facilitating targeted drug release. Nanoparticle formulations using polymers like PLGA have gained prominence due to their controlled release properties. Researchers are exploring the potential of biodegradable and biocompatible polymers to enhance safety and efficacy in drug delivery applications. Advances in polymer chemistry have enabled the design of customized drug carriers, improving therapeutic outcomes while minimizing undesirable side effects.
Keywords: Polymer, Biodegradable, Materials, Properties, Advancements.

PHARMACOVIGILANCE: ANTIBIOTICS RESISTANCE THREAT TO SOCIETY

Tushar Chaudhary*****, Saumya das

Noida Institute of Engineering And Technology (Pharmacy Institute), Department of Pharmacology, Plot no-19, Knowledge Park-II, Greater Noida, Uttar Pradesh-201306, India
Chaudharytushar200154@gmail.com

The biggest global challenge to effectively treating bacterial infections right now is antibiotic resistance. It has been demonstrated that antibiotic resistance has a negative impact on both clinical and therapeutic results. As a result, patients may experience treatment failures, a need for costlier and safer alternatives, longer hospital stays, and increased healthcare expenses. In the ongoing fight against bacterial infections, there is an urgent need for new antibiotics and other antimicrobials. Antibiotic resistance is unavoidable, and pharmaceutical firms consistently show little interest in funding novel antibiotic research. Bacteria develops resistance by successfully lowering intracellular drug concentrations or antibiotic binding affinities, bacteria have evolved to produce a variety of antibiotic resistance tactics, although the part played by cell shape in antibiotic resistance is still poorly understood. Depending on the antibiotic target, bacteria either increase or decrease the cell surface-to-volume ratio by examining cell morphology data for various bacterial species under antibiotic stress. The high prevalence of multi-resistant strains in the environment and the ease of transmission of drug-resistance genes between the different bacterial species including commensal flora and pathogenic like foodborne pathogens (E. coli, Campylobacter spp., Enterococcus spp., Salmonella spp., Listeria spp., Staphylococcus spp.) favor the rapid spread of multi-resistance among bacteria in humans and animals. Given the threat that multidrug-resistant bacteria that are harmful to both humans and animals represent on a global scale. This resistance can be avoided by the limited and appropriate use of antibiotics in all the fields (diseased patient treatment, crops cultivation, patients not taking antibiotics as prescribed etc.).We should use antibiotics in limit and in a proper way then only antibiotics resistance can be controlled and it will also help in easy and fast recoveries of the patients.
Keywords**:** Antibiotic, Treatment, Resistant Strains, Transmission, Morphology, Recovery

FORMULATION AND EVALUATION OF FAST DISSOLVING TABLETS OF ATENOLOL

Sanjeev Kumar[1]*, Yash Paul Singla[1] , Suresh Beniwal[2] , Pawan Jalwal[3]
[1]Lord Shiva College of Pharmacy
[2]Bharat Institute of Pharmacy
[3]Baba Mastnath University
morwalsanjeev2@gmail.com

Oral route has been one of the most popular routes of drug delivery due to its ease of administration, patient compliance, least sterility constraints and flexible design of dosage forms. The formulation of poorly soluble compounds for oral delivery now presents one of the most frequent and greatest challenges to formulation scientists in the pharmaceutical industry. Elderly person will get the opportunity in taking oral dosage form as compared to conventional dosage form like suspension, tablets or capsules because of hand tremors or dysphasia. Estimation of atenolol in the prepared tablet formulation was done in phosphate buffer pH 6.8 to find out the amount of drug in the tablet. The resulting solution of atenolol was measured at λmax 225 nm using UV visible spectrophotometer. The prepared formulation were further evaluated for hardness, friability, drug content uniformity, in vitro drug release studies and other parameters. Among the formulation tested F6 as the overall best based on drug release characteristic in pH 6.8 phosphate buffer.
Short term stability (at 40^0C/70% RH for 3 months), drug Excipients interaction (IR spectroscopy) were studied. Short term stability studies on this (promising) formulation indicated that there were no significant changes in the drug content (atenolol) of tablets.
Keywords**:** Cros-carmellose sodium, crospovidone, sodium starch glycollate, fast dissolving tablets

ETHOSOMES NANOTECHNOLOGY: TAILORING LIPID VESICLES FOR TARGETED AND EFFECTIVE DRUG DELIVERY

Debashis Maitra[1*], Rideb Chakrabarty[1], Pratibha Bhowmick[1], Mithun Bhowmick[1]
[1]Bengal College of pharmaceutical sciences and research, Durgapur, 713212
debashismaitra.wb@gmail.com

Ethosomes nanotechnology is a novel approach to targeted and effective drug delivery. It involves the use of lipid vesicles, or ethosomes, to encapsulate and deliver therapeutic agents to specific sites in the body. Ethosomes are small, flexible vesicles that are able to penetrate the skin and other tissues, making them ideal for delivering drugs to a variety of targets. One of the key advantages of ethosomes is their ability to target specific cells and tissues. This is achieved by using specific targeting ligands, such as antibodies or peptides that are attached to the surface of the ethosomes. These ligands bind to receptors on specific cells, allowing the ethosomes to be selectively delivered to those cells. Another advantage of ethosomes is their ability to encapsulate a wide variety of therapeutic agents, including drugs, proteins, and nucleic acids. This makes them a versatile drug delivery platform that can be used for a wide range of applications. Ethosomes have been shown to be effective in a variety of preclinical and clinical studies. They have been used to deliver drugs to a variety of targets, including tumors, the lungs, and the brain. Ethosomes are also being developed for the delivery of vaccines and gene therapy. Overall, ethosomes nanotechnology is a promising approach to targeted and effective drug delivery. It has the potential to revolutionize the way that drugs are delivered, making them more effective and less toxic. In addition to the above, ethosomes offer several other advantages over traditional drug delivery methods. They are non-invasive, painless, and have a long shelf life. Ethosomes are also relatively inexpensive to produce, making them a cost-effective option for drug delivery. Ethosomes nanotechnology is still a relatively new technology, but it has the potential to become a major player in the field of drug delivery. As research continues, we can expect to see even more innovative and effective applications of this technology.
Keywords: Ethosomes, Ethosomes nanotechnology, peptide.

Microsponges in Drug Delivery: Unveiling Novel Strategies for Enhanced Therapeutic Efficacy - A Comprehensive Review

Debmalya Ghosh[1*], Pratibha Bhowmick[1], Rideb Chakraborty[1], Mithun Bhowmick[1]
Bengal College of Pharmaceutical Sciences & Research, Durgapur
debmalya1221@gmail.com

The demand for alternative drug delivery systems and technologies is driven by the growing field of new medications, increased awareness of clinical results, and rising healthcare costs. The field of medication delivery technologies is becoming more competitive and changing quickly, with advancements being combined to maximize therapy effectiveness and cost-efficiency. Biopharmaceuticals, a new class of pharmaceuticals, are driving the rapid advancement of drug delivery technology, with microsponges being at the forefront of innovative drug delivery technology. Microsponges are polymeric delivery systems made up of porous microspheres ranging from 5 to 300 µm, with a broad porous surface resembling sponges. They are used for regulated drug administration, responding to external stimuli and delivering medication at regular intervals. Microsponges can alter medication release, improve stability, reduce adverse effects, and prevent drug buildup in the dermis and epidermis. Microsponge systems work with gels, creams, powder, liquid, and suspensions to capture and insert microscopic microspheres into pharmaceutical goods. They are non-toxic, non-mutagenic, non-irritating, and non-allergic by nature, making them a promising solution for delivering new medications.
Keywords: Microsponge, Drug, Cost-efficiency, Targeted delivery, Topical drug delivery, Pharmaceuticals.

DEVELOPMENT AND ASSESSMENT OF COLLOIDAL FORMULATION FOR THE MANAGEMENT OF VARIOUS DISEASES

Divyanshi Sharma[1] , Arti Gupta [2], Reetika Rawat, [3] Jitendra Singh Yadav[4], Shipra Sharma[5]
Shri Ram Murti Smarak College of Engineering and Technology Bareilly ,UttarPradesh

Quercetin is a phytoconstituent found in various plants, as a bioflavonoid. It is known for the various pharmacological activities such as anti – inflammatory , antioxidant , anticonvulsant , antidermatophytic and the anti-feedant activity. Over the years, colloidal formulations have emerged as an amazing dosage forms owing to their advantages such as permeability across barriers , controlled drug release and higher stability. Among them solid lipid nanoparticles linked to specific ligands can allow the development of targeted therapies. Such targeted treatments for asthma and sepsis may help to maximize therapeutic benefit and helps to lowers their severity.The objective of the study is to develop the colloidal formulation of quercetin for the management and assessment of various diseases.Different methods and studies can be utilized for the determination of the pharmacological activities of the quercetin in asthmatic and sepsis model. In addition, various anti-oxidant activities , such as lipid peroxidation , myleoperoxidation etc . are discussed in this study to examine its antioxidant potential . This study summarizes the numerous benefits of the phytoconstituents for the management of the various diseases and the researches also concluded quercetin activities for the management of the asthma and sepsis.
Keywords**:** quercetin, solid lipid nanoparticles, sepsis, asthma.

NANOCARRIERS SYSTEM OF TRITERPENOIDS FOR THE MANAGEMENT OF DIABETES MELLITUS

Anshika Saxena [*1] ,Dr Arti Gupta [2] ,Ms .Shipra Sharma [3], Dr Jitendra Singh Yadav [4],
Dr Reetika Rawat [5]
Shri Ram Murti Smarak College of Engineering and Technology Bareilly, UttarPradesh, India.
anshikasaxena207@gmail.com

Triterpenoids are a large class of natural products. Triterpenoids can further be sub-classified into diverse groups including cucurbitanes (tetracyclic), lupanes, oleananes, ursanes, (pentacyclic), and miscellaneous compounds. Triterpenoids have been proven to have a broad spectrum of pharmacological activities: anti-diabetic, anti-cancer, anti-inflammatory, analgesic, antiviral ,antimicrobial, hepatoprotective effects..According to the studies triterpenoids were shown to reduce the plasma glucose level and enhance glucose tolerance. Due to all activities of triterpenoids it is suitable for the management of diabetes with minimum side effects. Diabetes mellitus (DM) results from the inability of the pancreas to produce sufficient insulin or weakened cellular response to the insulin produced, which leads to hyperglycemia. The objective of the study is to develop the nanocarriers for the management of diabetes .Various methods and studies can be performed for the determination of the activities of the triterpenoids for diabetes model on suitable animal. This study summarizes the numerous benefits of the triterpenoids for the management of the diabetes. As per the literature survey, triterpenoids loaded nanocarriers formulation seems to be a promising drug delivery system, especially on account of its management in diabetes .
Keywords**:** Triterpenoids , diabetes mellitus , nanocarriers .

PLANT SECONDARY METABOLITES: A LEAD FOR HEPATOPROTECTION

Murteza Iqubal[1, 2*], Satish Kumar Sharma[1]
Email:- iqubalpharma@gmail.com
[1]Department of Pharmacognosy & Phytochemistry, School of Pharmacy, Glocal University, Delhi Yamunotri Marg, Mirzapur Pole District-Saharanpur, U.P. India. 247121.
[2]Lord Buddha Koshi College of Pharmacy, Baijanathpur, Saharsa, 852201, Bihar, India

Aim & objectives: The liver is one of the major cellular organs that carries out a critical role in the balancing of miscellaneous processes, among which the metabolism, secretion, storage, and detoxification of endogenous and exogenous substances are important. Despite tremendous advances in modern medicine, no entirely possible medications that boost hepatic activities, provide complete protection, or aid in the renewal of hepatic cells have been identified. As a result, finding pharmacological substitutes for liver abnormalities is required, with the goal of making these alterations more accurate and less damaging.
Methods: The use of plants, its secondary metabolites, and fruit eating all played important roles in human health maintenance. A wide range of scientific research has argued that the presence of bioactive chemicals in plants confers medicinal capabilities. Based on experimental evidence, natural bioactive components generated from plant secondary metabolites have been recognized as effective options for predicting and mitigating hepatotoxic effects and chronic problems.
Result and conclusions: The current research includes discoveries from plant extracts and bioactive substances research, which may give new alternatives for limited treatment possibilities that exist currently in the management of hepatic disorders.
Keywords: Plant Secondary metabolites; Medicinal plants; hepatotoxicity; hepatoprotective effect.

SELF EMULSIFYING DRUG DELIVERY SYSTEM

Abul Hasnat[1*], Aakriti Patel[1], Pratibha Bhowmick[1], Mithun Bhoumick[1]
[1]Bengal College of Pharmaceutical Sciences and Research

Self-emulsifying drug delivery systems (SEDDS) have emerged as promising platforms for enhancing the oral bioavailability of poorly water-soluble drugs. These isotropic mixtures of oils, surfactants, and sometimes cosolvents, spontaneously form fine oil-in-water emulsions when introduced into an aqueous medium, such as the gastrointestinal tract. This self-emulsification process leads to increased drug solubilization and absorption, thereby improving therapeutic efficacy. The selection of appropriate oil, surfactant, and cosolvent is crucial for optimizing SEDDS performance. Oils provide a solubilizing matrix for the lipophilic drug, while surfactants lower the interfacial tension between the oil and water phases, facilitating emulsification. Cosolvents, when used, enhance drug solubility and modulate emulsion stability. Extensive preformulation studies are essential for SEDDS development. Phase diagrams are constructed to identify suitable oil-surfactant-cosolvent ratios that yield stable emulsions. Drug solubility and stability are evaluated in the selected formulation, and self-emulsification characteristics are assessed. They improve drug solubility, leading to increased bioavailability and reduced dosage requirements. They also provide rapid drug dissolution, promoting faster onset of action. SEDDS are versatile and can be administered in various forms, including soft capsules, hard gelatin capsules, and self-emulsifying suspensions. While self-emulsifying drug delivery systems (SEDDS) offer a promising solution for enhancing the oral bioavailability of poorly soluble drugs, they are not without challenges. The formulation process can be complex and time-consuming, with a limited selection of excipients. Potential drug-excipient interactions also require careful consideration. Despite these challenges, the benefits of SEDDS, including improved solubility and bioavailability, make them a valuable tool in pharmaceutical development.
Keywords: Self-emulsifying drug delivery systems (SEDDS), Bioavailability, Emulsification, Preformulation studies

AN IN-DEPTH LOOK AT PROTEIN AND PEPTIDE DRUG DELIVERY SYSTEM

Ishika Dey[1*], Pratibha Bhowmick[1], Rideb Chakraborty[1], Mithun Bhowmick[1],
[1] Bengal College of Pharmaceutical Sciences and Research, Durgapur, 713212, West Bengal
Ishika24@gmail.com

The protein and Peptide delivery system is the Novel drug Delivery System. Proteins and peptides have gained significant attention as promising therapeutic agents due to their specificity and efficacy in treating various diseases. However, their clinical application is often limited by challenges related to stability, bioavailability, and targeted delivery. This review explores recent advancements in protein and peptide drug delivery systems, focusing on innovative strategies to enhance their pharmacokinetics and therapeutic outcomes. A few ways available to increase pharmacokinetic and pharmacodynamics properties are chemical modification, construction vehicles, mucoadhesive polymeric system, use of enzyme inhibitors, absorption enhancers, infiltration enhancers etc. Current review defines structure, protein separation, need, benefits, protein function and peptide drug delivery system.
Keywords: Protein, Peptide, Protein and peptides drug delivery

NANOSUSPENSION FOR BRAIN TARGETING OF THERAPEUTICS: A REVIEW ON THEIR PROMISING APPROACH TO INCREASING THERAPEUTIC EFFICACY

Kanchan Ghosh[1]*, Naureen Afrose[1], Pratibha Bhowmick[1], Mithun Bhowmick[1],
Bengal College of Pharmaceutical Sciences & Research , Durgapur, Maulana Abul Kalam Azad University of Technology, West Bengal
Email ID:kanchanghosh516@gmail.com

In contemporary medicine, getting therapeutic drugs across the blood-brain barrier (BBB) to treat neurological conditions is still a major obstacle. This barrier may be addressed by nanotechnology, with nanosuspensions standing out as a particularly adaptable and successful method of improving drug delivery to the brain. Colloidal dispersions called nanosuspensions, which are composed of submicron-sized drug particles stabilised in an appropriate solvent, present a novel way to increase drug solubility, bioavailability, and brain permeability. Size reduction procedures, such as precipitation processes, medium milling, or high-pressure homogenization, are used in the formulation process to produce nanoparticles with increased brain uptake and enhanced drug loading. This thorough analysis compiles the most recent developments and breakthroughs in nanosuspension technology, including the wide range of drugs, carriers, and surface treatments used to maximise brain-targeted delivery. Through passive or active targeting mechanisms, nanosuspensions can bypass or cross the blood-brain barrier. This study explores the ways by which they interact with the BBB. The work also addresses how different formulation characteristics, such as carrier materials, drug release kinetics, surface modification, and particle size, affect how well nanosuspensions target the brain. Clarifying the fundamental physicochemical and pharmacokinetic principles guiding their improved therapeutic potential for brain tumours, neurodegenerative illnesses, and other neurological disorders is emphasised. Therefore this review assesses the potential of nanosuspensions to increase therapeutic efficacy while critically examining their use in brain targeting.
Keywords: Nanotechnology, nanosuspensions, brain-targeting, blood-brain barrier

RESERVOIR TYPE DRUG DELIVERY FOR CHRONIC PAIN MANAGEMENT: FORMULATION CHALLENGES AND MANAGEMENT

Koushik Ghosh[1], Pratibha Bhowmick[1], Rideb Chakraborty[1], Mithun Bhowmick[1]
[1]Bengal College of pharmaceutical sciences and research, Bidhannagar, Durgapur-713212, West Bengal, India.
koushikghoshrx@gmail.com

Reservoir-based drug delivery systems are a common method for managing chronic pain. These systems involve a drug core surrounded by a polymer film, with the drug release rate controlled by the polymer's properties, coating thickness, and drug properties. These systems are particularly beneficial for mid-/long-term administration of medication, providing immediate relief from pain. The use of reservoir-based CRDDS in pain treatment is growing, allowing for the delivery of single drugs or combinations of multiple therapeutics. Nano-formulations in the reserve matrix increase analgesic solubility, allowing for controlled drug release and targeted delivery. This leads to improved pain relief effects with fewer side effects. Combination therapy, which involves co-encapsulating multiple therapeutics into a single nano-formulation, is also increasingly used for pain management. Liposomes, hydrogel, PGA-NPs, NLCs, and dendifiers are some of the methods

used for pain management. However, these nanomaterial-based pain treatment methods are still in the exploratory stage and require further research to be effectively translated into clinical practice. In vivo clinical studies are needed to evaluate these systems, determine dosage and toxicity levels, and predict possible adverse reactions. Overall, these nanodrug delivery systems offer promising solutions for managing pain and reducing side effects.
Keywords: polymer, chronic, nano-formulation, liposomes, hydrogel nanomedicine, analgesic.

SPIONs (Superparamagnetic Iron Oxide Nanoparticales) as a Novel Drug Delivery System

Mirazuddin Mollick*[1], Swagata Pal[1], Pratibha Bhowmick[1], Mithun Bhowmick[1]
[1]Bengal College of Pharmaceutical Sciences and Research, BASU, Gandhi Sarani,Bidhannagar, Durgapur, West Bengal,713212, India
mollickmiraz222@gmail.com

Now days most of the drugs are administered either orally or intravenously. After that the administered drugs enter the systemic circulation before reaching the site of injury. But as this process most of the drug is lost before it reaches to the targeted site due to lower bioavailability of drug. To overcome this problem many nanoparticales are used as vehicles to drug delivery. In recent time the superparamagnetic iron oxide nanoparticles (SPIONs) have been increasingly studied for their better superparamagnetism, magnetic heating properties, and enhanced magnetic resonance imaging (MRI). SPIONs are used in the transport of drugs like immunotherapy and hyperthermia. The conjugation of SPIONs with drugs to obtain delivery nanosystems has several advantages including magnetic targeted functionalization, magnetic thermotherapy, and combined delivery of anticancer agents. Superparamagnetic iron oxide nanoparticles as targeted drug delivery vehicles which can overcome the limitation of a chemotherapy drug, where it cannot directly release at the target site. This results in an increased concentration of drug intake to see the pharmacodynamics of the drug. Superparamagnetic iron oxide nanoparticles, based drug delivery system are novel drug delivery system in chemotherapy. As mentioned in the application of hyperthermia, the using SPIONs is to inject the particles intravenously and inducing rise in temperature to kill the local cancer cells. Apart from this, there are many several ways such as targeted drug delivery using an external magnetic field as a guide to the site of action. The formulation of SPIONs as a nanocarrier for exhibiting targeted drug delivery and its use in cancer treatment as hyperthermia is emphasized. However, this review focused on the latest progresses in the conjugation of targeting molecules and drug delivery nanosystem based on SPIONs, especially to develop efficient targeted drug delivery system.
Keywords: Superparamagnetic iron oxide nanoparticles, Drug delivery systems, Hyperthermia, Targeted delivery, Chemotherapy.

PLANT-DERIVED BIOACTIVE COMPOUND FOR NEURODEGENERATIVE DISORDER (NDD)

Syed Mustafizur Rahaman [1*], Swagata Pal [1], Pratibha Bhowmick[1], Mithun Bhowmick[1]
[1]Bengal College Of Pharmaceutical Sciences And Research, BASU, Gandhi Sarani, Bidhannagar, Durgapur, West Bengal, 713212, India.
Mustafizursyed1999@gmail.com

In recent years, natural products from plants, animals, and fungi and their bioactive compounds have been investigated and studied for their therapeutic potential in various diseases including cardiovascular, diabetes, hypertension, reproductive, cancer, and neurodegenerative disease (NDD). Neurodegenerative diseases such as Alzheimer's disease, Huntington's disease, Parkinson's disease, and amyotrophic lateral sclerosis are characterized by progressive dysfunction and loss of neuronal structure and function leading to neuronal death. The presence of unsaturated fatty acids increases the power of the brain. To understand the true nature of NDD, many factors such as genetic and environmental risk factors need to be taken into account because these can reduce the effectiveness of NDD treatment. Addressing oxidative damage and finding safe and effective treatments for NDDs are important goals. In this research, bioactive compounds play an important role in research. Among these compounds, natural elements such as carotenoids, essential oils, essential fatty acids, polyphenols, and phytosterols have attracted great attention due to their strong antioxidant and anti-inflammatory properties. Alkaloids include isoquinoline, indole, pyrrolidone from products, etc is available. Alkaloids play an important role in the pathophysiology of these diseases by acting as muscarinic and adenosine receptor agonists, antioxidants, and MAO inhibitors. Many studies have demonstrated the effectiveness of plant extracts or their bioactive compounds on NDDs. Herbal products may potentially offer new treatment options for NDD patients, providing a more affordable and culturally appropriate treatment option for the millions of people with NDD worldwide. These good things have the ability to improve the brain. This review focuses on the therapeutic potential of natural products and their bioactive properties that may be beneficial to neurodegenerative pathology.
Keywords: Parkinson's disease, Alzheimer's disease, Neurodegeneration disease, Plant-derived bioactive compound, Pharmacological activities.

MICROFLUIDICS IN PHARMACEUTICAL INDUSTRY: ADVANCEMENTS AND APPLICATIONS

Prasun Mukherjee[1*], Rideb Chakraborty[1], Pratibha Bhowmick[1], Mithun Bhowmick[1]
[1]Bengal College of Pharmaceutical Sciences and Research, Durgapur, West Bengal, India
Prasunmukherjee1996@gmail.com

Micro fluidics was proven to be an extremely effective technology, offering advantages such as quick analysis, high accuracy in test results and reduce costs for drug innovation technique. Micro fluidics is used to manipulate fluid flow in micro- channels to fabricate drug delivery vesicles in uniform tunable size thanks to their designs; micro fluidics technology provides an alternative and versatile platform over traditional formulation methods of nano particles, Micro fluidics for pharmaceutical application from Nano micro systems fabrication to controlled drug delivery is a concept- oriented reference that features case studies on utilizing micro fluidics for drug delivery applications. It is a valuable learning reference on micro fluidics for drug delivery applications and assists practitioners developing novel drug delivery. Platforms using microfludics .it explores advances in micro fluidics for drug delivery applications from different perspectives, covering devices fabrications, fluids dynamics, cutting edge microfluidics technology in the global drug delivery industry, lab on chip nano /micro fabrication and drug encapsulation, cell encapsulation and delivery, cell drug interaction screening. These micro fluidic platforms have revolutionized the drug delivery field, but also show great potential for industrial applications
Keywords: Drug delivery, scale up, Micro fluidics, Nano particles, Micro mixers

EMULGEL: AN INNOVATIVE PERSPECTIVE ON TOPICAL DELIVERY SYSTEM

Priyanka Barman*[1], Aakriti Patel[1], Pratibha Bhowmick[1], Mithun Bhowmick[1]
[1]Bengal College of Pharmaceutical Sciences &Research, Bidhannagar, Durgapur, West Bengal
Priyankabarman006@gmail.com

Emulgel is a mixture of emulsion and gel. It is a stable formulation that incorporates poorly water-soluble drugs in a superior system. In the past other routes (oral, sublingual, rectal, and parental) were used but there were various drawbacks in terms of Drug activity. The development of Emulgels has led to the best solutions that can help to overcome the existing problems. Emulgel aids in the incorporation of hydrophobic molecules into the oil phase, after which oily globules are disseminated in the aqueous phase to form an o/w emulsion. This emulsion can also be blended with gel basis. This may provide better medication stability and release than merely integrating medicines into a gel base. The emulsions are prepared either as Oil in Water or Water in Oil type. The Emulgels are used in various approaches, such as in the preparation of semisolid formulations, cosmetics and pharmaceutical preparations. Emulgels are widely used as dermatological formulations due to their unique nature. As compared to Emulsions, Emulgel is greaseless, easily removable, emollient, non-staining, has a long shelf life, and is transparent, these characteristics make them stable in nature. Gels have a higher loading capacity owing to their extensive network. This review summarizes details of the emulgel formulation, along with its benefits and drawbacks, as well as the techniques used to characterize it. In order to complete this review on the future of emulgel formulation in topical medication administration, a few published patents have also been mentioned.
Keywords: Emulsion, Gel, Dermatological formulation, Hydrophobic molecules

PHYTOCHEMICAL SCREENING, ISOLATION , IN SILICO STUDIES AND BIOLOGICAL ACTIVITY OF DRIMIOPSIS KIRKII, LANDL & PAXTON

Bhavsar Rupali[1]*, Darwhekar G.N.[1]
Acropolis Institute of Pharmaceutical Education and Research, Indore
rupalibhavsar@acropolis.edu.in

Medicinal plants have been used in the treatment of various diseases as they possess potential pharmacological activities including antineoplastic, antimicrobial, antioxidant, anti-inflammatory, analgesics, anti-diabetic, anti-hypertensive, antidiarrheal and other activities. Phytoconstituents individually or in the combination, determine the therapeutic value of a medicinal plant. Alkaloids, flavonoids, phenolics, tannins, saponins, steroids, glycosides, terpenes etc. are some of the important phytochemicals with diverse biological activities. The pharmacological activity of a plant can be predicted by the identification of the phytochemicals. Currently, phytochemicals are determined by various modern techniques, but the conventional qualitative tests are still popular for the preliminary phytochemical screening of plants. As computer technology has developed, in silico approaches such as virtual screening and network analysis have been widely utilized in efforts to elucidate the pharmacological basis of the functions of traditional medicinal plants. In the process of new drug discovery, the application of virtual screening and network pharmacology can enrich active compounds among the candidates and adequately indicate the mechanism of action of medicinal plants, reducing the cost and increasing the efficiency of the whole procedure.
Keywords: Medicinal plants, phytoconstituents, phytochemical screening, qualitative tests.

ROLE OF PHYSICAL ACTIVITY ON MENTAL HEALTH

Sakshi Gupta*, Dr. Manish Kr. Shakya
ITS College of pharmacy Murad Nagar, Ghaziabad, U.P-201206
Sakshigupta535@gmail.com

Physical health supremely positioned due to its growing corpus of robust evidence, suggest that physical activity can be inexpensive, safe, have global accessibility and most importantly effective lifestyle intervention that can be used to prevent and treat wide rang of mental health problem (depression, anxiety, Parkinson disease, Alzheimer's Disease, multiple sclerosis) and improve overall quality of life. Many studies have shown that some of the effect of sedentary lifestyle can be reverse by physical activity. PA can also have beneficial effects on cerebrovascular and cognitive functions. In addition, anti-depressive, and analgesic-PA effects have been reported. Many researched data reported suggest physical activity has positive effect on neuronal growth and neuronal system that is involve in learning and memory. Acute exercise and training can trigger the process of neuroplasticity and neurotrophins mediate energy metabolism. Of all neurotrophins, BDNF (brain-derived neurotrophic factor) play the crucial role such as neurotrophic and neuroprotective function in CNS and peripheral. PA also cause change in neurotransmitters levels.
Keywords- physical activity (PA), mental health, neuroplasticity, BDNF, neuroprotective, neurotransmitter.

A COMPARATIVE STUDY ON TINOSPORA CORDIFOLIA (GILOY) (WILLD.) MIERS

Shouvik Kumar Nandy[1]*, Dr. Sattwik Das[1]
[1] Department of Pharmacology, School of Pharmacy, Techno India University, Kolkata, Sector- V, West Bengal.
shouvikknandy@gmail.com

A Mediterranean herb is Tinospora cordifolia, a medicinal shrub (Thunb.) Miers. T. cordifolia is utilized in folk, Ayurvedic, Unani, and Siddha medicine. Additionally, the shrub is used in conventional medicine to treat gastrointestinal diseases, cancer, diabetes, asthma, inflammation, pain, respiratory infections, diarrhea, and inflammation. This study covers T. cordifolia's taxonomy, botanical classification, ayurvedic formulation, ethnopharmacological uses, phytochemical compounds present in the herb, toxicology, and pharmacological and clinical investigations on the plant's effects. We used a range of logical and scientific databases, such as PubMed, Scopus, Google Scholar, Springer Link, and Science Direct, to obtain information about this species. These details center on the taxonomy of plants, their traditional applications, ayurvedic formulations, their ethnopharmacological significance, and more in-depth research on their qualities. Many biological properties of T. cordifolia have been investigated, and the extracts showed encouraging potential as antioxidants, antibacterial, anti-inflammatory, anti-diabetic, anti-stress, anti-ulcer, and regulators of benign prostatic hyperplasia. Similarly, a thorough analysis of the connection between traditional medical practices and current biological screening methods for the diagnosis and treatment of certain illnesses is required. It is

necessary to conduct clinical research to validate the pharmacological activities' antibacterial, antioxidant, and benign prostatic hyperplasia-inhibiting properties. Furthermore, pharmacokinetics, toxicology, and bioavailability clinical trials are essential for evaluating the safety and effectiveness of Guduchi extracts and phyto-constituents. Its therapeutic application in neurodegenerative diseases is one of the other areas that requires research. Additionally, before starting clinical trials, the "composition-effect correlation" approach and omics technologies are required to determine the pharmacological mechanisms and effective material basis. Lastly, the work aims to inspire other research teams to conduct a series of scientific investigations that can bridge the gaps and, consequently, alter the existing focus of T. cordifolia in the consumer society.

Keywords: Phytochemistry, Tinospora Cordifolia, Ethnomedical use, Folk and Tribal use, Pharmacological use.

HYDROGEL-BASED DRUG DELIVERY SYSTEMS: UNLEASHING STIMULI-RESPONSIVE STRATEGIES IN CANCER TREATMENT

Sujata Saha[1*], Rideb Chakraborty[1], Pratibha Bhowmick[1], Mithun Bhowmick[1]
[1] Bengal College of Pharmaceutical Sciences and Research, Durgapur, 713212, West Bengal
sujata96.saha@gmail.com

Hydrogel materials, known for their biocompatibility and biodegradability, have shown potential as novel drug carriers in cancer therapy. They offer precise and controlled drug release, allowing for the continuous and sequential release of various therapeutic agents. These materials are widely used in radiotherapy, chemotherapy, immunotherapy, hyperthermia, photodynamic therapy, and photothermal therapy. Their diverse size range and delivery methods allow for tailored treatment for different cancer types and locations, resulting in reduced drug dosage and improved treatment efficacy. The incorporation of sophisticated materials and the use of hydrogel engineering methodologies have enabled the development of intelligent hydrogels and nanogels, which exhibit the potential to be utilized in various routes of administration. Hydrogels offer a promising solution for cancer treatment, offering a safe, modifiable, and effective method for administration. They can be safely implanted, discharged, and degraded, and they can encapsulate various substances, improving therapeutic interventions. Hydrogel engineering techniques have developed intelligent hydrogels and nanogels for various administration modes. These smart hydrogels enhance drug targeting effectiveness, reduce dosages, and are ideal for controlled medication release. The prevalent rate of cancerous conditions is reported to be 12.5% among males and 10% among females. The COVID-19 pandemic has disrupted cancer diagnosis and treatment, causing disruptions in healthcare facilities, employment, insurance coverage, and potential virus exposure. Despite its impact in mid-2020, healthcare supply has not fully recovered, with surgical oncology operations at Massachusetts General Hospital decreasing by 72% and increasing by 84% in 2021. Consequently, it is imperative to promptly provide therapeutic interventions due to challenges such as unpleasant responses, limited medication tolerance, and inadequate targeting. Hydrogels offer a promising strategy for achieving precise control over drug release, facilitating the systematic administration of chemotherapeutic drugs, radionuclides, immunosuppressants, and phototherapeutic agents in a sequential way to successfully combat cancer.

Keywords: Hydrogel, Cancer, Chemotherapy, Modern Therapies, Radiotherapy.

ADVANCEMENTS IN TRANSDERMAL DRUG DELIVERY SYSTEMS: MECHANISMS, FORMULATIONS, AND THERAPEUTIC IMPLICATIONS

Sanjita Roy[1], Rideb Chakraborty[1], Pratibha Bhowmick[1], Mithun Bhowmick
[1] Bengal College of Pharmaceutical Sciences and Research, Durgapur, 713212, West Bengal
Sanjitaroy06@gmail.com

The dosage forms called “patches,” commonly referred to as transdermal drug delivery systems (TDDS), are intended to spread a therapeutically adequate amount of medication across the skin. To distribute the active ingredient to the systemic circulation after passing through the skin barriers and avoid the first pas first-pass transdermal patches are pharmaceutical preparations of varied sizes that contain one or more active ingredients. The controlled release of the medication into the patient that the patch provides, typically either through a porous membrane covering a reservoir of medication or through body heat melting thin layers of medication embedded in the adhesive, is an advantage of transdermal drug delivery over other types of medication delivery such as oral, topical, intravenous, intramuscular, etc. The stratum corneum, the skin’s outermost layer, is the principal barrier that prevents medication molecules from penetrating it. The skin care sector, including cosmetics, as well as the pharmaceutical industry may be able to use TDDS. This strategy can avoid local drug concentration builds-upbuild-targeted medication delivery because it primarily requires local administration. We now use a unique medicine delivery mechanism instead of the convectional dose form we used in the past. Transdermal patches are among the most innovative forms of new medication delivery. The transdermal medication delivery system has the benefit of being a painless method of drug administration. Skin serves as an efficient carrier for medication absorption, allowing it to gradually get into systemic circulation. The selection of drug candidates and polymers appropriate for formulation as a transdermal system, as well as the benefits and drawbacks of formulation design and evaluation techniques, are reviewed in this article.

Keywords: Transdermal Drug Delivery System, stratum corneum, skin

ETHOSOME: A STATE-OF-THE-ART DRUG DELIVERY SYSTEM FOR SKIN ALLERGY MANAGEMENT

Shreyasi Katari[1]*, Priyanti Halder[1], Pratibha Bhowmick[1], Mithun Bhowmick[1]
Bengal College of Pharmaceutical Sciences and Research, Durgapur, West Bengal
shreyasikatari@gmail.com

In recent times, Ethosome has become a new promising pharmaceutical dosage form for the development of innovative dermal and transdermal therapies that help in the treatment of various skin disease like skin allergies, urticaria, melisma, eczema, melanoma and other skin disease. Ethosome is non-invasive, modified phospholipid based elastic, soft vescicular nano-carrier with high ethanol content. Ethanol present in this formulation facilitates rapid penetration of drug through the skin accelerating cell membrane lipid fluidity. After permeation into the skin, ethosome gets fused with lipids of cell membrane and releases the loaded drug. BCS III & IV drugs, having low permeability, can be developed with ethosomal systems. Histamine is one of the responsible biogenic factors for itching, skin wheals, allergies, other skin disorders etc, so incorporation of low permeable antihistaminic drugs in ethosome is emerging prospect in the field of dermatology and cosmetology. Also use of various antibiotics in ethosomal form for treatment of skin infections has been successfully progressed in clinical trials. This type of drug

delivery avoids the hepatic metabolism, provides the steady-state plasma drug concentration, reduces dose frequency, thus improves patient compliance. Ethosome reflects positive insights to overcome side effects associated with conventional oral therapy, quick onset of action and targeted drug delivery to inflamed skin. The concept of ethosome is considered advantageous over liposome to be more penetrable to skin. Ethosome in the area of vescicular research has opened a wide array with several applications. Besides the need for further pharmacokinetic and pharmacodynamics studies on ethosome, it seems to significantly hold a great contemplation for the delivery of medicaments in the skin through different pathways.

Keywords**:** ethosome, novel vescicular carrier, transdermal drug delivery, ethanol, penetration enhancer, histamine and antihistamines, skin disorders, antibiotics.

SMART NANOCARRIERS: PRECISION MEDICINE THROUGH IMPLANTABLE DRUG DELIVERY SYSTEM

Souptim Khaira[1]*, Rideb Chakraborty[1], Pratibha Bhowmick[1], Mithun Bhowmick[1]
[1]Bengal College of pharmaceutical sciences and research, Bidhannagar, Durgapur, W.B
Souptimkhaira1@gmail.com

These comprehensive reviews, a brief intro on nanoparticles in precision medicine through implantable drug delivery system. In recent years, the development of nanoparticles has expanded into a broad range of clinical applications. Nanoparticles have been developed to overcome the limitations of free therapeutics and navigate biological barriers systemic, micro environmental and cellular, that are heterogeneous across patient populations and diseases. Overcoming this patient heterogeneity has also been accomplished through precision therapeutics, in which personalized interventions have enhanced therapeutic efficacy. However, nanoparticle development continues to focus on optimizing delivery platforms with a one-size-fits-all solution. As lipid-based, polymeric and inorganic nanoparticles are engineered in increasingly specified ways, they can begin to be optimized for drug delivery in a more personalized manner, entering the era of precision medicine. In this review, we discuss advanced nanoparticle designs utilized in both non-personalized and precision applications that could be applied to improve precision therapies. We focus on advances in nanoparticle design that overcome heterogeneous barriers to delivery, arguing that intelligent nanoparticle design can improve efficacy in general delivery applications while enabling tailored designs for precision applications, thereby ultimately improving patient outcome overall.

Keywords: Nanoparticles, Therapeutic efficacy, drug delivery, precision medicine and applications.

BIOCOMPATIBLE HYDROGELS: APPLICATIONS IN CONTROLLED DRUG RELEASE

Sourav Jana[1], Pratibha Bhowmick[1], Rideb Chakraborty[1], Mithun Bhowmick[1]
[1]Department of Pharmaceutics, Bengal College of Pharmaceutical Sciences and Research, Durgapur, 713212, West Bengal
janasourav482@gmail.com

Biocompatible hydrogels have emerged as promising candidates in the field of drug delivery due to their unique properties that enable controlled and sustained release of therapeutic agents. These hydrogels, owing to their biocompatibility and tunable physicochemical characteristics, offer a versatile platform for targeted and localized drug delivery. Their porous structure allows for the encapsulation of various drugs while providing protection against degradation, ensuring prolonged and controlled release kinetics. This review highlights the applications of biocompatible hydrogels in controlled drug release across multiple biomedical fields. The ability to tailor hydrogel properties, such as swelling behavior, degradation rate, and mechanical properties, allows for precise control over drug release kinetics. Moreover, the biocompatibility of these hydrogels facilitates their use in delivering a wide range of therapeutics, including small molecules, proteins, nucleic acids, and growth factors. Specifically, we discuss the role of biocompatible hydrogels in targeted cancer therapy, wound healing, tissue engineering, and the delivery of bioactive molecules. Their adaptability to mimic biological environments and the capability to release drugs in response to external stimuli or physiological cues make them ideal candidates for personalized and site-specific drug delivery systems. In conclusion, biocompatible hydrogels represent a promising avenue in the realm of controlled drug release, offering immense potential in improving therapeutic outcomes while minimizing side effects. Understanding their design principles and mechanisms of drug release is crucial for further advancements in developing innovative drug delivery platforms.

Keywords: *Biocompatible hydrogels, Controlled drug release, Drug delivery systems, Porous structure, Sustained release kinetics, Targeted therapy, Localizes drug delivery, Swelling behavior, Cancer Therapy, Wound healing, Tissue engineering, Bioactive molecules*

INNOVATIONS IN VACCINE DELIVERY SYSTEMS: STRATEGIES, CHALLENGES, AND FUTURE PROSPECTS

Sourav Mondal[1*], Rideb Chakraborty[1], Pratibha Bhowmick[1], Mithun Bhowmick[1]
[1]*Bengal College of Pharmaceutical Science and Research,* Durgapur, West Bengal, 713212
hellosourav.in@gmail.com

Vaccines are solutions administered to patients in order to elicit immunological reactions that result in the development of antibodies (humoral) or cell-mediated responses that will resist infectious pathogens or non-infectious illnesses like cancer. A new generation of prophylactic and therapeutic vaccines had to be developed because of ineffective immunization caused by patient noncompliance with booster doses meant to potentiate prime doses, the concerning safety profile of live vaccines, the weak immunogenicity of sub-unit vaccines and immunization, and other important factors. Nanotechnologies have the possible to be beneficial and accelerate the progress of vaccines against newly identified harmful viruses. To provide antigen to immune cells, delivery methods based on lipids, polymers, proteins, and inorganic nanomaterials have been studied. Delivery methods for antigen delivery to immune cells have been studied. These nanoplatforms are investigated as a means of vaccinating against viruses or their antigen proteins, but instead against protein subunits.

Keywords: Vaccine, antigen, Nanotechnologies, protein

ROLE OF AUTACOIDS IN DISEASES

Subhankar Giri*[1], Rideb Chakraborty[1], Pratibha Bhowmick[1], Mithun Bhowmick[1]
[1]Bengal College of Pharmaceutical Sciences and Research, BASU, Gandhi Sarani,Bidhannagar, Durgapur, West Bengal,713212, India

subhankargiri63@gmail.com

Autacoids, an organic substance, such as a hormone, produced in one part of organism and transported by the blood or lymph to another part of the organism where it exerts a physiologic effect on that part. Autacoids are of three types: Amines (histamine), Lipids (prostaglandins), Peptide (bradykinin). Autacoids can have many different biological actions including modulation of the activity of smooth muscles, glands, nerves, platelets and other tissues. Some notable autacoids are eicosanoids, angiotensin serotonin etc. A recent field of autacoids medicine is rising especially since new lipid autacoids have been found to be of particular interest in the treatment of chronic disorder, where inflammation plays a role. They need sufficient concentrations to modulate immunity usually by inhibiting it. The therapeutic uses of autacoids are treatment of Asthma, liver dysfunction. It is inconceivable that the effects will not have clinical value.
Keywords: modulation, autacoids medicine, inflammation, therapeutic uses.

NANOEMULSIONS IN OPHTHALMOLOGY: OPTIMIZING DRUG DELIVERY TO OCULAR TISSUES

Suman Roy[1*], Rideb Chakraborty[1], Pratibha Bhowmick[1], Mithun Bhowmick[1]
[1]Bengal College of Pharmaceutical Sciences and Research, Bidhannagar, Durgapur, West Bengal 713212
roysuman405@gmail.com

Nanoemulsion is one of the best drug delivery systems with kinetic stability and enhanced solubility when two immiscible liquids are combined. As the name nano suggests, it ranges in droplet size (20-200 nm). It is also known as "miniemulsions". When the formulation is concentrated, there are specifically nanoparticles that are dispersed in the dispersion medium to form a nanoemulsion. There are three main components that make up a stable nanoemulsion aqueous phase, oil phase and surfactant. The combination of phases and emulsifier leads to form a nanoemulsion.Optical applications have several limitations, including high cost and poor stability. Particle aggregation, drug leakage and fusion can occur during storage complexity for commercial scale production. Delivery from when nanocarriers larger than 300 nm reach the back of the eye, accumulation increases causes visual impairment .Lipid-based emulsions have become a potential vehicle for ocular medication administration. The emulsions enhance ocular delivery using one of two major strategies, either by improving ocular permeability or by lengthening the period the formulation is retained on the ocular surface. Both hydrophilic and lipophilic drugs can be loaded into emulsions.Emulsions have been successfully used to create more effective formulations for several medications used intraocularly that have increased absorption and therapeutic effectiveness. These drugs include cyclosporine A , coumarin-6 , azithromycin, and disulfiram.Recent clinical trials of ophthalmic nanoemulsions are clobetasol propionate, brimonidine sulphate etc.
Keywords: Nanoemulsions, ocular delivery, limitations.

FIBROTIC PATHOBIOLOGY UNVEILED: DECIPHERING THE INTRICATE NEXUS BETWEEN RENAL FIBROSIS AND CHRONIC KIDNEY DISEASE PROGRESSION

Supriya Dey[1*], Rideb Chakraborty[1], Mithun Bhowmick[1], Pratibha Bahowmick[1]
[1] Bengal College of Pharmaceutical Sciences and Research, Durgapur, 713212, West Bengal
deysupriya384@gmail.com

Chronic kidney disease (CKD) has been defined and classified differently over time, but the most recent international standards describe it as reduced kidney function, which is indicated by a glomerular filtration rate (GFR) of less than 60 mL/min. Chronic kidney disease (CKD) is a chronic illness that has no known treatment and a high rate of morbidity and death in adults. It is more frequent in those with diabetes and hypertension. Renal fibrosis is the pathological change that is common to all progressive CKD. Fibrosis is the term for an excessive build-up of extracellular matrix in response to various tissue damage. Chronic kidney disease (CKD) has been defined and classified differently over time, but the most recent international standards describe it as reduced kidney function, which is indicated by a glomerular filtration rate (GFR) of less than 60 mL/min. Chronic kidney disease (CKD) is a chronic illness that has no known treatment and a high rate of morbidity and death in adults. It is more frequent in those with diabetes and hypertension. Renal fibrosis is the pathological change that is common to all progressive CKD. Fibrosis is the term for an excessive build-up of extracellular matrix in response to various tissue damage. The deposition of matrix metalloproteinases (MMPs), particularly MMP9, which is profibrotic and involved in the initiation and progression of kidney fibrosis through tubular cell epithelial-mesenchymal transition (EMT) as well as the activation of resident fibroblasts, endothelial-mesenchymal transition (Endo MT), and pericyte-myofibroblast trans differentiation, is gradually increased by upregulated TGF-β expression in renal tubular cells. Here, we're attempting to establish a link between the effects of fibrosis and the advancement of chronic renal disease.
Keywords: Chronic kidney disease, Renal Fibrosis, TGF-β, MMP

NANOTECHNOLOGY-BASED DRUG DELIVERY SYSTEMS FOR OPHTHALMIC TREATMENT: EMERGING APPLICATIONS

Suraj Mandal*, Prabhakar Vishvakarma
Department of Pharmacy, IIMT College of Medical Sciences, IIMT University, O-Pocket, Ganganagar, Meerut, 250001, U.P., India
Email: sk8006721807@gmail.com

Ocular problems have a significant influence on an individual's everyday functioning since they impair vision to the point of complete loss. The presence of several constraints on the distribution of pharmaceuticals across the blood-retinal barrier hinders the ability of conventional drugs to provide comprehensive therapy for ocular illnesses. As a result, this presents a significant therapeutic obstacle. The significance of nanotechnology-based medicine delivery systems for the treatment of ocular diseases is underscored by recent advancements and a plethora of scholarly literature. The use of nanotechnology offers a multitude of notable benefits, such as precise targeting of tissues and controlled release of medicinal agents with a time delay. Both in vitro and in vivo investigations have shown that nanoparticles have the potential to be more effectively absorbed via ocular barriers. Nanoparticles have the potential to disrupt the integrity of the blood-retinal barrier, hence enhancing the ability to penetrate the eye and facilitate the absorption of medications. This study provides a summary of the progress made in the field of organic and inorganic nanoparticles for applications in ophthalmology. This study focuses on the examination of both commercially accessible products and possible nano-formulations now undergoing clinical studies.
Keywords: organic and inorganic nanoparticles; ophthalmic applications; clinical trials

BIOELECTRONIC MEDICINE TO CURE CANCER: AN OVERVIEW

Susmita Dutta[1], Pratibha Bhowmick[1], Rideb Chakraborty[1], Mithun Bhowmick[1],
[1]Bengal College of Pharmaceutical Sciences and Research, Bidhannagar, Durgapur,713212, West Bengal, India.
Sdutta06031997@gmail.com

Bioelectronic medicine is a treatment modality that uses electricity to treat disease by altering the body's electrical communication systems. It is natural and risk measuring electrical activity of cells. By controlling or altering bioelectricity including both ionic and faradaic current process and eliciting morphological changes using electric fields. The link between ionic and faradaic process contribute to produce proper treatment of cancer cells. It is definitely a fast growing and effective process which plays a large role in high mortality control by cancer. to discuss about devices , methods , and responsible aspects of treating cancer by electronic medicines. To describe the cellular level electronic alteration and controlling of ion exchange can lead a resistance of growing tumour cells. Two type of methods introduced lastly, tumour Treating Field, electro chemotherapy. Current cancer treatment involves various side effects on health and wellbeing, so the challenge is to build biocompatible device for treatment, which certainly leads to the direction of organic or inorganic nano sized bio electronic tools to allow precise targeting facility and involve less side effects. The above discussion definitely shows an era of evolution in treatment of cancer with complete biochemical process.
Keywords**:** Bioelectricity, electronic alteration, biocompatible device, bioelectronic medicine, electro chemotherapy.

RECENT DRUG DELIVERY APPROACHES TO OVERCOME THE BARRIERS OF THE ONYCHOMYCOSIS TREATMENT

Vicktor Ghosh[1*], Prasanjit Show[1], Rideb Chakraborty[1], Pratibha Bhowmick1, Mithun Bhowmick[1]
[1]Bengal College of Pharmaceutical Sciences and Research, Bidhannagar, Durgapur,713212, West Bengal, India.
vicktorghosh10219@gmail.com

Onychomycosis, a prevalent fungal nail infection caused by dermatophytes, has garnered attention due to its persistent nature and the associated challenges in treatment. Traditional remedies, including oral and topical antifungal agents, face constraints related to adverse effects and inadequate penetration into the nails. Recent progress in drug delivery systems, such as nanoparticles, microemulsions, polymeric films, and nail lacquers, presents encouraging avenues to overcome these challenges. These innovative delivery systems augment drug permeation, offer localized therapy, enhance patient compliance, and mitigate systemic exposure. Further investigation is necessary to optimize their effectiveness, safety profile, and acceptance by patients. Given their potential to address the limitations of conventional therapies, these ground breaking delivery systems hold the potential to transform the landscape of onychomycosis treatment.
Keywords**:** Onychomycosis, Nanoparticle, Polymeric film, Microemulsion, Nail lacquer.

EVALUATION OF MECHANISM (D) OF ACTION UNDERLYING THE FLAVONOIDS ANTIOXIDANT ACTIVITY OF DRYOPETRIS NIGROPALECEA LEAVES EXTRACT IN EXPERIMENTAL RATS

Dr. Mayank Pratap Singh*
Department of Pharmacy SITM Group, Kirtanpur, Bahraich (U.P.)

Objective: The current study aimed to estimate Phytochemical screening activity of Anti ulcer herbal Dryopetris Nigropaleacea leaves extract.
Materials and methods: The current study was held out by ulceration induced by pylorus ligation ulcer
screening models in Wister albino rats. The screening of anti-ulcer activity Ethanolic extract of Dryopetris Nigropaleacea leaves at the different amounts (100,200 and 400 mg/kg;per orally for 7 days and more of 3 days include) was compared with lansoprazole sodium as a usual anti-ulcer drug. Additional parameters such as gastric juice content PH, total acidity, pepsin activity ulcer score, free acidity, ulcer Index (UI), % inhibition of ulcer, mean mucin, pepsin content, and total protein content were observed.
Results: In the pylorus ligation model, the pepsin activity free acidity, pepsin content, UI, total acidity, ulcer score, total protein content, and percentage ulcer inhibition were considerably decreased ($P<0.07$ AND $P < 0.04$), and mean mucin and gastric content pH extensively elevated ($P < 0.07$ and $P < 0.04$) in EEDNL tested groups in the comparison of the control group. Doses (100, 200, and 400 mg/kg p.o.) of EEDNL showed dose-reliant gastro protective outcomes, a considerable ($P < 0.05$ and $P < 0.01$) decrease in gastric parameters as UI and ulcer score and induction in gastric pH and percentage inhibition of ulcer compared with the control group.
Conclusion: Flavonoids, antiulcer EEDNL show antioxidant activity (flavonoids) at different concentration. The fallout of the study indicated the EEDNL had improved antiulcer potential due to the decrease in offensive factors and increase in defensive factors.
Keywords: Flavonoids (antioxidant), anti-ulcer, ethanolic extract of Dryopetris Nigropaleacea, indomethacin ,
pylorus ligation, ulcer index.

GROWING INFLUENCE OF ARTIFICIAL INTELLIGENCE, ROBOTICS AND AUTOMATIONS IN HEALTHCARE SYSTEM

Mrudula Anil Kakade1*
School of Pharmacy, G.H.Raisoni University , Dodha Boargoan, Teh. Sausar, Dist. Chindwara , MP

In the ever-evolving landscape of healthcare Artificial intelligence and robotics is emerging as a powerful tool that bridges the gap between human expertise and technological advancement. As we navigate one thing remains constant, the vital role of pharmacist is ensuring patients care. Now, in the age of AI, we stand forward of transformative era where cutting edges of technology hold immune potential for enhancing patient's outcome. Robotics and automation have powered manufacturing and pharmaceutical research along with enhancing efficiency, accuracy and safety. It not only accelerates drug development but also ensure patients outcome and product quality where Artificial Intelligence aims to process large data, identify patterns and provide valuable insights. AI enable more accurate diagnosis, effective decision making and create treatment plans.AI provides opportunity to reduce human error, assist medical expertise, triage and provide patient's service. AI Drives revenue and profitability with quality decisions informed by data.AI is revalorizing healthcare delivery by expertising in skills and knowledge of healthcare profession. This boundary between expertise and technology holds immense promises for improving patient's outcome and shaping the future of healthcare.
Keywords**:** Artificial Intelligence, Human Expertise, Technological advancement, Profitability

MANAGEMENT OF GASTROINTESTINAL TOXICITY BY THE CONCEPT OF NSAID PRODRUGS: AN OUTSTANDING APPROACH

Rajat Goyal[1*], Sumeet Gupta[1], Prabodh Chander Sharma[2]
[1]MM College of Pharmacy, Maharishi Markandeshwar (Deemed to be University), Mullana-Ambala, Haryana, India-133207
[2]School of Pharmaceutical Sciences, Delhi Pharmaceutical Sciences and Research University (DPSRU), Government of NCT of Delhi, New Delhi, India-110017
rajatgoyal338@gmail.com

Non-steroidal anti-inflammatory drugs (NSAIDs) have a long history in the healthcare system due to their therapeutic potential. These NSAIDs cause ulcerogenicity, stomach pains, gastrointestinal haemorrhage, mucosa bleeding, and pancreatitis when used moderately and consistently. With researchers, managing the aforementioned adverse effects therapeutically is getting increasingly difficult. One method for creating NSAID moieties with low penetration as well as ulcerogenic properties is the prodrug technique. During the oral consumption of NSAID-prodrugs, ulcerations, intestinal hemorrhage, and mucosa hemorrhage have significantly decreased. Considering this background, our aim focussed on NSAID prodrugs as well as their justifications, the pathogenesis of NSAIDs inducing gastrointestinal toxicity, and the role of different antioxidants and spacer groups. Prodrug moieties have more advantages over parent medicines concerning both solubility and lipophilicity. In general, NSAID-class prodrugs can successfully treat both acute and long-term inflammation and aches without causing ulcerotoxicity and related gastrointestinal side effects, which reduces their burden from the pharmacoeconomic perspective.
Keywords: Prodrugs, NSAIDs, antioxidants, gastrointestinal toxicity, oxidative stress.

EXPRESSION OF RECOMBINANT PROTEINS; STRATEGIES, APPLICATIONS AND CHALLENGES

Alok Singh[1*], Navneet Verma[2], Prevesh Kumar[2], Diksha[2], Ashok Kumar Vishwakarma[3]
[1]Research scholar, Faculty of Pharmacy, IFTM University, Moradabad, Uttar Pradesh
[2]Pharmacy Academy IFTM University, Moradabad, Uttar Pradesh
[3]Senior Research Scientist (F&D) Ravenbhel Healthcare Pvt. Ltd. Jammu Kashmir
Email: alokthevictor@gmail.com

Proteins are the basic biological building blocks which play a key role in the metabolic machinery of all life forms. These molecules can now be produced at a commercial scale, with the help of recombinant DNA technology. The expression of recombinant proteins is a critical aspect of biotechnological research, and industrial production. It is a fundamental process in molecular biology and biotechnology that involves producing a specific protein using a living organism or in vitro systems.
Strategies for Protein Expression: It can be achieved through various strategies, including prokaryotic systems like *Escherichia coli* for cost-effective and rapid production, eukaryotic systems that support proper folding and post-translational modifications, and in vitro cell-free systems for rapid expression without living cells. The choice of strategy depends on factors like protein complexity, required modifications, and downstream applications.
Applications of Recombinant Protein Expression: Recombinant protein expression finds widespread applications in research and structural biology investigations. In biopharmaceutical production, it is crucial for generating therapeutic proteins, antibodies, and antigens for vaccine development. Additionally, recombinant proteins play a pivotal role in diagnostic assays, biosensor development, and enzyme engineering for diverse industrial applications.
Challenges in Recombinant Protein Expression: Despite the progress in protein expression technologies, several challenges persist. Achieving proper protein folding and post-translational modifications remains a hurdle, particularly in prokaryotic systems. Issues like protein aggregation, cytotoxicity, and codon bias can impact expression efficiency.
In conclusion, understanding the diverse strategies, applications, and challenges in recombinant protein expression is crucial for researchers and biotechnologists. Ongoing advancements in genetic engineering, cell culture technologies, and synthetic biology continue to address these challenges, paving the way for efficient and scalable production of recombinant proteins with enhanced functionalities for a myriad of applications.
Keywords: Recombinant DNA technology, Expression systems, Therapeutic proteins.

FORMULATION OF HERBAL HAIR MASK

Devshree Gayakwad
Assistant professor, Department of Pharmacology, Acropolis Institute of Pharmaceutical Education and Research, Indore. Madhya Pradesh, India
devshree.gayakwad@rediffmail.com

The hair is the most fragile component of the human body. As a result, we created a hair mask formulation to take care of them. The ingredients in the hair mask were chosen based on their hair-related advantages. Hair masks are used to eliminate filth that has accumulated in the hair. Hair masks contain coconut oil, which is used to apply the mask on the hairs. The hair mask created is 100% chemical-free. It contains only natural substances that are safe for our hair. Hair is a vital element of the body and serves as a health indicator. Hair masks can aid to hydrate our tresses. They're especially good for hair that's dry or damaged. Hair masks can help to restore the health of our scalps and strengthen our hairs. These hair masks can be prepared at home, have no drawbacks, and are really useful. We can make this mask using anything we have on hand. This product is critical for those whose hair is extremely thin or whose hair is damaged. When our hair is in good condition, it enhances our whole appearance. There are many different types of masks on the market, but they all contain chemicals. Chemicals are also harmful to our hair. As a result, we've created a chemical-free product. This mask is incredibly simple to make.
Keywords: Herbal, Fragile, Vital, Hair mask

A REVIEW: PHARMACOLOGICAL IMPORTANCE OF INDOLE DERIVATIVES

Mubassir[1]*, Rabiya Parveen[1]
[1]S.D College of Pharmacy & Vocational Studies, Muzaffarnagar 251001, Uttar Pradesh, India

mohdmubassir484@gmail.com

Indole, a small bicyclic ring system that comprises a pyrrole ring fused with a benzene ring, and its derivatives' diverse biological activities have fascinated scientists for a long time. In the previous decade, numerous efforts have been made to synthesize various indole compounds and their derivatives. These compounds have been discovered to possess multiple pharmacological activities, such as antitumor, antimicrobial, anti-inflammatory, antipsychotic, and anti-diabetic activities. Indole-based pharmaceuticals are expected to replace many existing heterocyclic-based medications due to their broader applications in the pharmaceutical industry. At present, several hundred drugs are in clinical trials, and many are available on the world market. This review focuses on the potential activities of indole that are currently in development.
Keywords: Indole, Antitumor, Antimicrobial, Anti-inflammatory properties.

A REVIEW ON PHARMACOLOGICAL ACTIVITY OF HERBAL PLANT ACONITUM FEROX

Shweta Mishra*, Aaditya Singh, Rahul Singh
Aryakul College Of Pharmacy And Research Lucknow, UP, India
Email: shwetamishra14062000@gmail.com

A sweet poison Aconitum Ferox belongs to the family of Ranunculaceae. Also called Indian Aconite. Vatsanabh another name of Aconitum Ferox. Each and every part of Aconiutm Ferox are poisonous but the root is more potent. Found in temperate sub-alphine Himalaya Sikkim to Gharwal. Aconite ferox is used only after Shodhana process. It is an excellent drug if given in the correct dosage. Shodhana process can be performed in various ways such as soaking in cow urine or boiling in milk. The first cow urine soaking method is a method in which the part to be used is soaked in cow urine and replaced with fresh urine every day for two consecutive days. After 3 days, collect and dry. In the second method, the used parts are boiled in milk and tied with a muslin cloth to make an envelope, which is hung in the center of the pot using a stick. Pour the milk into a container and heat it at a temperature of 100ºC for 6 hours. It was then taken out, washed with water, and dried. It is herbaceous dam plant. The roots of plants are made up of tubers. The plant's stem is 4 feet tall. The flower is large pale dirty blue. Its pharmacological properties include antipyretic, analgesics, anti-inflammatory, respiratory infection, diuretic, detoxifier, anticarcinogenic, anesthetic, antiarthritic, antimicrobial, antihelminthic, diaphoretic. It is also used in snake, scorpion and rodent bites. It is contraindicated in children pregnant and lactating women, infants, and old-age weak people.
Keywords: Aconitum ferox, Aconitine, Ranunculaceae, Alkaloid, shodhana process, queen of all poisons, and blue rocket

NANOEMULGEL ADVANCEMENTS: A COMPREHENSIVE OVERVIEW

Afshan[1]*, Dr. Madhu Verma[2], Ms. Sagarika Majhi[3]
I.T.S College of Pharmacy, Muradnagar, Ghaziabad, Uttar Pradesh,India-201206
*Email: mohammadafshan9@gmail.com

Nanoemulgel, a dynamic fusion of nanotechnology and hydrogel systems, represents a significant leap forward in the realm of drug delivery and topical formulations. This abstract provides a comprehensive overview of recent advancements, emphasizing the transformative impact of nanoemulgel on improving bioavailability, stability, and targeted delivery. Nanoemulgel formulations, characterized by nanosized emulsion droplets embedded in a gel matrix, have emerged as a versatile platform for enhancing the delivery of various pharmaceutical and cosmetic agents. The integration of nanotechnology allows for the creation of stable emulsions with reduced droplet size, leading to increased surface area and improved bioavailability of poorly water-soluble drugs.The hydrogel component of nanoemulgel imparts a user-friendly topical application, providing a non-greasy and easily spreadable consistency. This combination of nanotechnology and hydrogel properties results in formulations that offer sustained release, prolonged therapeutic effects, and enhanced patient compliance.The abstract delves into the applications of nanoemulgel in pharmaceuticals, showcasing its potential in delivering drugs with challenging solubility profiles. Furthermore, the adaptability of nanoemulgel in cosmetic formulations is explored, highlighting its ability to encapsulate and deliver cosmetic actives for improved skin penetration and sustained release.The controllable release kinetics of nanoemulgel make it an ideal candidate for targeted drug delivery. Tailoring the gel matrix and emulsion characteristics enables precise modulation of release rates, facilitating localized therapy and minimizing systemic side effects.In addition to therapeutic applications, nanoemulgel's potential environmental impact is considered, as the technology allows for reduced amounts of active ingredients without compromising efficacy, aligning with sustainable and eco-friendly practices.In conclusion, this abstract underscores the transformative role of nanoemulgel in advancing drug delivery and topical formulations. The amalgamation of nanotechnology and hydrogel matrices in nanoemulgel formulations opens new avenues for improving therapeutic outcomes and user experiences in pharmaceuticals and cosmetics alike.
Keywords: nanoemulgel, drug delivery, topical formulations, nanotechnology, hydrogel, bioavailability, stability, targeted delivery, pharmaceuticals, cosmetics.

NANOPARTICLE-BASED APPROACHES FOR TREATING BIOFILM INFECTIONS: A REVIEW

Amit Yadav*, Nita Yadav, Reetika Rawat, Jitendra Singh Yadav, Shipra Sharma
Shri Ram Murti Smarak College of Engineering & Technology (Pharmacy),Bareilly-243202, Uttar Pradesh, India

Biofilm-related infections pose a significant challenge in clinical settings due to theirinherent resistance to conventional antibiotic treatments. Cefuroxime axetil is cephalosporin generally utilized for lower and upper respiratory tract infections, Genito-urinary tract infections, skin and soft tissue infections. Marketed preparation of cefuroxime axetil has very poor oral bioavailability (25% to 30%). Nanoparticle-based therapeutics have emerged as a promising strategy to combat biofilm infections and can enhance the bioavailability of active constituent. This study summarizes the current state of nanoparticle-based approaches for targeting and eradicating biofilms. It provides an overview of the mechanisms by which nanoparticles interact with biofilms, including physical disruption, enhanced drug delivery, and synergistic antimicrobial effects.The versatility of nanoparticles in targeting specific biofilm components such as extracellular polymeric substances (EPS) and microbial cells is also highlighted. Moreover, the potential benefits of nanoparticle-based strategies, including reduced antimicrobial resistance and enhanced biofilm penetration, are discussed. In addition, antioxidant potential of cefuroxime axetil is discussed. Furthermore, the challenges and future directions in the development of nanoparticle-based therapies for biofilm infections are outlined, paving the way for the translation of these innovative approaches into clinical practice.

Keywords: biofilm, infection, nanoparticle, antimicrobial, drug delivery, extracellular polymeric substances (EPS), resistance, clinical translation

A REVIEW ON PHARMACOLOGICAL AND PHYTOCHEMICAL PROPERTIES OF "TRADITIONAL MEDICINAL PLANT ADINA CORDIFOLIA

Mayank Pal*, Rahul singh, Aaditya singh,
Aryakul College of pharmacy and research Lucknow, UP, India -226002
Email: mayankpal77739814@gmail.com

In ancient times, many medicinal plants were used around the globe due to their unique source of medicinal properties, and they may be the most common human use of biodiversity.
According to WHO, more than 80% of people in developing countries still rely on local medicinal plants to meet their primary health needs. Adina cordifolia is also known as Haldina cordifolia and is also one of the plants used in herbal medicine due to its high medicinal value. They come from deciduous trees which belong to the Rubiaceae family. They are found in Vietnam and southern peninsular Malaysia and China. They are commonly known as Haldu, Kadam in Hindi, and also known by the name of Gao tron in Vietnamese. They are over 20 meters tall and flower in the winter and dry season. Their bark is used as an antiseptic.
Adina cordifolia extract includes various types of carbohydrates, alkaloids, Saponins, phenols, tannins, cardiac glycosides, flavonoids, and Terpenoid. They exhibit various pharmacological activities such as antiprotozoal, antioxidant, Antinociceptive, anti-inflammatory, and anti-proliferative activities. It can also be used to treat various diseases like ulcers, dysuria, wounds, skin diseases, fever and burning sensation, diuretics, stomach diseases, dysentery, and diarrhea. The heartwood of the tree contains Indole alkaloids. Their bark also contains 8 to 10% tannin and the leaves contain quercetin and ursolic acid. They did not show any adverse reactions. Various studies are also performed such as microscopic evaluation, pH determination; fluorescence analysis, physicochemical screening, and many other tests have been performed to evaluate them.
Keywords: Adina Cordifolia, Phytochemistry, Rubiaceae family, WHO, kadam, Haldina cordifolia

UNVEILING THE ANTIMICROBIAL POTENTIAL OF COW URINE: A COMPILATION OF STUDIES

Sopan S Gupta
School of Pharmacy, G H raisoni university,
Gram Dodda Borgaon, Teh. Sausar, Dist Chhindwara 480106, Madhya Pradesh, India
sopangupta06@gmail.com

Cow urine, referred to as "goambha, gojala, godrava," holds historical significance in traditional medicine, with mentions in ancient scriptures. Continuously used in villages for decades, it is considered an essential remedy for various ailments in both humans and animals. Recent research using the cup and well method revealed the antimicrobial potential of cow urine. It demonstrated sensitivity against E.coli bacteria, even those resistant to rifampicin and clindamycin antibiotics. Additionally, cow urine exhibited activity against S. aureus, B. Subtilis, and B. megaterium, showcasing its effectiveness beyond conventional antibiotics. Concentrated cow urine has shown significant inhibitory effects on gram-positive and gram-negative bacteria, as well as fungi. This broad-spectrum inhibition suggests its potential as a versatile therapeutic agent. A study under the supervision of the Raj. Go Seva Ayog's ethical committee revealed that cow urine therapy can reduce hematological toxicities induced by chemotherapy and radiation. Patients reported an overall sense of well-being, improved quality of life, and better symptom management, highlighting the therapeutic value of cow urine in healthcare. In summary, the multifaceted benefits of cow urine, from its antimicrobial properties to its role in mitigating chemotherapy related toxicities, underscore its potential in holistic healthcare practices.
Keywords:- Rifampicin, Clindamycin, s. aureus, B. Subtilis, B. Megaterium, Chemotherapy, Radiation.

CUTTING-EDGE APPROACHES TO TOPICAL BURN WOUND HEALING GEL: A THOROUGH REVIEW

Avishek Sarkar[1]*, Aakriti Patel[1], Pratibha Bhowmick[1], Mithun Bhowmick[1]
[1]Bengal College of Pharmaceutical Sciences and Research, Durgapur, Maulana Abul Kalam Azad University of Technology, West Bengal
Email id:- avisheksarkar073@gmail.com

One promising therapeutic strategy for the treatment of burn wounds is a topical burn wound healing gel. Recently, a number of innovative strategies have been created in an effort to increase the safety and effectiveness of these gels. Some of the most exciting new techniques are covered in this overview, such as the application of hydrogels, growth factors, and nanotechnology. Techniques based on nanotechnology have many benefits when it comes to the creation of burn wound healing gel. Drugs, growth factors, or other therapeutic agents can be directly delivered to the wound site using nanoparticles, increasing their effectiveness and minimising systemic negative effects. Additionally, the effectiveness of burn wound healing gels can be increased by engineering nanoparticles to have particular qualities like biodegradability or antibacterial activity. Another substance that shows promise for the creation of gels to cure burn wounds is hydrogel. Water-absorbing polymers called hydrogels are able to provide the moist environment needed for wound healing at the location of the wound. Hydrogels can also be utilised to administer medication or other therapeutic agents directly to the site of the wound. Naturally occurring proteins called growth factors are essential for the healing of wounds. A growing number of growth factors are being added to burn wound healing gels since it has been demonstrated that they are useful in accelerating the healing process. The treatment of burn wounds could be greatly enhanced by the creation of innovative methods for burn wound healing gel. These methods may shorten the healing process, leave fewer scars, and enhance patient results.
Keywords: Nanoemulsions, Burn wounds, Gel, Nanoparticles, hydrogels

UNWIND AND REFRESH: THE HERBAL ELEGANCE OF BATH BOMB

Gayatri Mayar[1*], Momin Sarah Shaikh Junaid[2], Prof. Afaque Yunusi[3]
Mahatma Gandhi Vidyamandir's Samajshri Prashantdada Hiray College of Pharmacy, Loknete Vyankatrao Hiray Marg, Malegaon Camp, Malegaon, Nashik, Maharashtra, India, (423105).

gayatrimayar01@gmail.com

Cosmetic chemistry is a part of prevalent everyday life. Basically, bath bomb is a hard-packed mixture which effervesces when wet. Once it is put into the water, the included scents and color starts to release in the same after the initiation of reaction. These bath bombs are designed to deliver a relaxed and refreshed feeling throughout the day. The mechanism behind disintegration of these bath bombs encircles the reaction between citric acid and sodium bicarbonate in the presence of water results into the formation of salt of citric acid and carbon dioxide. On the other hand, they can be placed into the category of "medicated bath bombs" due to the presence of *Calendula officinalis* as an anti-inflammatory agent which reduces inflammation and provides other beneficial aspects to the skin. The other ingredients of the formulation such as lavender oil, sweet almond oil and rose petals give calming feeling, moisturizing effect and relaxing sensation respectively. We believe that this product should be explored with the perspective of holistic bath which promotes the sensation of relaxation and aromatherapy benefits in the evolving world.

Keywords: Cosmetic, bath bomb, relaxed, *Calendula*, rose petals, bath, aromatherapy.

BIOTECHNOLOGICAL INTERVENTIONS FOR ENHANCED PRODUCTION OF MEDICINALLY IMPORTANT PLANT METABOLITES

Anurag Chourasia
Assistant Professor, Quantum University, Roorkee
Email- anurag.chh1@gmail.com

The demand for plant-derived medicinally important metabolites has surged in recent years due to their therapeutic potential in various diseases. However, the limited availability of these compounds from natural sources poses a significant challenge for pharmaceutical and healthcare industries. This abstract highlight the ongoing research and advancements in biotechnological interventions aimed at enhancing the production of medicinally important plant metabolites.

Biotechnology offers a promising avenue to address the growing demand for bioactive compounds by leveraging plant cell and tissue culture techniques. One approach involves the establishment of in vitro cultures of medicinal plants, providing a controlled environment conducive to the biosynthesis of target metabolites. This methodology allows for the manipulation of key factors such as nutrient composition, hormonal balance, and environmental conditions to optimize metabolite production.

Furthermore, genetic engineering plays a pivotal role in tailoring plant metabolic pathways for increased yield of specific compounds. Through the manipulation of key biosynthetic genes, researchers can enhance the expression of enzymes involved in the synthesis of medicinally important metabolites. This not only facilitates increased production but also enables the development of plant varieties with improved therapeutic profiles. In addition to traditional plant tissue culture and genetic engineering, recent developments in synthetic biology offer innovative strategies for pathway optimization. The design and construction of synthetic biological systems can lead to the development of bioengineered plants capable of producing high yields of specific metabolites with enhanced bioactivity.

This abstract will delve into the current state of biotechnological interventions, exploring case studies and success stories in the enhanced production of plant metabolites. It will also discuss the challenges associated with scaling up these technologies for commercial production and potential future directions for research and development. The presentation aims to contribute valuable insights into the intersection of biotechnology and pharmacognosy, fostering a deeper understanding of how these interventions can revolutionize the accessibility of medicinally important plant metabolites in the pharmaceutical industry.

Keywords: Technologies, Plant metabolites, Biotechnology

CAR-T CELL THERAPY: A GAME CHANGER IN CANCER TREATMENT

Komal Sanjay Shinde
Maulana Azad educational trust's y. b. chavan college of pharmacy, Aurangabad 431001, Maharashtra, India.
komalshinde6339@gmail.com

The development of novel targeted therapies with acceptable safety profiles is critical to successful cancer outcomes with better survival rates. Immunotherapy offers promising opportunities with the potential to induce sustained remissions in patients with refractory disease. Recent dramatic clinical responses in trials with gene modified T cells expressing chimeric antigen receptors (CARs) in B-cell malignancies have generated great enthusiasm. Chimeric antigen receptor T (CAR-T) cells are a type of tumor immunotherapy that is a breakthrough technology in the clinical treatment of tumors. The basic principle of this method is to extract the patient's T cells and equip them with targeting recognition receptors of tumor cells and return them to the patient's body to recognize and kill tumor cells specifically. Most CAR-T cell therapies treat hematological diseases such as leukemia or lymphoma and achieved encouraging results. Despite current successes in hematological cancers, we are only in the beginning of exploring the powerful potential of CAR redirected T cells in the control and elimination of resistant, metastatic, or recurrent non hematological cancers.

Keywords: Cancer, Tumor, CAR-T cell, immunotherapy, chimeric antigen receptor.

COMPUTATIONAL STRATEGIES FOR IDENTIFYING BUTYRYLCHOLINESTERASE INHIBITORS IN *EQUUS CABALLUS*: HOMOLOGY MODELLING, DOCKING, AND AI APPROACHES

Ankit Ganeshpurkar[1,2 *], Sushil Kumar Singh[1]
[1] Pharmaceutical Chemistry Research Laboratory I, Department of Pharmaceutical Engineering & Technology, Indian Institute of Technology (Banaras Hindu University), Varanasi -221005, India.
Present address: [2] Department of Pharmaceutical Chemistry, Poona College of Pharmacy, Bharati Vidyapeeth (Deemed to be University), Pune-411038, Maharashtra, India.

Introduction: Molecular docking is a computational technique crucial for identifying the correct ligand orientation in a protein binding site. It involves an exhaustive search of the ligand's conformational space and orientation, guided by prior knowledge of the binding site. Virtual screening evaluates compound libraries through docking, utilizing scoring functions (SF) to assess binding affinity. SF, a key component of

docking software, quantifies interaction energies. Machine learning (ML) enhances drug design, predicting toxicity and aiding in shape-based analysis. ML algorithms learn from data, contributing to various aspects of drug design, including SF development.
Aim and objectives: The study focuses on Butyrylcholinesterase (BChE), presenting a validated method for identifying inhibitors through molecular docking and ML-based SF. Horse BChE is widely used for screening of BChE inhibitors and its protein structure is unavailable. The study's significance lies in addressing the gap in horse BChE protein structure availability, enhancing inhibitor predictivity.
Materials and methods: Homology model for horse BChE was prepared using sequence P81908 obtained from Uniprot. SWISS-MODEL, a web server accessible via ExPASy (https://swissmodel.expasy.org/), was used to generate 3D model. Protein model refinement was performed by Dockprep followed by energy minimization through Amber2022. The docking protocol was validated by a confusion matrix. The known BChE inhibitors were used to train ML models for the development of SF.
Results and Discussion: Initially, the developed homology model of Horse BChE developed from PDB id 4TPK was validated. Ramachandran outliers were found to be only 0.38 %, indicating the good quality of the model. Further, the energy minimisation stage 5 was found suitable and was used for further docking protocol development. The pose validation was carried out for the developed docking protocol. Finally, the ML-based SF was developed by using molecular descriptors and ligand interactions obtained after docking. Out of various models developed, the SF was formulated from an extra-tree classifier with AUC of 0.911 and random forest and extra-tree regressors with r^2 values of 0.964 and 1, respectively.
Conclusion and summary:

- Poor correlation observed between Autodock binding energy and log/standardized IC_{50} for ligands, which was addressed through the development of ML-based SF.
- Improved prediction accuracy was achieved with Random Forest and Extra Trees regression models for IC_{50} value prediction.
- Development of new scoring functions deemed essential for reliable predictions and increased confidence in identifying BChE inhibitors through docking results.
- The scoring function could be obtained from https://github.com/ankitganeshpurkar/

Keywords: Artificial intelligence; machine learning; butyrylcholinesterase; scoring function

HOSTED WITH RESPONSIBLE INNOVATION: PHARMACEUTICAL INDUSTRY POTENTIAL ALONG WITH BARRIERS

Bhawani Gautam
Northern Institute of Pharmacy and Research, Alwar, 301028, Rajasthan, India
Bhawanigautam716@gmail.com

It is understood how important technological advancement in medicine has become. Despite all the advancements made in twenty-first century, there is still a lot of unmet medical requirements potential for healthcare improvement. The issues facing pharmaceutical firms include finding ways to remain flexible and competitive in a world where knowledge is always expanding and technologies are becoming more advanced, as well as finding ways to earn enough revenue to support their own expansion. In order to overcome these obstacles, pharmaceutical businesses are forced to adopt new business strategies. Something needs to change because the industry is hampered by protracted research and development(R&D) cycles and poor outcomes for novel therapies. External collaboration is required throughout the discovery, development, production and advertising processes. Public collaboration is required throughout the discovery, development, production, and commercialization processes. Additionally, alliances have become more frequent and expansive, increasing access to international scientific expertise in universities, research facilities, and biotech firms. Open creativity has grown prominent in the drug sector and is utilized to complement R&D with the goal of introducing new medications for patients faster and at a cheaper cost, despite the assumption that pharma businesses are "closed" or closely controlled enterprises. Each pharmaceutical company modified the open-innovation philosophy over time to create its own version to suit specific requirements and services. Major developments in present difficulties but also lots of possibilities for companies and researchers. Excellent drug development necessitates on-going learning, an open mind, and the adoption of fresh methodologies, in addition to the implementation of effective partnerships.
Keywords: Medicine, Drug Development, Research, Novel Therapies, Barriers

ANTIMICROBIAL RESISTANCE : A GLOBAL RESPONSE

Harsh Pratap Singh*, Saumya Das
*Noida Institute of Engineering Technology (Pharmacy Institute), Department of Pharmacology,
Plot no-19, Knowledge Park-II, Greater Noida, Uttar Pradesh-201306, India
harshpratap719@gmail.com

One of the most significant scientific developments of the modern era is the discovery of antibiotics. Millions of lives have been saved by antibiotics. Antimicrobial resistance (AMR) poses serious health hazards to people and threatens this progress. The impact of antibiotic resistance on mortality and public health costs is difficult to determine, and there have been few research on the subject. An important factor in the improper use of antibiotics is general practitioners' overprescription practices, especially in the lack of legitimate indications. In 2010, medical professionals in the United States prescribed 258.0 million courses of antibiotics 833 prescriptions per 1000 residents. Macrolides (22%) and penicillins (23%) were the most prevalent types advised. The antibiotic prescribed the most often amoxicillin and azithromycin were the drugs used. In addition to offering a global picture of the scope of AMR for the first time, the WHO global report on surveillance of AMR highlights the absence of sufficient monitoring in many global locations. In 2015, WHO Member States unanimously approved a Global Plan of Action to tackle AMR There significant gaps in knowledge about microorganisms of significant value for public health that prevents an precise evaluation of the actual circumstances and of patterns across time. The majority of the current threat comes from Gram-negative bacteria, for which there are currently very few effective medications to treat multidrug-resistant illnesses. The release of fresh vaccines could lower the incidence of infectious illnesses and hence reduce the use for antibiotics. Teixobactin , a recently derived antibiotic with remarkable efficacy against Gram-positive bacteria, including drug-resistant forms, offers hope for the future and serves as an example for new research.
Keywords: Antimicrobial resistance , Gram-negative resistance , Infection prevention.

WHAT ARE RNA VACCINES AND HOW DO THEY WORK?

Sandhya Baliram More
Maulana Azad's Educational Trust, Y. B. Chavan College of Pharmacy, Rauza Bagh, Aurangabad 431001, Maharashtra, India.

Conventional vaccines usually contain inactivated disease-causing organisms or proteins made by the pathogen (antigens), which work by mimicking the infectious agent. They stimulate the body's immune response, so it is primed to respond more rapidly and effectively if exposed to the infectious agent in the future.
RNA vaccines use a different approach that takes advantage of the process that cells use to make proteins: cells use DNA as the template to make messenger RNA (mRNA) molecules, which are then translated to build proteins. An RNA vaccine consists of an mRNA strand that codes for a disease-specific antigen. Once the mRNA strand in the vaccine is inside the body's cells, the cells use the genetic information to produce the antigen. This antigen is then displayed on the cell surface, where it is recognised by the immune system.
Keywords: RNA vaccine, mRNA vaccine, sRNA vaccine, Vaccine epidemiology.

OPPORTUNITIES, SCOPE AND FUTURE OF ENTREPRENEUR IN HEALTHCARE INDUSTRY: AN OVERVIEW

Prerna Chaturvedi*, Sumeet Dwivedi
Acropolis Institute of Pharmaceutical Education and Research, Indore (M.P.) – India
E.mail: drsumeetdwivedi@acropolis.edu.in, prernachaturvedi12@gmail.com

Healthcare has always offered many potential in India, and now that it is tightly linked to technology, the industry is poised for rapid expansion. The Indian healthcare business is expanding quickly, and investments in health technology have increased significantly in recent years. India's healthcare industry has grown significantly in both employment and income. Hospitals, medical devices, clinical trials, outsourcing, telemedicine, medical tourism, health insurance, and medical equipment all fall under the category of healthcare. Due to improved services, coverage, and rising spending by both public and private entities, the Indian healthcare industry is expanding quickly. Due to the history of the healthcare sector's resistance to and slow-rolling of various changes — frequently to the detriment of patients, providers, and payers — there is now a market opportunity for business owners with cutting-edge, agile products and services that can provide greater value than the status quo. Innovative businesses that are forging new paths forward have grasped many business opportunities in the healthcare sector. An entrepreneur might work in a number of important fields, such as ovarian cancer diagnosis, health insurance, electronic health records, etc. Medical device manufacturers have a lot of prospects in India. With significant capital expenditure for cutting-edge diagnostic facilities, the nation has also emerged as one of the top locations for high-end diagnostic services, serving a larger section of the populace. The present paper highlights the various opportunities along with all possible scope and future aspects of entrepreneur in healthcare industry.
Keywords: Healthcare, Opportunities, Scope

ANTIDIABETIC EFFECT OF VITAMIN D ON OXIDATIVE STRESS

Ayasha Saiffi[1]*, Sokindra kumar[1]
[1]Faculty of Pharmacy, Swami Vivekanand Subharti University, Meerut-250005, Uttar Pradesh, India.
ayashasaiffi@gmail.com

Diabetes mellitus (DM) is a disease associated with metabolism which is characterized through hyperglycemia, ensuing in impaired insulin secretion and/or action. DM can be classified into two main classes: type 1 diabetes mellitus (T1DM) and type 2 diabetes mellitus (T2DM), with T2DM affecting about 5% of the population. T2DM is associated with long-term organ damage,
dysfunction and failure, and is currently one of the costliest chronic diseases in the world (ADA - American Diabetes Association (ADA), 2011. This disease is also linked to obesity, insulin resistance, and defects in pancreatic β-cell function and mass. The diabetic patients has been partly linked with the consumption of a high-calorie diet and sedentary lifestyle which results diabetes due to obesity. T1D is an autoimmune multifactorial disease in which genetic predispositions are associated with destruction of the β cells of the pancreas which results in the lack of insulin secretion. The Disease can occur at any age childhood and adolescence. An unknown environmental factor triggers β-cell-specific autoimmunity event where viruses, bad life style, bacteria and diet have all been implicated. T2DM is the most popular type of the diabetes and is characterized by diminished peripheral insulin sensitivity, lack of efficient glucose uptake in targeted tissues such as adipose tissue, skeletal muscle and adipose tissue, impaired regulation of hepatic glucose production, and declining β-cell function. These metabolic defects lead to β cell failure. Hyperglycemic state occurs when insulin secretion is unable to recompense for insulin resistance. T2DM is amplified by several genetic component and environmental factors such as age, obesity, diet, and lack of physical activity. Both type of diabetes i.e., T1D and T2D are associated with an increased risk of vascular and metabolic disorders. The present study investigated the effects of Vitamin D as on streptozotocin induced diabetes in rats. Various biochemical parameters such as SOD, GSH and catalase activity were also assessed. The present study demonstrates that Vitamin D had potential therapeutic effects on diabetes in rats via inhibiting oxidative stress.
Keywords: Vitamin D, antioxidant, Diabetes, oxidative stress

THERAPEUTIC POTENTIAL OF ZINC OXIDE NANOPARTICLES TO OVERCOME MULTI DRUG RESISTANCE IN CANCER

[1]Hiranmoy Saha*, [1]Mohd Mazher, [1]Indu Singh, [1]Debashish Praminik, [1]Saloni Agarwal
[1]School of Medical and Allied Sciences, K.R. Mangalam University, India
Email: hiranmoysahs@gmail.com

Cancer is one of the leading causes of death all around the globe. Despite targeted medication, chemotherapy remains the main treatment regimen for cancer patients. The challenges of cancer treatment are abnormal cell proliferation, regulation and uncontrolled growth of cells that invade normal tissues and organ and spread throughout the body and reappearance over the period.
Several factors and mechanism are responsible for the development of multi drug resistance (MDR) including increased expression of efflux transporters, the tumor microenvironment, changes in molecular targets and the activity of cancer stem cells.
Targeted drug delivery of nanoparticles can overcome multidrug resistance and can be cytotoxic for cancer cells by synthesizing ROS (reactive oxygen species) causing mitochondrial damage and ultimately results in apoptosis. ZnO nanoparticles's unique properties can prove to be decisive in drug delivery, diagnosis, imaging and treatment of infection, inflammation, and cancer.
This comprehensive review presents diverse modalities for multidrug resistance in cancer with primary focus on various causes for multi drug resistance and its treatment using various metal oxide nanoparticles significantly zinc oxide nanoparticles.
Keywords: Cancer, MDR, ROS, Cytotoxic, Nanoparticles.

NEXT-GENERATION GENE THERAPY: UTILIZATION OF LIPID-BASED AND POLYMER-BASED NON-VIRAL VECTORS FOR ADVANCING NUCLEIC ACID DELIVERY

Himanshu Sharma[1], Girendra Kumar Gautam[2]*, Sachin Tyagi[1], Suryakant Verma[1]
[1]Department of Pharmacy, Bharat Institute of Technology, Meerut, 250103, Uttar Pradesh
[2]Shri Ram College of Pharmacy, Parikrama Marg, Muzaffarnagar 251001, Uttar Pradesh
[3]SMT Tarawati Institute of Biomedical and Allied Science, Roorkee 247667, India
shceuticals@gmail.com

The field of gene therapy has attracted more attention because of its broad ability to modify gene expression through targeted delivery of messenger RNA, microRNA, genomic DNA, and short-interfering RNA, with the goal of treating both cancerous and non-cancerous conditions. Gene regulation has been made easier by the engineering of several nucleic acid analogues that specifically target both coding and non-coding areas of the human genome. However, problems related to these nucleic acid mimics' less than ideal dispersion within cells or organs have limited their wider therapeutic utility. Novel non-viral delivery techniques including liposomes, polyplexes, and nanoparticles have been developed to overcome these obstacles. This thorough analysis mainly concentrates on non-viral delivery vectors, especially those made of cationic lipids and polymers, for the goal of delivering nucleic acids for use in diverse gene therapy applications.
Keywords: Gene Therapy, Gene Expression, Targeted Delivery, Therapeutic applications.

OPTIMIZATION OF HPLC CONDITIONS FOR QUALIFICATION OF QUETIAPINE FUMARATE AND ITS VALIDATION THROUGH VARIOUS VALIDATION PARAMETERS

*Roshani Singh , Deepesh Parashar, Manoj Sharma
School Of Studies in Pharmaceutical Sciences, Jiwaji University, Gwalior (M.P), 474001
*Presenting Author: rs678752@gmail.com

Introduction: Chromatography, although primarily a separation technique, is mostly employed in chemical analysis. In which High-performance liquid chromatography (HPLC) is an extremely versatile technique where analytes are separated by passage through a column packed with micrometer-sized particles. Now a day reversed-phase chromatography is the most commonly used separation technique in HPLC. The reasons for this include the simplicity, versatility, and scope of the reversed-phase method as it is able to handle compounds of a diverse polarity and molecular mass.
Aim & Objectives: The present study mainly focuses on the optimization of HPLC conditions and other important perspectives during method development and validation of Quetiapine fumarate.
Method: The Agilent Technologies 1200 Series apparatus (Santa Clara, CA, USA) with PDA detector was used for the HPLC analysis. For monitoring of chromatographic system and data acquisition, the Agilent Chem Station program was used. Reversed phase HPLC mode having stationary phase with C_{18} bonded phase i.e. Zorbax XDB C-18, 150 mm x 4.6 mm, 5.0 µm was selected. After assessing the solubility of drug in different solvents as well in mobile phases; ACN: Methanol: Buffer (27.5:27.5:45.0) was selected as mobile phase. Flow Rate was 1.2 mL/min with Injection volume of 20 µL. Column temperature was 40 ºC at 250 nm detection wavelength and 20 mins runtime.
Results: Satisfactory resolution was obtained at 8.9 mins retention time with the above conditions of HPLC method which were validated by various validation parameters such as Linearity, Accuracy, Specificity, Precision, Robustness and System suitability parameters.
Summary and Conclusion: The developed RP-HPLC method was simple, sensitive, precise and accurate hence can be used in routine for the determination of Quetiapine fumarate in bulk and in pharmaceutical dosage form.
Keywords**:** Quetiapine fumarate, Method development, Method validation, Linearity, Accuracy, Specificity, Precision.

A COMPREHENSIVE REVIEW ON THE DISEASES VITILIGO.

Anu Radha
Research scholar, department of pharmaceutical sciences school of pharmaceutical sciences ، CT University Ludhiana Punjab India.
anubalgotra1014@gmail.com

Vitiligo is a chronic skin disorder characterized by the loss of pigmentation, leading to the development of white patches on the skin. This condition results from the destruction of melanocytes, the pigment-producing cells, often attributed to autoimmune factors. Vitiligo can affect individuals of any age, race, or gender and may have a significant impact on both physical appearance and psychological well-being. While various treatment options exist, including topical corticosteroids, phototherapy, and surgical interventions, there is no universally curative solution. Ongoing research aims to enhance our understanding of vitiligo's complex pathogenesis and to develop more effective and targeted therapeutic strategies for managing this dermatological condition. Treatment for this disease could be topical Corticosteroid, Phototherapy, Topical Calcineurin Inhibitors, Excimer Laser, Microskin and Camouflage. Prevention includes, Sun Protection, Avoiding Triggers, Dietary Considerations, Managing Stress.
Keywords: Vitiligo, treatment, prevention.

DESIGNED ZERO-DIMENSIONAL CO-DOPED GRAPHENE QUANTUM DOTS-BASED FLUORESCENCE SENSOR FOR MONITORING DIMETHOATE

Mahendra R. Mahajan[1*], Pravin. O. Patil[1]

Organophosphorus pesticide, which is widely used in agriculture, has harmful effects on organs. To address this issue, advanced sensors are crucial for detecting it in real samples. Notably, graphene quantum dots (GQDs)-centered fluorescent sensors offer numerous advantages such as high sensitivity, and selectivity. Therefore, in this work, we designed a new co-doped GQD fluorescence sensor to achieve selective dimethoate detection. Briefly, the synthesis of co-doped GQD was achieved through the hydrothermal method. Extensive spectral characterizations, including FTIR, UV-Vis spectroscopy, zeta potential analysis, particle size analysis, HR-TEM, Raman, PXRD, and fluorescence studies, were conducted to validate the fabrication of co-doped GQD. The resulting nanosized co-doped GQD demonstrated an enhanced quantum yield. In the context of sensing, the addition of a quencher to co-doped GQD induces fluorescence quenching ("Turn Off") due to electrostatic complex formation. Upon introducing dimethoate into the quenched system, a proportional correlation emerges between

dimethoate concentration and fluorescence reactivation. Remarkably, the sensor achieves a limit detection limit (LOD) of 89.6 ng/mL, offering a broad linear range spanning from 1 to 900ng/mL. In addition, it exhibited real-time applicability, good stability, and reproducibility. In conclusion, the design of co-doped GQDs can be used as a proof of concept for dimethoate sensing within various sample contexts.

INTELLECTUAL PROPERTY RIGHTS IN PHARMACEUTICALS INDUSTRY

Mansee arya *,Saumya Das
Noida Institute of Engineering Technology (Pharmacy Institute), Department of Pharmacology, Plot no-19, Knowledge Park-II, Greater Noida, Uttar Pradesh-201306, India.
manseearya26@gmail.com

Intellectual property (IP) is the creation of the mind. It relates to the fact that certain products of human intellect should be afforded the same protective rights that apply to physical property . Intellectual Property Rights (IPR) used in the protection of a company's invention. It promotes healthy competition in the market, which is helpful to a country's economy. The development of new life-saving medications, which must be secured by Intellectual Property Rights (IPRs). Patents grant the pharmaceutical corporations to market their pharmaceuticals and ban others from manufacturing, selling, or manufacturing these drugs for 20 years. The intellectual property rights given to the inventor allows him to benefit while investing in drug research and development to generate more drugs and develop those already discovered. This boosts the economic growth of the country. These rights assist governments all around the world in ensuring the safety of their medical discoveries. Pharmaceutical companies should have an efficient intellectual property strategy to optimize investment returns while maintaining robust patent protection. Promoting innovation is essential for drug research, and Intellectual Property Rights (IPR) may help you reach your aim of having a competitive advantage. So India is the world's biggest provider of generic pharmaceuticals that's why Intellectual Property Rights (IPR) promotes healthy competition in the market and is also valuable for protecting their time, money, and effort, supporting industrial development and economic growth. Lastly, IPRs provide sufficient incentives to these companies for investing in research and development.
Keywords: Intellectual property rights, Public rights , Economic growth, Promoting innovation.

DESIGN, SYNTHESIS AND BIOLOGICAL EVALUATION OF NEW DRUG CANDIDATE AS A POTENTIAL MEMORY ENHANCER

Ishwari R. Chaudhari*, Deepak S. Mohale
Pataldhamal Wadhwani college of pharmacy yavatmal
ishwarichaudhari253@gmail.com

Introduction: Alzheimer's disease (AD) is a neurodegenerative disease of the brain associated with decrease of cognitive function, memory impairment, and behavioral changes. More than 25 million people in the world today are affected by dementia, most suffering from Alzheimer's disease. In both developed and developing nations, Alzheimer's disease has had tremendous impact on the affected individuals, caregivers, and society. The duration of the disease can vary between 5 years and 20 years. The general therapeutic approaches are reliant on the use of acetyl cholinesterase inhibitors(AChE) which can preserve brain cholinergic nerve function in some patients.With the advances in studies of the pathogenic mechanisms in AD.The target of new AD drug development has been directed to modifying the pathology
Aim & Objective: To design and synthesize the new chemical entity as a new class of Acetyl choline esterase inhibitor
Method : Generated virtual library of compound having structural similarity with available entity then sort out promising compound from the generated library by virtual screening then select specific compounds by performed molecular docking of selected compounds form the library and see the desired interaction then performed molecular dynamics of specific molecules .Sorted final lead molecules showing desired properties and synthesized and characterization of final lead molecule and evaluated the Alzheimer activity
Results: Bispyridinium derivatives and Pyridinium derivatives compounds shows significant AChE inhibitory activities toward AChE.
Summery & Conclusion: Taking into consideration the structure activity relationships of the new synthesized compounds was the most potent and a selective inhibitor of AChE

MANGO GINGER – THE UNCOMMON SPICE WITH UNCOMMON PHARMACOTHERAPEUTIC POTENTIALS

Lata Choudhary*, Satish Sahu, Ritesh Jain
School of Pharmacy, CEC, Bilaspur (C.G.) India
lata.niper21@gmail.com

Curcuma amada Roxb., is an uncommon spice that looks like ginger but flavors like fresh mango. Pickles and other culinary items are typically made with mango ginger rhizomes. Mango ginger is widely regarded in Ayurvedic and Unani medicinal systems as a digestive aid, aphrodisiac, antipyretic, emollient, diuretic, laxative, and expectorant as well as a cure for biliousness, itching, skin disorders, bronchitis, asthma, hiccups, and inflammation caused by accidents. Aside from its numerous biological benefits, mango ginger has antioxidant, antibacterial, anti-fungal, anti-inflammatory, antiplatelet, cytotoxic, anti-allergic, hypotriglyceridemic, CNS depressing properties, analgesic, etc. Some of the major chemical constituents are volatile oils, phenolic acids, curcuminoids, starch, terpenoids etc. The primary active components of *C. amada* are highlighted in this review article along with their biological roles, which may be important from a pharmacological standpoint.
Keywords: *Curcuma amada*, Traditional uses, Mango ginger, Pharmacological activity, Curcuminoids

LATENT AUTOIMMUNE DIABETES OF ADULTS (LADA) - TYPE 1.5 DIABETES

Khushi Kapoor, Divya
Shri Ram College of Pharmacy, Parikrama Marg, Muzaffarnagar 251001, Uttar Pradesh, India

Latent Autoimmune Diabetes in Adults (LADA) describes a form of diabetes with features bridging between type 1 and type 2 diabetes. Typically appearing in adults, LADA distinguishes itself through three diagnostic criteria: adult onset, the presence of circulating islet autoantibodies, and initial insulin independence. Unlike traditional type 1 diabetes, LADA exhibits a slower progression, allowing initial management without insulin. Approximately 10% of individuals initially presenting with non-insulin-requiring diabetes are diagnosed with

LADA. Despite a growing awareness of LADA, there remains a dearth of research and clinical knowledge, hindering our understanding and treatment capabilities. To enhance comprehension and management of this diabetes variant, a comprehensive examination is essential.
Exploring nomenclature, diagnostic criteria, genetics, pathology, and treatment avenues is crucial for advancing our knowledge. Improving the precision of diagnostic criteria, understanding genetic predispositions, unraveling the underlying pathology, and refining treatment approaches are paramount. By delving into these aspects, we aim to foster a more nuanced understanding of LADA, enabling refined recommendations for its diagnosis and management, ultimately advancing our ability to address this distinctive form of diabetes.
In conclusion, the research on LADA (Latent Autoimmune Diabetes in Adults) underscores its significance in the realm of diabetes mellitus. The findings emphasize the need for heightened awareness, early diagnosis, and tailored treatment strategies to address the unique characteristics of LADA. Further studies are warranted to enhance our understanding of its etiology and optimize therapeutic interventions for improved patient outcomes.
Keywords: LADA, Diabetes Mellitus, Islet Autoantibodies, Prevelance of Diabetes.

NEPHROTOXICITY INDUCED BY MERCURY CONTAINING COSMECEUTICALS

[1]Saloni Agarwal*, Mohd. Mazher[1], Swati Kaushik[1], Hiranmoy Saha[1]
[1]School of Medical and Allied Science, K.R. Mangalam University, India
Email: saloni154agarwal@gmail.com

Cosmetic agents have been used globally to enhance the beauty and fairness of skin. The melanin pigment formed in melanocytes provides the skin its color. A survey conducted by Cosmetic Europe showed that most of the population agreed that cosmetics improve quality of life. Among these, skin whitening agents have the most demand in the cosmetic industry.
These skin whitening formulations contain heavy metals like mercury, cadmium, lead, nickel, arsenic which have a chronic effect on core organs and are asymptomatic at the initial stages which cause toxicity.
The appeal for fairer skin tone has created a wide market for such products despite such harsh effects. Significant concentration of mercury in these preparations must be checked and labelled as per the regulations. The acceptable limit for this toxic agent is recognized by several healthcare organizations worldwide (WHO, US FDA, BIS, etc). This review comprehensively advocates to remove or eliminate presence of mercury in skin whitening agents beyond the permissible limits and its role in nephrotoxicity.
Keywords: Mercury, Cosmeceuticals, Skin whitening formulation, Regulations

MUSA BALBISIANA LINN: UNRAVELING IT'S PHARMACOLOGICAL POTENCY AND HEALTH BENEFITS

Sadab*, Prof. (Dr.) Aaditya Singh
Aryakul College of Pharmacy & Research Lucknow, U.P., 226029, India
sadab123shekh@gmail.com

Musa balbisiana, colloquially known as wild banana, stands as a botanical treasure with profound pharmacological implications Beyond its aesthetic appeal, Musa balbisiana plays a crucial role in the evolutionary history of bananas. Its distinct characteristics, including large leaves and robust pseudo stems, make it an intriguing subject for botanical study. This investigation unveils the plant's therapeutic potential through a focused exploration of its pharmacological effects. Phytochemical analysis uncovered a diverse array of bioactive compounds within Musa balbisiana, laying the foundation for its pharmacological significance. In vitro studies demonstrated the plant's remarkable anti-inflammatory attributes, inhibiting key mediators of inflammation. Concurrently, Musa balbisiana showcased potent antioxidant capabilities, indicating its promise in combating oxidative stress-related disorders. Microbial susceptibility assays illuminated the plant's antimicrobial prowess, suggesting applications in addressing the escalating challenges of antibiotic resistance. Notably, Musa balbisiana exhibited hepatoprotective effects, mitigating liver damage induced by toxins. Neuropharmacological investigations hinted at the plant's neuroprotective potential, encouraging further exploration in the realm of neurodegenerative conditions. Additionally, cardioprotective studies unveiled positive impacts on cardiovascular parameters, suggesting preventive implications for heart-related disorders. This abstract encapsulates the pharmacological versatility of Musa balbisiana, offering a glimpse into its potential as a source of novel therapeutic agents. The identified bioactive compounds and observed effects pave the way for future research, positioning Musa balbisiana as a promising avenue for drug development and preventive medicine.
Keywords: Musa balbisiana, pharmacological effects, anti-inflammatory, antioxidant, antimicrobial, hepatoprotective, neuroprotective, cardioprotective.

TO IMPROVE THE ABSORPTION OF POOR WATER-SOLUBLE DRUG BY THE FORMATION OF MICROEMULSION OF THESE DRUGS

Narayan Arora*, Deepti Agarwal[1], Dr. Arun Kumar[2], Shivam Kumar[2], Sanjay Kori[2]
1. Sanskar College of Pharmacy and Research, Ghaziabad, U.P., India
2. Parmarth College of Pharmacy, Hapur, Uttar Pradesh, India
aroranarayan12@gmail.com

The objective of the present research study was to formulate, develop and optimize microemulsion systems for oral delivery of poorly water soluble active pharmaceutical ingredients. At present, development of a microemulsion drug delivery system is mainly performed via pseudoternary phase diagram. Lipids and surfactants are combined randomly and selection of a suitable mixture is often solely based upon droplet size measurements of formulation. Following process are incluce in basic studies formulate, develop and optimize oil in water microemulsion system containing Felodipine using suitable oil, surfactant and co-surfactant, formulate, develop and optimize self-micro emulsifying drug delivery system containing Valsartan using suitable oil, surfactant and co-surfactant, To select formulation components like oils, surfactants and co-surfactants based on the drug solubility studies,
To optimize the ratio of surfactant and co-surfactant to formulate stable microemulsion system using Pseudo ternary phase diagram, to characterize the microemulsion and SMEDDS with respect to their physical properties. To perform and compare In-vitro intestinal permeability study (ex-vivo drug release study) for optimized microemulsion, SMEDDS systems and plain drug suspension, To compare the in-vitro drug release study of optimized Liquid SMEDDS, Solid SMEDDS with marketed conventional tablet formulation of Valsartan, To perform pharmacokinetic study using suitable animal model to evaluate oral bioavailability of Felodipine when delivered as microemulsion

and plain drug suspension, To perform the stability study of optimized microemulsion, SMEDDS and Solid SMEDDS system.Manufacturing process needs special equipments for filling, weight sorting and banding operations which increase the cost. Capsules are sensitive to moisture and gelatin has a tendency to cross-link with capsule contents. Hygroscopic fills may cause rapid capsule softening and leaking. The interactions between lipid components and capsule shells are often observed. Drug migration into the capsule shell can affect its release mechanism.
Keywords: microemulsion, surfactant, valsartan, ingredient etc.

OPTIMIZING DRUG DELIVERY: PHARMACEUTICAL MINI TABLETS IN THERAPEUTICINNOVATION

Neha Mishra*, Dr. Jitendra S Yadav, Dr. Arti Gupta
Shri Ram Murti Smarak College of Engineering & Technology (Pharmacy),Bareilly - 243202, Uttar Pradesh , India

The Term "Solid Dosage Form" refers to pharmaceutical formulations that are solid innature such as tablets, capsules, powders and granules. These formulations are designed to be administered orally and can contain active pharmaceutical ingredients along with various excipient. This research focus on Pharmaceutical Mini Tablets which refers to a specific dosage form used in drug delivery. These mini tablets are typically very small, often less than 3mm in diameter and can be designed for various purpose such as rapid disintegration, controlled release or targeted delivery within the gastrointestinal tract. They are particularly useful in pediatric and geriatric patient populations, as well as for multi - drug regimens and personalizes medicine. Pharmaceutical mini tablets are manufactured using specialized techniques such as direct compression, micro encapsulation or freeze drying and they offer advantages such as dose flexibility, precise dosing and potentially improved patient compliance. Their small size also allows for alternative administration routes such as dispersing in liquids for patients with swallowing difficulties. Research in this area focuses on optimization of formulation, manufacturing processes and understanding their performance in vivo. The flexibility and potential advantages of pharmaceutical mini tablets make them an area of growing interest in pharmaceutical development and personalized medicine.
Keyword: Solid dosage form, Mini - Tablets, Personalizes medicine, targeted delivery

UNWIND AND REFRESH: THE HERBAL ELEGANCE OF BATH BOMB

Ms. Gayatri Mayar[1*], Momin Sarah Shaikh Junaid[2], Mr. Afaque Yunusi[3]
[1*,2]Student at MGV's Samajshri Prashantdada Hiray College of Pharmacy, Malegaon, Nashik (MS) 423105.
[3]Professor at MGV's Samajshri Prashantdada Hiray College of Pharmacy, Malegaon, Nashik (MS) 423105.
Corresponding E-mail ID: gayatrimayar01@gmail.com

Cosmetic chemistry is a part of prevalent everyday life. Basically, bath bomb is a hard-packed mixture which effervesces when wet. Once it is put into the water, the included scents and color starts to release in the same after the initiation of reaction. These bath bombs are designed to deliver a relaxed and refreshed feeling throughout the day. The mechanism behind disintegration of these bath bombs encircles the reaction between citric acid and sodium bicarbonate in the presence of water results into the formation of salt of citric acid and carbon dioxide. On the other hand, they can be placed into the category of "medicated bath bombs" due to the presence of *Calendula officinalis* as an anti-inflammatory agent which reduces inflammation and provides other beneficial aspects to the skin. The other ingredients of the formulation such as lavender oil, sweet almond oil and rose petals give calming feeling, moisturizing effect and relaxing sensation respectively. We believe that this product should be explored with the perspective of holistic bath which promotes the sensation of relaxation and aromatherapy benefits in the evolving world.
Keywords: Cosmetic, bath bomb, relaxed, *Calendula*, rose petals, bath, aromatherapy.

MUSA BALBISIANA LINN: UNRAVELING IT'S PHARMACOLOGICAL POTENCY AND HEALTH BENEFITS

Sadab*, Prof. (Dr.) Aaditya Singh
Aryakul College of Pharmacy & Research Lucknow, U.P., 226029, India
sadab123shekh@gmail.com

Musa balbisiana, colloquially known as wild banana, stands as a botanical treasure with profound pharmacological implications Beyond its aesthetic appeal, Musa balbisiana plays a crucial role in the evolutionary history of bananas. Its distinct characteristics, including large leaves and robust pseudo stems, make it an intriguing subject for botanical study. This investigation unveils the plant's therapeutic potential through a focused exploration of its pharmacological effects. Phytochemical analysis uncovered a diverse array of bioactive compounds within Musa balbisiana, laying the foundation for its pharmacological significance. In vitro studies demonstrated the plant's remarkable anti-inflammatory attributes, inhibiting key mediators of inflammation. Concurrently, Musa balbisiana showcased potent antioxidant capabilities, indicating its promise in combating oxidative stress-related disorders. Microbial susceptibility assays illuminated the plant's antimicrobial prowess, suggesting applications in addressing the escalating challenges of antibiotic resistance. Notably, Musa balbisiana exhibited hepatoprotective effects, mitigating liver damage induced by toxins. Neuropharmacological investigations hinted at the plant's neuroprotective potential, encouraging further exploration in the realm of neurodegenerative conditions. Additionally, cardioprotective studies unveiled positive impacts on cardiovascular parameters, suggesting preventive implications for heart-related disorders. This abstract encapsulates the pharmacological versatility of Musa balbisiana, offering a glimpse into its potential as a source of novel therapeutic agents. The identified bioactive compounds and observed effects pave the way for future research, positioning Musa balbisiana as a promising avenue for drug development and preventive medicine.
Keywords: Musa balbisiana, pharmacological effects, anti-inflammatory, antioxidant, antimicrobial, hepatoprotective, neuroprotective, cardioprotective.

PHARMACOTHERAPY OF PARKINSON'S DISEASE

Viveka G. Korde*
School of Pharmacy, G H Raisoni University, Saikheda, Madhya Pradesh, India.
vivekakorde@gmail.com

Parkinson's complaint is a progressive neurodegenerative complaint represented by motor and non- motor symptoms, affecting millions worldwide. Pharmacotherapy plays a vital portion in managing symptoms and perfecting the quality of life for affected identities. This study aims to reconsider and anatomize recent creations in pharmacological interventions for Parkinson's complaint. To charge the forcefulness of current pharmacological treatments in easing motor symptoms associated with Parkinson's complaint. To synthesize and interpret the effects of these inquiries to give a complete understanding of the current country of pharmacotherapy for Parkinson's complaint. PubMed, Scopus, and other workable databases were searched utilizing fated extension and repudiation criteria. inquiries were named predicated on their connection to pharmacological interventions for Parkinson's complaint, and data birth was performed to anatomize pivotal effects. The review linked (insert number) workable inquiries, encompassing a non identical range of pharmacological interventions, involving levodopa, dopamine agonists, MAO- B impediments, and other arising antidotes. Methodological variations among inquiries were also analyzed to understand the diversity in disquisition approaches. The dissection of current literature reveals significant creations in pharmacotherapy for Parkinson's complaint, with various interventions establishing effectiveness in managing motor and non- motor symptoms. Levodopa remains a foundation, but arising antidotes show off pledge. In conclusion, this study provides a complete overview of the current country of pharmacotherapy for Parkinson's complaint, offering expensive perceptivity for clinicians and researchers.
Keywords**:** Parkinson's complaint, pharmacotherapy, levodopa, dopamine agonists, MAO- B impediments.

PHARMACOGENOMICS OF ANTICANCER AGENTS; A RECENT ADVANCEMENT IN PHARMACEUTICAL TECHNOLOGY

Amrita Thakur[1]*, Ayushman Roy [2]
[1] School of Pharmacy, Vishwakarma University, Survey No.2,3,4, Kondhwa Rd.Laxmi Nagar, Betal Nagar, Kondhwa, Pune, Maharashtra,411048,Pune (M.H.)
[2] Rungta College of Pharmaceutical Sciences & Research, Rungta Educational Campus, Khoka-Kurud Road, Bhilai, Chhattisgarh 490024, Bhilai (C.G.)
amritathakur01@gmail.com

The field of pharmacogenomics has emerged as a transformative force in the realm of anticancer therapy, representing a recent and profound advancement in pharmaceutical technology. At its core, pharmacogenomics seeks to unravel the intricate interplay between an individual's genetic makeup and their response to specific drugs, particularly in the context of cancer treatment. This revolutionary approach enables the tailoring of anticancer agents to the unique genetic profile of each patient, ushering in an era of personalized medicine. By delving into the genetic variations that influence drug metabolism, efficacy, and toxicity, healthcare providers can make informed decisions to optimize treatment regimens. This not only enhances the therapeutic benefits but also mitigates the risk of adverse effects. One notable outcome of pharmacogenomics is the development of targeted therapies, exemplified by the likes of tyrosine kinase inhibitors and immune checkpoint inhibitors. These precision medications, finely tuned based on pharmacogenomic insights, exhibit heightened efficacy in targeting cancer cells while sparing healthy tissues from unnecessary damage. This shift towards individualized treatment strategies is reshaping the landscape of cancer care. The identification of specific biomarkers associated with drug response empowers clinicians to make informed choices, moving away from the traditional one-size-fits-all paradigm. As pharmacogenomics continues to unravel the genetic intricacies of drug response, it holds the promise of not only improving treatment outcomes but also ushering in a new era of precision medicine, offering hope and enhancement in the battle against cancer.
Keywords**:** Pharmacogenomics, Cancer, Tyrosine kinase inhibitors, Biomarkers, personalized medicines.

EXPLORING THE POTENTIAL OF PLANT-BASED PHARMACEUTICALS: HARNESSING NATURE'S BOUNTY FOR NOVEL THERAPIES

Mugdha Arvind Joshi [1*], Manasi Arvindrao Joshi[2]
[1]Phd Scholar, Dr. Babasaheb Ambedkar Technological University, Lonere, Raigad. &
Asst. Prof., IVM's Krishnarao Bhegade Institute of Pharmaceutical Education and Research, Talegaon Dabhade. Dist. Pune.
[2] Asst. Prof., Arvindbabu Deshmukh Mahavidyalaya, Bharsingi, Dist. Nagpur.
majoshi.iiper@gmail.com

Plant-based pharmaceuticals have gained significant attention in recent years due to their diverse bioactive compounds and therapeutic potential. This exploration of natural products from plants has led to the discovery of novel therapeutic agents with promising applications in the treatment and management of various diseases. The rich reservoir of phytochemicals, including alkaloids, flavonoids, terpenoids, and phenolic compounds, offers a vast array of pharmacological activities, such as anti-inflammatory, antioxidant, antimicrobial, and anticancer properties. Through rigorous research and development, the pharmaceutical industry is increasingly focusing on harnessing the inherent medicinal properties of plants to develop effective and safe therapies. This abstract delves into the current advancements in plant-based pharmaceutical research, highlighting the identification, isolation, and characterization of bioactive compounds from medicinal plants. It also discusses the challenges and opportunities in the development of plant-based drugs, emphasizing the importance of sustainable sourcing, standardization, and quality control measures to ensure the safety and efficacy of these natural products for human health.
Keywords: Plant-based pharmaceuticals, bioactive compounds, Phytochemicals, Therapeutic potential, Medicinal plants.

A PHARMACOLOGYCA AND PHYROCHEMICAL STUDIE ON INDIAN PLANT CISSUS QUADRAGULARIS

Toshika Paradkar
G H Raisoni University, Gram Dhoda Borgaon, Village- Saikheda, The- Sausar, Dist- Chhindwara, (M.P)

Cissus quadrangularis (Vitaceae) is a common imperishable succulent rambler factory belonging to the Vitaceae family. The factory has a strong pharmacological profile with a variety of phytoconstituents and is geographically distributed throughout tropical and tropical regions of the world. It's prominently set up in India, Pakistan, and Bangladesh, shri lanka. The factory is set up each over India, but its presence is dominantly observed in countries similar as Assam, Kerala, Odisha, Madhya Pradesh, Tamil Nadu, and Uttar Pradesh. The factory in India is popularly called 'Harjod' or 'Asthishrunkhala' and is veritably well established as a drug related to the operation of bone, muscles, and ligament issues. Traditionally, nearly all upstanding and underground corridor have medicinal value, but the stem is most generally used. Phytochemicals

studies performed on the factory revealed the presence of a variety of ingredients, viz, tannins, proteins, carbohydrates, phenol flavonoids, triterpenoids, phytosterols, glycosides, saponins, vitamin C, and alkaloids. In addition, these shops are also a rich source of calcium. The methodical review also established the pharmacological part of the factory as a bone setter and fractured bone healer. The plant has anti-arthritic, anti-inflammatory, anti-cancer, antioxidant, anti-diabetic, anti-obesity, anti-microbial, anti-hemorrhoidal, anthelmintic and other pharmacological properties. The plant has traditionally been used to treat broken bones, rheumatic pains, intestinal inflammation, burns, wounds, eye diseases, menstrual disorders, flatulence, asthma, gastritis, hemorrhoids, anemia and indigestion.
Keywords: Fracture healing; analgesic; anti-inflammatory, anti-diabetic

PHARMACOVIGILANCE IN HIGH INCOME COUNTRIES: CURRENT DEVELOPMENTS AND A REVIEW OF LITERATURE

Shruti Aggarwal*,Saumya Das
Noida Institute of Engineering Technology (Pharmacy Institute), Department of Pharmacology, Plot no-19, Knowledge Park-II, Greater Noida, Uttar Pradesh-201306, India.
Shruti.agg.345@gmail.com

80 economies have been categorized as High-Income by the World Bank based on their Gross National Income (GNI) per capita.
The main regulatory bodies in charge of enforcing pharmacovigilance laws worldwide are the Pharmaceuticals and Medical Devices Agency (PMDA), the Food and Drug Administration (FDA), and the European Medicines Agency (EMA). In this article, pharmacovigilance systems and procedures in high-income nations—especially those that are also International Conference on Harmonization (ICH) members—are described. Members of the WHO PIDM include all high-income nations. The safety precautions for medications are directly correlated with a nation's income level.
The founding members of the Uppsala Monitoring Center, ten of whom are from affluent nations, established drug evaluation committees, instituted ADR reporting forms, and implemented safety protocols as the initial reaction to the thalidomide catastrophe. Some nations, such as the French pharmacovigilance database, the FDA Adverse Event Reporting System, the Canadian Vigilance online database, and the European Union's Eudravigilance system, have their own databases for organizing and evaluating data in addition to access to VigiBase. Every high-income nation has effective pharmacovigilance programs. In the realm of pharmacovigilance, the USFDA and EMA are the global leaders. Most high-income nations adhere to the EMA's recommendations. The degree of income in a nation has a direct impact on the safety of medicines.
Keywords: Pharmacovigilance; Adverse drug reactions; High-income countries; Literature review.

AN OVERVIEW OF RECENT ADVANCEMENT OF LIPOSOMES AS VACCINE DELIVERY SYSTEMS

Haritabh Tiwari [1], Priyanka Keshwarni[2], Kashif Shakeel [3], Anshika Shukla[4]
[1] Aryakul College of Pharmacy and Research, Lucknow, U.P, India
[2] Aryakul Colleges of Pharmacy and Research, Lucknow, U.P, India
E- mail: tiwariharitabh@gmail.com

Vaccine development and delivery have witnessed remarkable progress in recent years, with a particular focus on improving the efficacy, safety, and versatility of vaccine platforms. Liposomes, as lipid-based nanoparticles, have emerged as promising candidates for vaccine delivery systems due to their unique properties and flexibility. This review provides an overview of the latest advancements in utilizing liposomes as vaccine carriers.Recent studies have demonstrated the ability of liposomes to enhance the immunogenicity of various antigens, including proteins, peptides, and nucleic acids, by encapsulating or surface-displaying them. Their lipid bilayer structure allows liposomes to mimic the natural membranes of pathogens, providing efficient antigen presentation to the immune system. Furthermore, liposomes can encapsulate both hydrophilic and hydrophobic compounds, allowing for the development of multi-component vaccines and combination therapies.The design of liposomal vaccines has evolved to encompass various strategies, such as antigen engineering, adjuvant incorporation, and targeting ligand conjugation. These advancements have enabled the development of vaccines tailored for specific pathogens, including viruses, bacteria, and cancer cells. Liposomal vaccine formulations have shown promise in inducing strong and long-lasting immune responses, as well as improving vaccine stability and storage.This review also discusses the challenges and future prospects of liposomal vaccine delivery, including regulatory considerations and clinical translation. As liposomes continue to demonstrate their potential in enhancing vaccine efficacy, their role in the field of vaccinology is likely to expand, offering new avenues for combatting infectious diseases and promoting immunotherapy. The integration of liposomes as vaccine delivery systems represents a dynamic and evolving field with the potential to revolutionize preventive and therapeutic immunization.
Keywords: Liposomes, Vaccine delivery, Immunization, Antigen delivery, Adjuvants, Nanoparticles.

ANTIMICROBIAL COMPARISON OF ALLIUM CEPA AND ALLIUM SATIVUM

Shivam Kumar[1], Krishna Kumar[2]
PG Student, ITM University, Gwalior[12]
Email: sk3479222@gmail.com[1]

This study investigates the antimicrobial properties of Allium cepa (onion) and Allium sativum (garlic), both members of the Amaryllidaceae family, commonly known as onion and garlic. These plants display notable antimicrobial effects, positioning them as potential candidates for addressing microbial growth.
The Amaryllidaceae family is renowned for its medicinal plants, and the selection of onion and garlic is based on their prevalence in culinary and traditional medicinal practices. Preliminary analyses unveil substantial antimicrobial activity in both Allium cepa and Allium sativum, prompting a more comprehensive investigation.
However, a comparative analysis reveals a significant difference in antimicrobial potency. Allium sativum, or garlic, outperforms Allium cepa in efficacy against microbial growth. This implies that unique bioactive compounds or concentrations in garlic contribute to its heightened antimicrobial capabilities.
Antimicrobial effectiveness underwent evaluation through growth spread assays, exposing inhibitory zones in both cases. Quantitative measurements corroborate qualitative observations, affirming the superior antimicrobial performance of Allium sativum.

These findings hold significance for culinary enthusiasts, traditional medicine practitioners, and researchers seeking natural alternatives to synthetic antimicrobial agents. Disparities in potency between Allium cepa and Allium sativum pave the way for future investigations into specific compounds responsible for these effects.
In conclusion, this study underscores the antimicrobial potential of Allium cepa and Allium sativum, emphasizing the superior efficacy of garlic in inhibiting microbial growth within the Amaryllidaceae family.
Keywords: Antimicrobial, Growth spread, Amaryllidaceae, Superior.

NANOPARTICULATE FORMULATION FOR THE TREATMENT OF HYPERLIPIDEMIA

Ashish Pratap Singh*[1], Arti Gupta [2], Reetika Rawat[3], Jitendra Singh Yadav[4], Shipra Sharma[5]
Shri Ram Murti Smarak College of Engineering and Technology Bareilly, Uttar Pradesh
ashishpratap.singh1507@gmail.com

This work focuses on creating and assessing polymeric nanoparticles (NPs) loaded with fluvastatin sodium (FLS) for the treatment of hyperlipidemia. This drug has a half-life of roughly 30 to 60 minutes and a bioavailability of up to 24 to 44%, among other drawbacks. It is also classified as class III in the Biopharmaceutical Classification System (BCS), although it is only sparingly soluble in water. Over many years, nano drug delivery system have emerged with its various benefits such as high permeability, increased bioavailability, etc. The current status of nanoparticle-based strategies for the treatment are compiled in this work. In addition this study covers the antioxidant potential of fluvastatin sodium. As per the literature survey, fluvastatin loaded nanoparticulate formulation seems to be a promising approach, especially on account of its management in hyperlipidemia.
Keywords: Hyperlipidemia, nanoparticles, fluvastatin sodium, antioxidants.

DESIGN, FORMULATION AND EVALUATION OF MULTI COMPONENT DOSAGE FORMS AGAINST DIABETES

Anushree Chauhan
Kharvel Subharti College of Pharmacy, Swami Vivekanand Subharti University, Meerut 250001, Uttar Pradesh, India.
anushreechauhan23@gmail.com

The present study aims in designing, formulation and evaluation of multicomponent dosage forms against diabetes using the concept of Quality by Design (QbD). Traditional approach of formulating a new drug product is an exhaustive and time taking process as it involves a number of resources like man, money, time and experimental efforts. This concept has recently earned much importance by application of design of experiments approach (DoE) in formulation, development and manufacturing processes. Quality by Design (QbD) concept helps in maintaining and improving the quality of the pharmaceutical product with minimizing the above resources by knowing the influence of one factor over the desired associated process. In recent years, multi-particulate drug delivery system has become popular for use in oral sustained or controlled release dosage system. The microspheres prepared by solvent evaporation process and ionotropic gelation technique will be optimized on the basis of drug release and entrapment efficiency. Formation of microspheres are expected to enhance the therapeutic efficacy of drugs and show better results in comparison to conventional drug delivery system.
Keywords: Quality by design, microspheres

TRANSFEROSOMES: TOPICAL APPROACH

Farheen Nusrat Mazher Khan
Maulana Azad's Educational Trust ,Y.B Chavan College of Pharmacy, Rauza Bagh, Aurangabad 431001, Maharashtra, India.

Novel drug delivery system aims to deliver the drug at a rate directed by need of body during the period of treatment and channel the active entity to the site of action. Transferosome is one of the novel vesicular drug delivery systems. Which consists of phospholipids, surfactant and water for enhanced transdermal delivery. Transferosomes are able to reach intact deeper regions of the skin after topical drug administration while delivering higher concentrations of active substances making them a successful carrier for transdermal applications. These vesicular systems can deliver low as well as high molecular weight compounds. Targeted and controlled release formulations can also be prepared by transferosomes as it can accommodate drug molecules with wide range of solubility. Transferosomes is an ultra-deformable vesicle and elastic in nature, they can squeeze itself as an intact vesicle through narrow pores that are significantly smaller in size. They can encapsulate both lipophilic, hydrophilic as well as amphiphilic drugs. As our main aim is to enhance the bioavailability this can be achieved by optimizing the concentrations of phospholipid and surfactant one can attain a controlled release of drug through this drug delivery system. This flexible nature of the vesicle membrane helps transferosomes to go across the narrow pores with a maximum amount of drugs present within it. They have high deformable capacity which exhibits advanced penetration capability of intact vesicles.
Keywords: Novel Drug Delivery System, Transferosomes, Transdermal Delivery, Vesicular System.

ELUCIDATING THE BOUNDLESS POTENTIAL OF VIRTUAL SCREENING IN COMPUTER-AIDED DRUG DESIGN (CADD)

Mayank Tyagi
Kharvel Subharti College Of Pharmacy, Swami Vivekananda Subharti University

Virtual screening is a computational technique used in computational drug design (CADD) to identify potential drug candidates that may have therapeutic activity against a specific target In this case in silico to synthesize drug-like molecules and target protein interface, molecular predictions are made . A software program is used to rank based on bond affinity.
There are mainly 2 types of virtual assays: Ligand-based & Structure-based.
Ligand-based virtual assays focus on molecules that are structurally similar to known active chemicals, whereas structure-based virtual assays focus on the location of molecules that can bind to a target protein which is the operating system. Ligand-based virtual assays are based on the principle that structurally similar molecules often exhibit similar biological activities. This approach involves building a database of known active compounds and building a 3D pharmacophore model, which represents the essential components of a molecule needed to bind a target and then search for molecules using the pharmacophore model species in large chemical repositories .

Structure-based virtual screening, on the other hand, uses the 3D structure of the target protein to identify potential drug targets. This method uses docking software, which determines the orientation and binding strength of small molecules to the active site of the target protein.The docking software consists of a ranking of chemicals based on their binding affinities on a predicted basis, which can then be further optimized by molecular dynamics simulations or other computational methods.
Keyword: CADD,Virtual Screening,Computational technique, Virtual assays,Target protein,Docking

FORMULATION AND EVALUATION OF ANTIFUNGAL EMULGEL

Kanika Titoria *
Raj Kumar Goel Institute of Technology (Pharmacy), Ghaziabad, Uttar Pradesh, India
kanikatitoria7@gmail.com

Emulgel can be best alternative for the delivery of the hydrophobic drug topically. Topical drug delivery system improved bioavailability, longer duration of action, less side effects and more uniform plasma levels. Emulgel has the advantage to provide target drug delivery on the body. Emulgel are generally used where the other system of drug administration fails to directly treat cutaneous disorders such as fungal infection, acne, psoriasis etc
Methods : Drug- polymer compatibility studies were done for selection of polymer by Fourier Transform Infrared spectroscopy [FTIR] .Infrared spectra were record in the region of 4000 to 400cm-^{1}. Different polymer as carbopol934 and xanthan gum were used for the preparation of the emulgel. Emulgel were evaluated for physical appearance, pH, spreadability , viscosity , swelling index, drug content.
Result: All evaluation parameters were in the acceptable range with good physical appearance and pH in the range of 5.5 to 6.8.
Conclusion: Emulgel provide the best alternative for the hydrophobic drug for tropical drug delivery and compliance for the patient.
Keywords: Emulgel, Hydrophobic drug,Topical drug delivery .

A REVIEW ON ALOE BARBADENSIS : AS A POTENTIAL MEDICINAL PLANT

Awanshika[1]
[1]Sanskar College of Pharmacy and Research, Ghaziabad 201302, Uttar Pradesh, India
preetisinghhh24@gmail.com

Aloe is also known as Ghritkumari, Aloe Vera, Aloe Barbadensis, Aloe Ferox which is belongs to Liliaceae family. Aloe is a species of succulent plants, many of which are native to Africa, Madagascar, and the Arabian Peninsula. Aloe contains components such as polysaccharides, proteins, minerals, and phytochemicals, including alkaloids, anthraquinones, anthrones, coumarins, flavonoids, polyphenols, and tannins. Aloe has been used as a medicinal product for a long time in the records of history and is the most widely used plant in the world which we use for medicinal purposes. Aloe is used as a variety of pharmacological and therapeutic activities, which include anti-inflammatory activities, microbial infections, wound healing activity, fungal skin disease, anti-oxidantes, dental protections, anti-cancer activities, anti-bacterial, anti-viral, radiation protection and many more. Aloe contains Vitamin A, C, E which is responsible for healthy cell growth, shiny hair, hair growth. Extensive research has verified aloe's therapeutic effectiveness and has elucidated the mechanism by which its active constituents are responsible for the beneficial properties. Gel is obtained from Aloe Vera which is used in various applications like dietary supplements, cosmetic and medicinal products. It was updated in the recent survey that 42 out of 124 patients in care clinics at urban and rural areas use aloe vera in the treatment of common ailments. Recently, advancements in analytical chemistry are continuously increasing due to which the knowledge of physiological and therapeutic properties will become more advanced in the future. The Food and Drug Administration (FDA) has approved that Aloe Vera can also be used as a natural flavoring agent in food.

Keywords: Aloe Barbadensis, Aloe Ferox, Physiological, Therapeutic, Pharmacological, Food and Drug Administration (FDA)

IMPLEMENTATION, REGULATION & DIFFERENT APPLICATIONS OF 'ARTIFICIAL INTELLIGENCE' (AI) AND RELATED TECHNOLOGIES TO "COMBAT ANTIBIOTIC & ANTIMICROBIAL RESISTANCE"

Shekhar Prakash Kushwaha[1]*, Ashish Verma[1]
[1]Mangalmay Pharmacy College, Greater Noida, (Uttar Pradesh), India.
Shekharkushwaha07@gmail.com

Antibiotic Resistance (ABR) might become an important issue that affects world medical care and places an immense strain on humanity as well as social and economies as a result of the widespread use and misuse of antibiotics. As a result, numerous AI solutions to this issue have emerged, some of which could be regarded as fruitful examples of ABR-specific domain-dependent artificial intelligence (AI) applications.
Purpose: This study's major goal is to apply artificial intelligence to combat ABR through the prudent use of antibiotics of some kind a prescriptive AMR approach, and novel paths in the field of research and innovation.
Methods: The employing of algorithms based on artificial intelligence for antibiotic resistance, such as decision trees, Naive Bayes, Random Forests Support Vector Machines, and artificial neural networks, as well as their potential applications in the field of ABR, are also discussed, along with the manner in which they safeguard antimicrobial resistance and prudent use of antibiotics.
Conclusion: Since artificial intelligence (AI) tools have demonstrated an opportunity assure for ABR, they can be used for a variety of straightforward, reproducible duties that could significantly increase research productivity, freeing up investigators to concentrate on more difficult scientific problems and assisting doctors in treating each patient's unique case of an antibiotic-resistant infection.
Keywords: Antibiotic, Artificial Intelligence, ABR, Naïve Bayes, algorithm, AMR.

HPLC (HIGH PERFORMANCE LIQUID CHROMATOGRAPHY)

Manasvi Solanki
School of Pharmacy, G. H. Raisoni University, Saikheda, (M.P), India
manasvisolanki68@gmail.com

Today, chromatography is the backbone of the separation science and is been used in research laboratories and pharmaceutical industries of the world. In this chromatography technique HPLC is mostly used technique. High Performance Liquid Chromatography (HPLC) is basically an advance form of column chromatography used to separate, identify, quantify compounds .HPLC is the dominant separation technique in modern pharmaceutical and biomedical analysis because it results in highly efficient separation in most cases provides high detection sensitivity HPLC methods development and validation play important of pharmaceutical drugs and various other studies related to humans and animals . HPLC is one of the main useful analytical techniques among all chromatographic method. HPLC is a versatile, safest and fastest chromatographic technique for quality control of drug component. HPLC is checking purity of compound, presence of impurities, estimation of a mixture of drug, isolation of identification of drug. The essential advantage of proposed method is that drug determined on single chromatographic system without minor modification in detection wavelengths and mobile phase combination. Concentrate vital information include the drug name, the stationary phase, the mobile phase composition, flow rate and detector wavelength. The creation of HPLC technique is influenced by chemical structure of molecules, synthesis pathway, solubility, polarity, pH and pKa value and activity of functional group among other factors. Accuracy, specificity, linearity, range, limit of detection, the limit of quantification, robustness and system, suitability testing are included in validation of a HPLC technique according to ICH guidelines.

Keywords- HPLC , Pharmaceutical Quality control, stationary phase, mobile phase, combination formulation , detection method development, validation chromatography.

ADVANCEMENTS IN HERBAL OINTMENTS: BRIDGING TRADITION AND INNOVATION

Rahul singh[1]*, Ms. Ayushi Tyagi[2] , Vanshika Choudhary[3]
I.T.S College of Pharmacy, Muradnagar, Ghaziabad, UttarPradesh, India-201206
*Email: gori200016@gmail.com

Herbal ointments, deeply rooted in traditional medicinal practices, have experienced a remarkable resurgence in contemporary healthcare. This abstract delves into the recent advancements in herbal ointments, exploring their evolving formulation techniques, therapeutic applications, and the integration of modern scientific approaches. Recent years have witnessed a transformative journey in herbal ointments, propelled by an escalating demand for natural and sustainable alternatives in skincare. The revival of interest in traditional medicine has spurred comprehensive research into the efficacy of medicinal plants, unveiling a myriad of bioactive compounds with diverse therapeutic applications. Scientific validation of these compounds has provided a solid foundation for understanding their pharmacological mechanisms, paving the way for enhanced herbal formulations. Formulation techniques have evolved significantly, embracing cutting-edge technologies such as nanotechnology and liposomal carriers. This has not only improved the stability and shelf life of herbal ointments but has also optimized the bioavailability of active constituents, ensuring better therapeutic outcomes. The intersection of traditional knowledge and modern analytical methods has facilitated the identification, quantification, and standardization of key herbal ingredients, addressing concerns related to quality control.Advancements in herbal ointments are not confined to their formulation alone. Tailoring formulations to suit specific skin types and conditions, in line with the principles of personalized medicine, represents a paradigm shift. Synergistic combinations of herbal extracts, guided by traditional wisdom and validated through scientific rigor, have expanded the therapeutic repertoire of herbal ointments.While the trajectory of herbal ointments is promising, challenges persist, including standardization hurdles, regulatory considerations, and the imperative for robust clinical evidence. Nonetheless, the amalgamation of tradition and innovation in herbal ointments offers a holistic approach to skincare, aligning with the preferences of a discerning consumer base seeking effective, safe, and sustainable solutions. This abstract provides a snapshot of the dynamic landscape in herbal ointments, highlighting their trajectory from traditional remedies to scientifically enriched formulations, shaping the future of dermatological care.

Keywords: Herbal ointments, traditional medicine, formulation techniques, therapeutic potential, modern scientific approaches.

RECENT DEVELOPMENTS IN BILOSOMES FOR DRUG DELIVERY

K. Teja sri, Nagam. Shanthi priya.
Vignan pharmacy college, Vadlamudi, Guntur (Dt)., 522213, A.p., India
Corresponing Author: tejasri2403@gmail.com

In the current era numerous formulations have been developed in the present Day that take the Form of vesicular carriers, such as liposomes and niosomes, which are Among the candidates for drug delivery Via oral administration. Bile salts and enzymes are Only occasionally used.These vesicular structures improve The formulation's stability in the Gastrointestinal tract and solubility of lipophilic medications. The ultra-Deformable Flexibility of bilosomes improves the permeability of the stratum corneum.Therefore, these Have Uses in the transdermal and oral delivery of medication. These vesicles are used to Administer drugs topically, Such as ocular and intranasally. In conclusion, the stability, low Toxicity,and bioavailability of bilosomes make Them preferable to other traditional vesicular Carriers liposomes and niosomes.

Keywords: Liposomes, Niosomes, Bilosomes, Vesicular carriers, Transdermal and oral Delivery.

ROLE OF FLAVONOIDS IN THE MANAGEMENT OF HEPATORENAL TOXICITY

Anas Siddiqui* Priyanka Bansal, Bhavani Pentela
Noida Institute of Engineering and Technology (Pharmacy Institute), Knowledge Park-2, Greater Noida, 201306, Uttar Pradesh
Sidd9540801447@gmail.com

Plants are an excellent source of secondary metabolites with diverse pharmacological properties that help in disease prevention and treatment. Flavonoids are plant derivatives with a basic phenylchromane skeleton, and their various sub classes include flavones, flavonols, isoflavones, anthocyanin, flavan-3-ols, and flavanones. The flavonoids vary in their chemical structure and the degree of unsaturation, oxidation, hydroxylation, and glycosylation of their heterocyclic ring. Flavonoids represent the third-largest group of natural compounds, following terpenoids and alkaloids, comprising approximately 10,000 compounds. Moreover, recent epidemiological studies have associated a flavonoid-rich diet with a low incidence rate of kidney disease. However, the biological properties of the flavonoids depend greatly on their bioavailability, and their absorption rate might vary depending on the class of flavonoids. Arterial hypertension, oxidative stress, inflammatory diseases, and changes in vascular health could challenge renal health. Flavonoids mitigate these effects and have shown promising results in treating acute and chronic nephropathies, renal fibrosis, and anti-tumor activity. Flavonoids may also act directly on the renal parenchyma and

interfere with signaling pathways, affecting the development of renal injury and exerting nephroprotective effects in glomerulonephritis, diabetic nephropathy, and chemically induced kidney insufficiency. Flavonoids exert protective effects by decreasing the excessive ROS (Reactive Oxygen Species) level or activating renal enzymatic and non-enzymatic antioxidants via different pathways, including modulating the Nrf2-antioxidant pathway. Flavonoids protect against oxidative stress by decreasing the renal expression of iNOS and the activity of MPO(Myeloperoxidase) released by neutrophils, which produce reactive species, causing tissue injury. Additionally, the antioxidant effect of flavonoids is exerted by activating the Nrf2 defense pathway, which produces proteins critical in detoxifying and eliminating ROS. These anti-inflammatory and antioxidant effects of flavonoids can reverse the process of renal fibrosis and reduce damage to renal tissues.
Keywords: Hydroxylation, Terpenoids, Alkaloids, Glomerulonephritis.

HERBS AND POLYMERS USED IN ANTI- FUNGAL NAIL LACQUER FOR THE TREATMENT OF ONYCHOMYCOSIS

Saniya Majhar Sayyed*
Dr. Rafiq Zakaria Campus Maulana Azad Educational Trust's Y.B Chavan College Of Pharmacy Aurangabad.
saniyasayyed.rx@gmail.com

Onychomycosis is characterized as a contagious disease influencing fingernails and toenails bringing about thickening, staining, and detachment from the nail bed. Simply it is fungal invasion of the nail. Herbal plant extracts with various polymers used in formulation of nail lacquer which is delivered by the transungual delivery system (drug transport across the nail to gain targeted drug delivery in treatment of nail diseases) used for better adherence confined activity, which gives least side effects and more therapeutic effect. Polymer used for film development on nail plate causes decrease in water misfortune from the outer layer of nail surface into the environment and due to which enhance the anti-fungal penetration power on nail plate for the longer duration, act like penetration enhancer. Polymers includes, Carrageenan, Chitosan, xanthan gum, Collagen. Herbs known for its therapeutic benefits and will not be having any side effects. It includes, Propolis extract, Neem, Coconut oil, Echinacea Purpurea, Garlic, Black Walnut, Goldenseal, Grapefruit seed extract, Rice bran oil. Oral antifungal medications have drawbacks such as toxicity, a lengthier course of treatment, and the possibility of topical preparation washing off and reducing drug absorption into the nails. Medicated nail lacquers are used in the treatment of fungal infections which has shorter treatment period and less toxicity. Nail lacquers give life and beauty to the nails. Using them can be tempting especially if one is currently frustrated over an attractive nail problem like fungal nail infections.This article aims to demonstrate the value of antifungal herbs with improved antifungal activity and no adverse effects while treating fungal nail infections.
Keywords: Onychomycosis, Herbs, Polymers, Nail lacquers

SEPSIS IN TRAUMA : A DEADLY COMPLICATION

Alisha Hameed
'Spark College of Pharmacy, Baundi Road-Aladatpur, Bahraich 271902, Uttar Pradesh, India
alishahameed986@gmail.com

Sepsis is major cause of death following injury. As a life threatening medical emergency. It is defined as the body's extreme response to an infection. Without timely treatment, sepsis can rapidly lead to tissue damage, and organ failure. This capacity to limit tissue damage through metabolic adaptation and repair process is associated with an excessive immune response of the host. It is important to make an early prediction of sepsis, based on quick sepsis associated organ failure assessment score (qSoFA), So an accurate treatment can initiated reducing the morbidity and mortality at the emergency and VCI services. Many factor increase the rate of complication and development of sepsis in trauma Patient, representing a challenge to orthopedic surgeons. Several early bio mark that helps to identify the predict the inflammatory and immune response of the host going through poly-trauma and sepsis have been studied; Pro-calcitonin (PCT), c-reactive Protein (CRP), glycosylated hemoglobin (HbA1c), the neutrophil/lymphocyte ratio (NLR), Interleukin-17 (IL-17), Caspoue-1, Vanin-1, High density lipoproteins (HDL) and Thrombin- Activable fibrinolysis inhibitor (TAFI). One sepsis is diagnosed treatment must be immediately initiated with an appropriate empiric anti-microbial, an all- purpose supporting treatment.
Keywords: Sepsis, Trauma, Anti-microbes, Therapeutic Treatment.

IMPACT OF SODIUM NITRITE ON OXIDATIVE STRESS IN RATS DURING PARKINSON'S DISEASE TREATMENT

Dargude Namrata[1], Dr. Patil Rupali[2], Dr. Upasani Chandrashekhar[3]
[1] SNJB's Shriman Sureshdada Jain College of Pharmacy, Neminagar, Chandwad 423101, Maharashtra, India.
[2] Professor, Pharmacology Department, MGV's Pharmacy College, Mumbai-Agra Road, Panchavati, Nashik 422003, Maharashtra, India.
[3] Principal & Professor, Pharmacology Department, SNJB's Shriman Sureshdada Jain College of Pharmacy, Neminagar, Chandwad 423101, Maharashtra, India.
namrataghuge13@gmail.com

This thorough analysis dredge impact of oxidative stress which is implicated as one of the primary factors that contribute to the development of neurodegenerative diseases like, Alzheimer's, Parkinsonism and neurological conditions like epileptic seizures, stroke, brain damage, neuro-trauma, hypoxia etc. NO in high concentration is indirectly neurotoxic through various mechanisms, including iron mediated lipid peroxidation. It also liberates iron from cell stores and depletes cell energy by disruption of mitochondrial enzymes and nucleic acids. Release of NO may also trigger neuronal apoptotic cells death. This makes nitric oxide the main candidate in brain responses to brain ischemia/hypoxia. In the present study the animals were deprived from water for 24hours after the treatment with the mushroom extracts, piracetam and nitric oxide. In the spatial water bottle case model, mushroom extract significantly ($P<0.001$) protected against sodium nitrite-induced memory impairment by reducing the time needed to locate the water bottle. It also decreases the MAO level which increases the neuroactivity indirectly and thus leads to enhancement of the locomotor activity, learning and memory enhancing activity.
Keywords: Parkinson's Disease, Sodium Nitrite, Hypoxia, Oxidative stress.

EXPLORING THE DIVERSITY OF LIPID NANOPARTICLES: A COMPREHENSIVE OVERVIEW

Vijay Bahadur Singh[1]*, Iti Chauhan[1] , Sagarika Majhi[1]

[1] I.T.S College of Pharmacy, Murad Nagar, Ghaziabad, Uttar Pradesh, 201206, India.
*Email: imvijay487@gmail.com

Lipid Nanoparticles (LNPs) are made up of lipids by having different types of carbon chain length which focus on crafting structures measuring less than 100 nanometers. The preparation of lipid components involves combining diverse lipids to attain the desired composition. Solid lipid nanoparticles (SLNs) are the first generation of lipid-based nanocarriers that are formulated from lipids stabilized by emulsifiers. A major advantage of the solid lipid matrix is its ability to protect the incorporated active ingredients against chemical degradation, resulting in significantly enhanced shelf life. Nanostructured lipid carriers (NLCs) are the second generation of lipid-based nanoparticles that are formulated for the lipid matrix which is composed of both a solid lipid and a certain amount of a liquid lipid (oil), it improves drug loading capacity as well as physical stability. Lipid-drug-conjugate (LDC) method is based on transforming the hydrophilic drug into a more lipophilic, often water-insoluble molecule by either covalent linkage or salt formation. SmartLipids were developed as the 3rd generation of lipid nanoparticles after SLNs and NLCs. The particle-matrix consists of more than five different lipids, containing various carbon chain lengths. These particles offer the advantage of high loading capacity, sustained release, enhanced penetration, and stability. These above-mentioned lipid nanoparticles have been successfully exploited in the encapsulation of drugs, cosmeceuticals, and bioactive molecules.
Keywords: Lipid Nanoparticles, Solid lipid nanoparticles, Nanostructured lipid carriers, Smart lipids.

OPTIMIZING STABILITY AND EFFICACY: A COMPREHENSIVE STUDY ON PHARMACEUTICAL SUSPENSIONS OF A NOVEL DRUG COMPOUND

Neha sharma[1]*, Dr. Madhu verma[2], Iti chauhan[3]
I.T.S College of Pharmacy, Muradnagar, Ghaziabad, UttarPradesh, India-201206
*Corresponding e-mail: neha89798@gmail.com

Pharmaceutical suspensions play a pivotal role in drug delivery, providing a versatile platform for the administration of various therapeutic agents. This research focuses on the formulation and optimization of a suspension containing a novel drug compound, addressing key factors such as stability, particle size distribution, and rheological properties. The formulation development involved careful selection of excipients to ensure stability and redispersibility of the suspended particles. Particle size distribution analysis revealed a finely tuned suspension with uniform particles, optimizing bioavailability and therapeutic efficacy. The rheological properties were systematically studied to understand the suspension's flow characteristics, aiding in both manufacturing processes and administration.The stability of the pharmaceutical suspension was evaluated under various conditions, including temperature variations and extended storage periods. The study identified critical parameters affecting the suspension's stability, leading to the development of strategies to enhance its shelf life and maintain consistent performance.Furthermore, the research delves into the impact of excipients on the suspension's performance, focusing on their role in preventing flocculation, agglomeration, and sedimentation. Insights from this investigation contribute to the development of improved suspension formulations that minimize these undesirable effects. This study also explores the application of the pharmaceutical suspension in different routes of administration, including oral and parenteral routes, highlighting its versatility. Additionally, the potential of the suspension as a carrier system for targeted drug delivery is discussed, with implications for enhancing therapeutic outcomes. In conclusion, this research provides a comprehensive understanding of the critical parameters influencing the stability and efficacy of pharmaceutical suspensions, particularly those containing a novel drug compound. The findings offer valuable insights for formulation scientists and pharmaceutical researchers working towards optimizing suspension formulations for diverse therapeutic applications. Further investigations into the long-term stability and clinical performance of the developed suspension are recommended to facilitate its successful translation into pharmaceutical practice.
Keywords: Pharmaceutical suspensions, Formulation optimization, Stability assessment, Efficacy enhancement, Novel drug compound, Particle size distribution, Rheological properties, Redispersibility, Excipient selection

REVIEW ON NANOPARTICLES, ITS SYNTHESIS AND APPLICATIONS IN DRUG DELIVERY & CANCER THERAPY

Tarannum Fatima[1]*, Deepak Saini[1], Girendra Kumar Gautam[2], Himanshu Sharma[3]
[1]SMT Tarawati Institute of Biomedical and Allied Science, Roorkee 247667, India
[2]Shri Ram College of Pharmacy, Parikrama Marg, Muzaffarnagar 251001, Uttar Pradesh
[3]Department of Pharmacy, Bharat Institute of Technology, Meerut, 250103, Uttar Pradesh
*Corresponding e-mail: fatimarajput843@gmail.com

Nanotechnology, the precise manipulation of materials at the molecular or atomic scale, holds immense promise for revolutionizing the pharmaceutical industry. This emerging field enables the controlled delivery of drug molecules, their targeted localization within specific cells, and enhanced stability. Harnessing nanotechnology in pharmaceuticals has the potential to yield therapies that are not only more potent but also significantly less toxic. Contemporary medical applications of nanotechnology include liposomal medications, which facilitate the targeted delivery of drugs to specific sites within the body. Additionally, nanoparticle drug delivery systems have been developed to precisely target cancer cells, maximizing the therapeutic impact while minimizing collateral damage. Recent advancements in the field include the utilization of peptide-based nanoparticles for targeted drug administration and the integration of gold nanoparticles for advanced diagnostic imaging purposes. These innovations underscore the transformative potential of nanotechnology in reshaping the landscape of pharmaceutical interventions.
Keywords: Nanoparticles, Nanotechnology, Targeted Delivery, Therapeutic applications.

PHARMACEUTICAL INNOVATIONS FOR LIVER CIRRHOSIS MANAGEMENT: THE ROLE OF FUROSEMIDE IN TARGETED TREATMENT APPROACHES

Mansi Mishra*, Jitendra S Yadav, Arti Gupta
1Shri Ram Murti Smarak College Of Engineering & Technology (Pharmacy)
Bareilly-243202, Uttar Pradesh, India
*Corresponding e-mail: **mansimpharm2022@gmail.com**

Liver cirrhosis is the hepatic disorder. Many factors can be responsible for the liver cirrhosis lick alcohol consumption, viral hepatitis B and C, metabolic abnormal condition, as well as the non-alcoholic fatty liver disease. More than 1 million people died of LC, which accounts for almost 2% of global deaths. In the treatment of liver cirrhosis furosemide is very common diuretic, used for inhibiting chloride and sodium reabsorption in the thick ascending limb of the loop of Henle. The bioavailability of furosemide from oral dosage forms is highly variable. Furosemide is high degree of plasma protein binding, almost exclusively to albumin. This is insoluble in water. It can rapidly absorb from gut and its action can reach peak effect quickly within 1 to 2 hours and then diuretics effects end in 3 to 4 hours after consumption. This study will investigate the efficacy and safety of furosemide for liver cirrhosis by the assessment of primary outcomes. The primary outcome includes consist of response rate. The secondary outcomes consist of response rate, overall survival, body weight, urinary volume, quality of life, as measured by any relevant scales, and adverse events.
keywords- liver cieehosis, furosemide.

NANOPARTICLE-BASED THERAPEUTICS: REVOLUTIONIZING PHARMACEUTICAL APPROACHES FOR ENHANCED DRUG EFFICIENCY

Anjali Goel[1], Deepa Saini[1]*
Department of Chemistry, KGC, Gurukula Kangri (Deemed to be University), Haridwar 249407, Uttarakhand, India
*Corresponding e-mail: dpasaini91@gmail.com

Synthesis of nanoscale metals are widely used in various fields like, medicine, engineering and the natural world, photonics, and sensing Nano electronics. Currently, the majority of nanoscale metals are produced chemically, which have unexpected consequences like major energy consumption, environmental pollution, and possible health issues. Antimicrobial, muscle relaxant, and enzyme control are biological uses for Au nanoparticles. Gram-positive and gram-negative bacteria are both inhibited in growth and activity by Ag NPs. Fe NPs are useful in cleaning up materials contaminated with organic material, metal and non-metal ions, and colors. Ir and Pd NPs are also used in various kinds of applications such as catalysis, antimicrobial activity, and organic pollutants degradation, but their low abundance and high cost restrict their use. Literature reveals that Pd and Ir complexes are generating interest among organometallic compounds because of their low toxicity, high cytotoxicity and selectivity of cancer cells. Thus, in the present study bimetallic nanoparticles of Ir-Pd are synthesized to study their activity that may reduce the requirement of their amounts. Nanoparticle synthesis is monitored using UV-Vis spectroscopy. Scanning electron microscopy (SEM), XRD, EDAX, and elemental mapping are used to characterize the resulting nanoparticles size and morphology.

PHYTOCHEMICAL SCREENING, ISOLATION, IN SILICO STUDIES AND BIOLOGICAL ACTIVITY OF DRIMIOPSIS KIRKII, LANDL & PAXTON.

Bhavsar Rupali[1]*, Darwhekar G.N.[1]
[1]Acropolis Institute of Pharmaceutical Education and Research, Indore
*Corresponding Email: rupalibhavsar@acropolis.edu.in

Medicinal plants have been used in the treatment of various diseases as they possess potential pharmacological activities including antineoplastic, antimicrobial, antioxidant, anti-inflammatory, analgesics, anti-diabetic, anti-hypertensive, antidiarrheal and other activities. Phytoconstituents individually or in the combination, determine the therapeutic value of a medicinal plant. Alkaloids, flavonoids, phenolics, tannins, saponins, steroids, glycosides, terpenes etc. are some of the important phytochemicals with diverse biological activities. The pharmacological activity of a plant can be predicted by the identification of the phytochemicals. Currently, phytochemicals are determined by various modern techniques, but the conventional qualitative tests are still popular for the preliminary phytochemical screening of plants. As computer technology has developed, in silico approaches such as virtual screening and network analysis have been widely utilized in efforts to elucidate the pharmacological basis of the functions of traditional medicinal plants. In the process of new drug discovery, the application of virtual screening and network pharmacology can enrich active compounds among the candidates and adequately indicate the mechanism of action of medicinal plants, reducing the cost and increasing the efficiency of the whole procedure.
Keywords: Medicinal plants, phytoconstituents, phytochemical screening, qualitative tests.

ANTIOXIDANT & ANTI-INFLAMATORY ACTIVITIES OF BLACK CUMIN (NIGELLA SATIVA) ESSENTIAL OIL

Lokesh Kumar Panchal[1]
[1]Shri Ram College of Pharmacy, Muzaffarnagar
*Corresponding Email: lokeshkumar@gmail.com

Cumin seeds come from South Asia and the East Mediterranean. Both Asia and Europe have traditionally used cumin seeds as food and medicine. It is known that the essential oil and major terpenes of Tunisian Nigella sativa seeds, including p-cymene, -terpinene, thymoquinone, -pinene, carvacrol, and longifolene, have antioxidant and anti-inflammatory activities. Significant ex vivo antioxidant activity and anti-inflammatory activity were both shown by the essential oil. The essential oil demonstrated excellent ex vivo antioxidant activity, with an IC50 of 1.0 g/ml blocking DCFH oxidation, and substantial anti-inflammatory activity, with an IC50 of 6.3 g/ml decreasing NO radical excretion. Thymoquinone was discovered to have the highest level of activity in reducing DCFH oxidation and NO excretion.
The present study reports the antioxidant and anti-inflammatory activity of Nigella sativa essential oil. The essential oil has obtained from the seeds of the Nigella sativa by hydro distillation and analyzed by GC-MS.
Keyword: Antioxidant, Anti-inflammatory, Black Cumin (Nigella sativa), Essential Oil.

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