



PHARMA MONARCH

DEPARTMENT OF PHARMACEUTICS - NEWS LETTER



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INSTITUTION VISION

To be the ultimate destination for training, practice and research in pharmacy education to cater the health needs of the society.

INSTITUTION MISSION

To provide state-of-art infrastructure, research facilities with eminent faculties to disseminate advanced knowledge in pharmacy education through innovative teaching-learning process with human and ethical values.



In the remembrance of
Shri. K. V. Sankaranarayanan
(01.01.1948 - 12.07.2013)
Founder, Devaki Amma Memorial Institutions

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FROM THE EDITOR'S DESK

Dear Members and Readers,

A warm welcome to all of you!

Your **ATTITUDE**, Not Your **APTITUDE**,
Will Determine Your **ALTITUDE**

"Integrity is doing the right thing, even when no one is watching. While 'Wisdom' knows the 'Right Path to Take', 'integrity' is 'Taking' it!!" These words resonate deeply as we embark on the journey of another academic year, and we believe that upholding integrity is fundamental to our mission. It is the compass guiding us towards excellence, even in the face of challenges.

With renewed energy, our editorial board is delighted to present the latest edition of our department newsletter, "Pharma Monarch" in this academic year. This newsletter aims to foster greater understanding, communication, and integration among all stakeholders, covering a wide range of topics including academic activities, research updates, and pharmacy news.

Innovation in teaching and learning is key to keeping the flame of curiosity alive and preventing monotony. We are committed to maintaining this dedication and consistency in our efforts, as it reflects our collective achievements and aspirations. This newsletter serves as a platform for showcasing the talents of both students and faculty members, preparing them for the diverse opportunities available in the ever-expanding field of pharmacy.

We extend our heartfelt gratitude to our Management, Principal and Vice-Principal for their unwavering support in making this newsletter possible. Special thanks to all our colleagues for their invaluable contributions to this edition, and to the student editors and co-editors for their creativity in designing the newsletter.

As you delve into the contents of this newsletter, we encourage you to share your feedback with us. Your insights will help us continually improve and serve you better.

On behalf of the entire editorial team, I extend our warm wishes to all readers.

We are looking forward to new ideas and continued success.

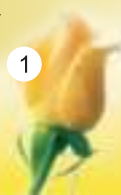
Have A Great and Happy Reading!

Best Regards,
Prof. Dr. R. Nethaji,
Editor-in- Chief

IN THIS ISSUE

- ☞ Department Activities
- ☞ Department Achievements
- ☞ Industrial Visit
- ☞ Pharma Articles

"Teachers Open the Door, But You Must Enter By Yourself" ~ Chinese Proverb



DEPARTMENT ACTIVITIES

RESEARCH PROJECTS

The department is inspired by identifying future needs of human resources to be felt by fast developing academics and scientific research in the area of Pharmaceuticals. The following research title in the pipeline:

Project Title	Students Name	Guides Name
Enhancing Migraine Care Through Nanosized Transferosome Based Intranasal <i>In-situ</i> Gel For Brain Targeting.	Mr. Adarsh M	Mrs. Neethu K
Innovative Approach to Angina Care: Design and Fabrication of Immediate-release Combination Therapy integrating Atorvastatin, Clopidogrel, and Aspirin.	Ms. Aswini Ullas K.	Dr. Vimal K.R
Standardization and Evaluation of Herbal Tablets using Plant Derived Mucilage: A Potential Therapeutic Effective in Gout Disorder.	Ms. Arathi P	Dr. R. Nethaji
Formulation and Evaluation of Antimicrobial Microencapsulated Herbal Extract Assimilating into Sanitary Napkin.	Mrs. Ardra	Dr. R. Nethaji
Revolutionizing Rapid Toothache Relief: A Medicated Adhesive Gummy for Prolonged Effectiveness in Dental Care.	Mr. Midhun T	Dr. Vimal K.R
Revolutionizing Wound Care: A Novel Multifunctional Bandage for Integrated Bleeding Control, Pain Relief and Antiseptic Action.	Ms. Aswathi P	Dr. Vimal K.R
Nano Innovation For Rheumatoid Arthritis: Developing Methotrexate Loaded Nanosponges For Topical Preparation.	Mr. Arjun Anand P	Mrs. Mishalal
Development and Evaluation of Sucrose-Free Lozenges Loaded With Triamcinolone Acetonide Nanoparticles for Treatment of Oral Mucous Membrane Lesions.	Ms. Anju Suresh	Mrs. Neethu K
Enhancing Patient Compliance: Development and Assessment of Carbamazepine Intra Nasal <i>In-Situ</i> Gel For Epilepsy Management.	Ms. Shabarin Jouhara	Mrs. Mishalal
Development and Assessment of A Comprehensive Topical Formulation For Targeted Relief of Insect Bite Induced Pain, Itching and Inflammation.	Ms. Jijimol P.J	Dr. Vimal K.R
Potential Role of Statin Loaded Topical Gel Formulations on Diabetic Wound Efficacy.	Mrs. Aysha Afeefa A	Dr. R. Nethaji

RESEARCH PUBLICATIONS

It's excellent to hear that both faculties and students are actively involved in research activities. Research involvement not only enhances the knowledge and skills of individuals but also contributes to the advancement of the field. Publishing papers and communicating research findings in reputed international journals are crucial steps in disseminating knowledge and gaining recognition within the global scientific community. They too involved in research and carried out various activities, which are evidenced by their paper publications in the reputed international Journals.

Sudha S, et al.

Critical analysis: Strategies in improving first year college students result in recent era across Indian colleges. *Intercontinental Journal of Pharmaceutical Investigations and Research*. 2023; 10(4): 51.

Assessment of knowledge, attitude, and utilization of herbal home remedies in malabar region, Kerala, India. *International Journal of Research in Pharmacology and Pharmacotherapeutics*. 2023; 12(4): 309-323.

"Good Teaching is more a Giving of Right Questions than a Giving of Right Answers" ~ Josef Albers

Midhun T, et al.

Revolutionizing allergy management: exploring cutting edge developments and novel therapies. *International Journal of Scientific Development and Research*. Oct 2023; 08(10): 32-35.

Jijimol PJ, et al.

A review on insect bite and how to deal with them. *International Journal of Scientific Development and Research*. Oct 2023; 08(10): 27-31.

Adarsh M, et al.

Exploring the potential of medicinal plants in preventing and treating kidney stone: Anti-urolithiatic perspective. *International Journal of Pharmaceutical Research and Applications*. Sept-Oct 2023; 08(05): 20-25.

Shabarin Jouhara, et al.

Exploring the causes, symptoms and management of toothache: A comprehensive review. *International Journal of Pharmaceutical Research and Applications*. Sept-Oct 2023; 08(05): 73-78.

Aswathi P, et al.

Medications and Hope: Navigating the path to recovery from drug abuse. *International Journal of Pharmaceutical Research and Applications*. Sept-Oct 2023; 08(05): 08-15.

Arathi P, et al.

Revolutionizing wound care: The power of multifunctional healing bandages. *Journal of Emerging Technologies and Innovative Research*. Sept 2023; 10(09): 813-821.

Ardra K, et al.

Combatting discomfort: Insights into sanitary napkin rash causes and solutions. *International Journal of Research and Analytical Reviews*. Sept 2023; 10(03): 457-464.

Aswini Ullas K, et al.

Advances in dosage forms and devices for addressing cardiac emergencies: A comprehensive review. *International Journal of Science and Research*. Sept 2023; 12(09): 254-262.

Anju Suresh, et al.

Exploring minor, major and Herpetiform aphthae; A comprehensive review of triamcinolone lozenges in the management of recurrent aphthous stomatitis. *International Journal of Research and Analytical Reviews*. 2023; 10(03): 84-93.

Arjun Anand, et al.

Advancements in drug delivery: Comprehensive review of formulation and future trends in mouth dissolving strips. *International Journal of Research and Analytical Reviews*. 2023; 10(03): 75-83.

Aysha Afeefa A, et al.

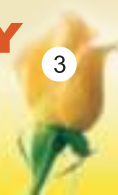
Advances in bone fracture management: A comprehensive review of treatment strategies and innovations. *International Journal of Scientific Development and Research*. Aug 2023; 08(08): 1147-1153.

SCIENTIFIC EVENTS PARTICIPATION

Pharmaceutics third semester M. Pharm students were actively involved in staying updated with the latest trends and developments in the pharmaceutical field by participating in scientific events.

The International Seminar on "Global Horizons: Navigating Higher Studies, Research and Career Abroad" organized by Moulana College of Pharmacy on 16th December 2023, sounds like a valuable opportunity for students to explore avenues for further studies, research, and career prospects abroad.

"You Learn Something Every Day If You Pay Attention." ~ Ray LeBlond



The participation of the following students from Pharmaceutics department demonstrates a strong commitment to academic and professional growth:

- | | |
|--------------------|--------------------------|
| 1. Mr. Adarsh M | 7. Ms. Aswini Ullas K |
| 2. Mr. Anju Suresh | 8. Ms. Jijimol P.J |
| 3. Ms. Arathi P | 9. Mr. Midhun T |
| 4. Mrs. Ardra K | 10. Ms. Shabarin Jouhara |
| 5. Mr. Arjun Anand | 11. Mrs. Aysha Afeefa A |
| 6. Ms. Aswathi P | |



International Seminar Participation

Their attendance at such seminars not only enriches their knowledge but also fosters networking opportunities and opens doors to future collaborations. It's a commendable initiative by the Pharmaceutics department to sponsor students to participate in such events, ensuring they are well-equipped with the latest insights and skills relevant to their field.

SCIENTIFIC EVENTS ORGANIZED

Department of Pharmaceutics, has organized a One Day Workshop on "**Response Surface Methodology: A Deep Dive into DOE for Product Optimization**", on 08th December 2023.

The inaugural function was presided by Shri Mr. M. Narayanan, Trustee & Manager, Devaki Amma Memorial Institution, followed then welcome address was delivered by the Principal Dr. G. Babu. The program was inaugurated by the Chief guest Dr. Palanivel Venkatesan, Associate Professor, Faculty of Pharmacy, Annamalai University, Chidambaram, Tamil Nadu. The organizing secretary Dr. R. Nethaji, Professor & Head, Department of Pharmaceutics, have briefed about the seminar and speaker.



**Dignitaries on the Dias
at Inaugural Session of the Workshop**

Dr. Palanivel Venkatesan, has more than 20 Years of teaching and research experiences and published more than 68 research papers. He has delivered an impressive total of 83 lectures as a resource person, speaker, and guest lecturer in various seminars and workshops.

He began his session by explaining the basic notion of Quality by Design (QbD) and the importance of Response surface approach in pharmaceutical development. He also discussed the various stages of the product optimization as well as the challenges encountered in method development including critical parameters identification.

He continued the workshop with DoE software and provided suitable product development instructions to the attendees with case studies. The workshop likely covered topics such as:

- Introduction to response surface methodology (RSM) and design of experiments (DOE)
- Basic principles and concepts of RSM
- Planning and conducting experiments using RSM
- Analysis of experimental data and interpretation of results
- Optimization techniques for product formulation and process parameters
- Practical applications of RSM in pharmaceutical research and development
- Software tools for RSM and DOE analysis

This seminar cum workshop session was extremely interactive with Third semester M.Pharm students, seventh semester B.Pharm students and faculty members, asking numerous questions about product development and optimization and clarifying their concerns.

"Research is Creating New Knowledge." ~ Dr. A.P.J. Abdul Kalam

All the scientific sessions were very informative and useful for students to incorporate DOE in their research and have gained valuable insights into how to apply RSM effectively to optimize pharmaceutical formulations, processes, and other aspects of drug development. Such workshops are crucial for researchers and professionals in the pharmaceutical industry to stay updated with the latest methodologies and tools for product optimization.

At end of the workshop, Dr. Sudha S, Professor, Department of Pharmaceutics, delivered the vote of thanks.

DEPARTMENT ACHIEVEMENTS

PATENT RECEIVED

Dr. Zeeshan Afsar, Dr. Nethaji Ramalingam, Dr. Vimal KR et.al., has filed a design patent on "*Portable Vacuum Evaporator for Thermolabile Phytoconstituents*" by the Patent Office, Government of India, under Design Number 388530-001. The date of issue for the patent is 12/09/2003 and the application was applied on 17/06/2003. This accomplishment is a testament to their innovation and dedication to advancing technology in the field of phytoconstituents extraction.

This achievement not only reflects positively on the individuals involved but also brings recognition to our organization for its commitment to fostering innovation and research in the pharmaceutical domain. Our organization congratulates all the faculties involved for reaching this significant milestone.

MEMBERSHIP IN EDITORIAL BOARDS

Dr. Nethaji Ramalingam, Professor & Head, on his recent appointments as an Editorial Board Member in prestigious international journals affiliated with *Scinexis Global Research Forum*, based in England, United Kingdom. These appointments signify recognition of Dr. Nethaji Ramalingam expertise and contributions to his field. His involvement in the editorial boards of the following journals reflects his diverse interests and broad knowledge base:

- Scinexis Journal of Infectious Diseases.
- Scinexis Journal of Science & Technology Research.
- Scinexis Journal of Healthcare Research.
- Scinexis Journal of Medical Devices and Healthcare Innovation.

As an editorial board member, he will play a significant role in shaping the content and direction of these journals, ensuring the publication of high-quality research that advances the respective fields. His appointment is not only a testament to his academic excellence but also a testament to the esteem in which he is held within the international scientific community. We extend our congratulations and best wishes to him on these prestigious appointments.

INDUSTRIAL VISIT

A regular training programme for the students in pharmaceutical industry is arranged as a part of curriculum industry interaction.

Pharmaceutics department has been arranged an one day industrial visit for First year D. Pharm students (2022 Admission) on 06th November 2023, to Chethana Pharmaceuticals, Perinthalmanna, Malappuram District, Kerala,

Overall the said trips was incredibly a learning and fruitful experience to our students in terms of future jobs employment and acquiring an awareness of the actual guidelines linked to production and allied units in the Pharma industry, also it gave them more exposure.



Industrial Visit
Chethana Pharmaceuticals

"Motivation is What Gets You Started. Habit is What Keeps You Going" ~ Jim Ryun

PHARMA ARTICLES

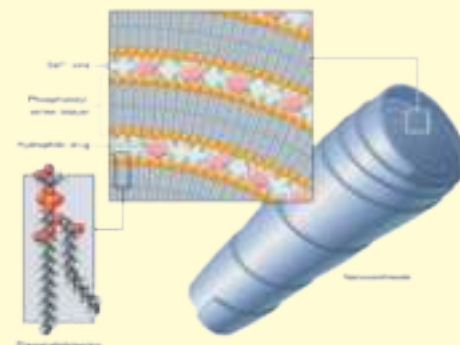
NANOCOCHLEATES: A NOVEL DRUG DELIVERY TECHNOLOGY

(Source: <https://www.jsirjournal.com/Vol2Issue5018.pdf>)

In the present scenario, more than 50% of drug which are discovered were the product of biotechnological innovations. The progress of biotechnology has brought more and more biological therapeutics to clinical applications, however, the development of appropriate dosage forms for these agents are far behind the pace of the development of the new agents. This is due to their tissue impermeability and in-vivo instability, low entrapment efficiency and, so on. Drug delivery systems that allow oral delivery improve patient compliance and facilitate treatment, which has a significant impact on healthcare economics. An ideal NDDS should fulfill two basic requirements: It should deliver the drug at a rate directed as per the needs of the body, over the period of treatment and it should channel the active ingredient to the site of action. The novel drug delivery system is most suitable and approachable in developing the delivery system which improves the therapeutic efficacy of new as well as pre-existing drugs, thus providing controlled and sustained drug delivery to the specific site. vesicle-based delivery systems particularly liposomes were quite successful in delivery of drugs across the membrane, because of their structural similarity with the cell membrane, but these have some limitations, for overcoming it nanocochleates are introduced. Various formulation modifications with liposomes allowed the development of a new class of drug vehicles called "COCHLEATE. The nanocochleate drug delivery vehicle is based upon encapsulating drugs in a multilayered, lipid crystal matrix (a cochleate) to potentially deliver the drug safely and effectively. Nanocochleates are cylindrical (cigar-like) microstructures that consist of a series of lipid bilayers, Nanocochleate delivery vehicles are stable phospholipid-cation precipitates composed of simple, naturally occurring materials, generally phosphatidylserine and calcium. They have a unique multilayered structure consisting of a solid, lipid bilayer sheet rolled up in a spiral or in stacked sheets, with little or no internal aqueous space. This structure provides protection from degradation for associated "encochleated" molecules. Cochleates are solid particulates made of large continuous, lipid bi-layer sheets rolled up in a spiral structure with no internal aqueous phase. This technology was able to answer the challenges of oral delivery of different kind of biological molecules, especially the hydrophobic ones. Cochleates differ from liposomes in having water-free interior, rod-shape & rigid stable structure, these unique characteristics make cochleates a great platform for delivery of drugs that were having poor bioavailability. It is most versatile technology for the delivery of a wide range of drugs and molecules such as proteins and peptides, polynucleotide, antiviral agent, anaesthetic, anticancer agent, immunosuppressant, steroidal anti-inflammatory agent, non-steroidal anti-inflammatory agents, tranquilizer, nutritional supplement, herbal product, vitamin. Thus, it provides a potential delivery system for the wide class of drugs. There are several methods for preparation such as Hydrogel method, Trapping method, Liposome before cochleates dialysis method, Direct calcium dialysis method, Binary aqueous- aqueous emulsion system, Solvent drip method. Nanocochleate drug delivery vehicle allows an efficient oral delivery of drugs. An alternative route of administration can be parenteral, rectal, topical, sublingual, mucosal, nasal, ophthalmic, subcutaneous, intramuscular, intravenous, transdermal, spinal, intrathecal, intra-articular, intra-arterial, sub-arachnoid, bronchial, lymphatic, and intrauterine administration, intravaginal or any other mucosal surfaces. Absorption after oral administration of nanocochleates take place from intestine. Nanocochleates cross across the digestive epithelium and deliver their cargo molecules into blood vessel. The interaction of calcium with negatively charged lipids has been extensively studied. Many naturally occurring membrane fusion events involve the interaction of calcium with negatively charged phospholipids (generally phosphatidylserine or phosphatidylglycerol). Calcium-induced perturbations of membranes containing negatively charged lipids, and the subsequent membrane fusion events, are important mechanisms in many natural membrane-fusion processes. Hence, cochleates can be envisioned as membrane-fusion intermediates. Absorption after oral



Mrs. Neethu K,
Asst. Professor



"A Goal without a Plan is Just a Wish." ~ Antoine De Saint-Exupéry

administration takes place from intestine. Nanocochleates cross across the digestive epithelium and deliver their active drug molecules into blood vessel. In case of other route (except IV) they cross across the associated cell and reach into circulation. After reaching into circulation, they are delivered to targeted cell, The recently proposed hypothesis states that when lipid bi-layer structure of nanocochleates fuses with the cell membrane, then the contents of nanocochleates are delivered into cells, thus release of the drug occurs. Nano-cochleate drug delivery system provides an unique platform for delivery of wide range of oral & systemic therapeutics including drugs, genes, and vaccine antigens. Encochleation helps to improve the efficiency of the final product by enhancing the qualities of formulation, increasing processing and shelf-life stability, enhancing bioavailability, reducing toxicity, and increasing efficacy. As nanocochleates possesses unique multilayered structure, it protects active agents inside which are to be carried. There is tremendous increase in patent filing and publications of nanocochleates indicating growing industrial interest as well as academic interest in the area of drug delivery. Thus, nanocochleate drug delivery system is gaining more importance in pharmaceutical development for transfer of suitable & desired drug molecule into body with good potential.

GLIMPSES OF ONE DAY WORKSHOP (08/12/2023)



Chief Guest Speech



Extraordinary Talks by Eminent Speaker



Spectators



During Workshop



Skill Training



Pedagogues



Honour & Memento's to Chief Guest



Pharmaceutics Comrade

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