INNOVATIVE
COLLEGE OF PHARMACY

(Affiliated to Dr. APJAKTU, BTEUP - Lucknow
and Approved by PCI, New Delhi)

Faculty Development Program

RECENT TRENDS, ADVANCEMENTS AND OPPORTUNITIES IN PHYTOCHEMICAL RESEARCH AND DEVELOPMENT

ELIGIBILITY:
All Pharmacy Faculty Members

DURATION :
6th July 2020 To 12th July 2020

INNOVATIVE COLLEGE OF PHARMACY
PRINCIPAL

Principal:
Dr. J. Joanofarc
Pharmacy

Coordinator:
Dr. Titiksha Sharma
Academic Director

Plot No.-6, Knowledge Park-2, Greater Noida, U.P.
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Date: 2 July 2020

Circular

All the faculty members are hereby informed that the institute has scheduled seven days **FDP** on **"Recent Trends, Advancements and opportunities In Phytochemical Research and Development"** from **6 July 2020 to 12 July 2020.** The brief date wise Itinerary of the event is as under:

Day	Date	Time	Topic	Resource Person
1	06/07/2020	12 PM-1 PM 1 PM-3 PM	Inauguration Ayurveda Knowledge base Opportunities for Phytochemical Research	Prof.(Dr.) Ravi Kant
2	07/07/2020	2 PM to 3:30 PM	Ways to explore phytopharmaceuticals from traditional knowledge	Dr. Zeenat Iqbal
3	08/07/2020	2 PM to 3:30 PM	Metagenome mining to discover novel Anti-infectives	Dr. Sunil Thakur
4	09/07/2020	2 PM to 3:30 PM	Challenges in Ayurvedic/ Herbal formulations and ways to overcome it	Dr. Ravinder Kumar
5	10/07/2020	2 PM to 3:30 PM	Structural Elucidation of Phytochemicals: Saponin	Prof.(Dr.) M.S.Vyas
6	11/07/2020	2 PM to 3:30 PM	Technology interventions in exploring new opportunities and establishing natural products as modern phytopharmaceuticals	Dr.Neelam Saxena
7	12/07/2020	2 PM to 3:30 PM 3:30 PM to 4 PM	Active components and bioactivities from natural products Valedictory	Dr. Sumesh Kumar

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All the faculty members are requested to attend the sessions. The faculty members having their scheduled lectures during the time of the FDP may attend the session after their lectures.

On the completion of the event, the proper certificate shall be conferred to the participants who have attended all the sessions. It is further to be noted that every day there will be short multiple-question tests to ascertain what you have understood during the session.

All are requested to comply with the instructions.

Principal

Copy to:-
Chairman
All Department Heads
IQAC

Report on Faculty Development Program
Organized by
INNOVATIVE COLLEGE OF PHARMACY
on
Recent Trends, Advancements and opportunities In Phytochemical Research and Development
(6 July 2020 to 12 July 2020)

INTRODUCTION

In recent years, the field of phytochemical research and development has witnessed remarkable growth and innovation, driven by increasing recognition of the therapeutic potential of natural compounds derived from plants. Phytochemicals, broadly defined as bioactive compounds found in fruits, vegetables, herbs, and other botanical sources, have garnered significant attention for their diverse health benefits and applications across various industries.

This Faculty Development Program (FDP) aims to explore the latest trends, advancements, and emerging opportunities in phytochemical research and development. By delving into the cutting-edge discoveries and methodologies within this dynamic field, participants will gain valuable insights into harnessing the potential of phytochemicals for scientific exploration, product development, and therapeutic applications.

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PURPOSE

The purpose of this Faculty Development Program (FDP) is to explore and elucidate the latest trends, advancements, and opportunities in phytochemical research and development. By focusing on the exploration of bioactive compounds derived from plants, this program aims to equip participants with the knowledge and skills necessary to leverage phytochemicals for scientific research, product development, and therapeutic applications.

PROGRAM OVERVIEW

Recent advancements in phytochemical research have highlighted the identification of bioactive compounds through advanced analytical techniques, exploration of synergistic effects for therapeutic applications, and the rise of biotechnological approaches for enhancing production. Improved extraction methods and computational tools are enhancing efficiency and discovery, while clinical trials are validating their efficacy and safety for personalized medicine and healthcare applications. These developments underscore promising opportunities in developing sustainable, effective phytochemical-based products for global markets.

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The day-wise FDP program is as under :

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6	11/07/2020	2 PM to 3:30 PM	Technology interventions in exploring new opportunities and establishing natural products as modern phytopharmaceuticals	Dr.Neelam Saxena
7	12/07/2020	2 PM to 3:30 PM 3:30 PM to 4 PM	Active components and bioactivities from natural products Valedictory	Dr. Sumesh Kumar

PRINCIPAL

DAY-WISE REPORT

A seven-day Faculty Development Programme was organized in the institute from **6 July 2020 to 12 July 2020** .The day-wise report in the brief is being encapsulated for the reference of all concerned.

Day 1
06/07/2020

Session Topic: Ayurveda Knowledge base Opportunities for Phytochemical Research
Timing: 12 PM to 3 PM
Guest: Prof.
Resource Person: Prof.(Dr.) Ravi Kant

The first day of the Programme commenced with the **formal welcome** of the **Guest Prof. .(Dr.) Ravi Kant** and the Resource Person and all participants by Principal **Dr. J. Joanofarc.**

The session on Ayurveda in the Faculty Development Program (FDP) presents an opportunity to delve into the rich knowledge base of Ayurvedic principles for phytochemical research. By integrating traditional Ayurvedic texts and practices, researchers can identify bioactive compounds and explore their therapeutic potential using modern scientific validation methods.
Emphasis should be placed on investigating synergistic formulations, bioprospecting for novel phytochemical discoveries, and implementing biotechnological advancements for sustainable production. Standardization of extraction methods and quality control measures aligned with Ayurvedic principles will be crucial. Furthermore, the session can highlight the importance of ethical sourcing practices and promote educational initiatives to bridge traditional Ayurvedic knowledge with contemporary research, fostering interdisciplinary

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collaboration and advancing phytochemical research in healthcare applications.

Day 2
07/07/2020

Session Topic: **Ways to explore phytopharmaceuticals from traditional knowledge**
Timing: 2 PM to 3:30 PM
Resource Person: Dr. Zeenat Iqbal

In a Faculty Development Program (FDP) session focused on exploring phytopharmaceuticals from traditional knowledge, participants would delve into a comprehensive approach to bridge traditional wisdom with modern scientific methodologies. The session would begin with an overview of traditional medicinal systems, emphasizing their historical significance and cultural context. Participants would then learn about effective methods for conducting literature reviews and ethnobotanical surveys to identify medicinal plants and understand their traditional uses.

The session would highlight the importance of documenting and validating traditional knowledge through collaborative research with local communities and traditional healers. Practical insights into bioassay-guided fractionation techniques and advanced phytochemical analysis would be provided, enabling participants to identify bioactive compounds responsible for therapeutic effects

Throughout the session, emphasis would be placed on ethical considerations, intellectual property rights, and fair benefit-sharing with indigenous communities. Case studies and success stories would illustrate how traditional knowledge has

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been successfully integrated into contemporary phytopharmaceutical research, fostering interactive discussions and networking opportunities among participants to exchange ideas and best practices.

Overall, the FDP session would equip participants with both theoretical knowledge and practical skills necessary to conduct impactful research and development initiatives in phytopharmaceuticals, honoring and leveraging the wealth of traditional knowledge for modern healthcare applications.

Day 3
08/07/2020

Session Topic: <u>Metagenome mining to discover novel Anti-infectives</u>

Timing: 2 PM to 3:30 PM
Resource Person: Dr. Sunil Thakur

In a Faculty Development Program (FDP) session dedicated to metagenome mining for discovering novel anti-infectives, participants would engage deeply with advanced methodologies at the intersection of genomics, bioinformatics, and pharmaceutical discovery. The session would commence by introducing the concept of metagenomics, emphasizing its role in exploring the genetic diversity of microbial communities directly from diverse environmental samples. This approach allows researchers to access a vast reservoir of genetic information from microorganisms that are often difficult or impossible to culture using traditional methods.

Participants would then delve into practical aspects of bioinformatics tools and techniques essential for analyzing metagenomic data. They would learn how to

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perform sequence assembly, gene annotation, and comparative genomics to identify genes encoding potential anti-infective compounds. The session would highlight strategies for target identification and validation, including computational modeling and experimental assays to assess the efficacy and specificity of bioactive molecules discovered through metagenomic studies.

Day 4
09/07/2020

Session Topic: <u>Challenges in Ayurvedic/ Herbal formulations and ways to overcome it</u>

Timing: 2 PM to 3:30 PM
Resource Person: Dr. Ravinder Kumar

In an FDP session focused on Ayurvedic and herbal formulations, participants would explore the multifaceted challenges and innovative approaches necessary for developing effective and safe products. The session would begin by addressing the fundamental challenge of ensuring consistent quality and standardization in herbal formulations. Participants would learn about advanced analytical techniques like HPLC and GC-MS for quantifying bioactive compounds, thereby establishing robust quality control measures essential for maintaining product efficacy and safety.

The session would emphasize the importance of evidence-based validation, guiding participants through the methodologies for conducting pharmacological studies and clinical trials to substantiate the efficacy of Ayurvedic and herbal formulations. This approach not only validates traditional knowledge but also bridges it with modern scientific validation, fostering confidence among healthcare providers and consumers.

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Moreover, participants would explore strategies for integrating traditional Ayurvedic wisdom with contemporary scientific advancements, promoting interdisciplinary collaboration among researchers, botanists, pharmacologists, and Ayurvedic practitioners. Discussions would extend to sustainable practices in herbal sourcing and cultivation, addressing concerns about resource depletion and ethical considerations in sourcing medicinal plants.

Day 5
10/07/2020

Session Topic:Structural Elucidation of Phytochemicals: Saponins
Timing: 2 PM to 3:30 PM
Resource Person: Prof.(Dr.) M.S.Vyas

In an FDP session focused on the structural elucidation of saponins, participants would explore essential techniques and methodologies for identifying and characterizing these complex phytochemicals. The session would cover extraction and isolation methods, advanced analytical techniques such as NMR spectroscopy and mass spectrometry for structural analysis, and computational tools for predicting properties.

Discussions would also include bioactivity assessments, challenges in stereochemical determination, and applications in drug development and nutraceuticals. Practical sessions would reinforce learning, equipping participants with skills to advance their research in phytochemistry and medicinal plant sciences.

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Day 6
11/07/2020

Session Topic: Technology interventions in exploring new opportunities and establishing natural products as modern phytopharmaceuticals

Timing: 2 PM to 3:30 PM
Resource Person: Dr.Neelam Saxena

In an FDP session focusing on technology interventions in establishing natural products as modern phytopharmaceuticals, participants would explore transformative methodologies at the intersection of traditional knowledge and cutting-edge science. The session would commence with an introduction to the historical significance and therapeutic potential of natural products derived from plants, emphasizing their role in traditional medicine and the growing interest in their scientific validation

Furthermore, the session would explore the complexities of clinical trials, regulatory considerations, and strategies for commercialization. Participants would gain insights into navigating regulatory frameworks, protecting intellectual property, and positioning phytopharmaceutical products in the competitive market landscape.

By the end of the session, participants would be equipped with practical knowledge and strategic insights to leverage technology interventions effectively in their research and teaching endeavors. The session would encourage interdisciplinary collaboration and innovation, fostering advancements in the field of natural product-based medicine and enhancing its integration into modern healthcare practices.

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Day 7
12/07/2020

Session Topic: **Active components and bioactivities from natural products**
Timing: 2 PM to 3:30 PM
Guest : Prof. Anil Varshaneya
Resource Person: Dr. Sumesh Kumar

In an FDP session dedicated to exploring active components and bioactivities from natural products, participants would engage in a comprehensive examination of the diverse range of bioactive compounds found in medicinal plants and their potential therapeutic applications. The session would begin with an overview of the importance of natural products in traditional medicine and their modern relevance in drug discovery and development.

Participants would delve into methodologies for identifying and isolating bioactive components from natural sources, emphasizing advanced extraction techniques such as supercritical fluid extraction, solid-phase extraction, and chromatographic methods like HPLC (High-Performance Liquid Chromatography) and GC-MS (Gas Chromatography-Mass Spectrometry). Discussions would highlight the role of these techniques in obtaining pure compounds for subsequent bioactivity assays.

In conclusion, the session on research writing and valedictory by Dr. Sumesh Kumar and guest Prof. Anil Varshaneya provided participants with practical guidance, encouragement, and inspiration as they concluded their journey in the workshop. Their insights and reflections served as a fitting conclusion to an enriching and impactful learning experience, leaving participants motivated to apply their newfound knowledge and skills in their research endeavors.

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ATTENDANCE LIST OF THE PARTICIPANTS

S.No.	Name of the Faculty	Signature
1	Dr. J. Joanofarc	
2	Dr. Amarjeet Singh	
3	Ms. Chanda ray	
4	Ms. Jaya Bhati	
5	Ms. Sangeeta Singh	
6	Ms. Deepika Chauhan	
7	Ms. Tabassum Malik	
8	Ms. Nida Hafiz	
9	Mr. Bijender	
10	Ms. Archita Katrolia	
11	Ms. Monika Setia	
12	Ms. Suman Lata Rawat	
13	Ms. Shilpi Sharma	
14	Mr. Vikas Sharma	
15	Ms. Priyanka Bhati	
16	Ms. Preeti Anand	
17	Ms. Sarika Nigam	
18	Mr. Sumit Kumar	

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(Period-6 July 2020 to 12 July 2020)

FEEDBACK FORM

Thank you for participating in our Faculty Development Program (FDP) on Ethical Dimensions in Research and Professional Integrity. Your feedback is invaluable to us as we strive to continuously improve our programs. Please take a moment to share your thoughts by completing the following feedback form:

1. How satisfied were you with the FDP overall?
    - Extremely satisfied
    - Very satisfied
    - Somewhat satisfied
    - Not satisfied
2. Were the topics covered in the FDP relevant to your role as a teaching staff member?

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- Yes
- No
- Somewhat

3. How would you rate the quality of the content presented during the FDP?
    - Excellent
    - Good
    - Fair
    - Poor
4. Were the sessions engaging and interactive?
    - Yes, very much
    - Somewhat
    - Not really
5. Do you feel that you acquired new knowledge or skills related to ethical dimensions in research and professional integrity?
    - Yes
    - No
    - Partially
6. How effective were the facilitators/resource persons in delivering the content?
    - Extremely effective
    - Effective
    - Somewhat effective
    - Not effective
7. How would you rate the organization and logistics of the FDP?

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- Excellent
- Good
- Fair
- Poor

8. Do you have any suggestions for improving future FDPs on similar topics?

Thank you for taking the time to provide your feedback. Your input will help us enhance future iterations of the FDP and better meet the needs of our teaching staff.

Sincerely,

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Test Questions for all Day Sessions

Result Analysis : 90% of participants felt that the session was excellent and/or 10%. It was a very good session.

Day 1 : Ayurveda Knowledge base Opportunities for Phytochemical Research

Question 1 : Are Ayurvedic herbs a potential source of bioactive phytochemicals? [ ] Yes [ ] No

Question 2 : Is there regulatory support for bringing Ayurvedic phytochemicals to market? [ ] Yes [ ] No

Day 2 : Ways to explore phytopharmaceuticals from traditional knowledge

Question 1 : Can ethnobotanical surveys uncover new phytopharmaceutical leads from traditional knowledge?[ ] Yes [ ] No

Question 2 : Are literature reviews effective in identifying medicinal plants with potential phytopharmaceutical properties? [ ] Yes [ ] No

Day 3 : Metagenome mining to discover novel Anti-infectives

Question 1 : Can metagenome mining identify novel antimicrobial compounds from environmental samples?[ ] Yes [ ] No

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Question 2 : Is metagenome mining effective in discovering anti-infectives targeting drug-resistant pathogens?[ ] Yes [ ] No

Day 4 : Challenges in Ayurvedic/ Herbal formulations and ways to overcome it

Question 1 : Is standardization of herbal extracts essential for overcoming quality control challenges? [ ] Yes [ ] No

Question 2 : Are clinical trials necessary to establish the efficacy and safety of Ayurvedic/herbal formulations? [ ] Yes [ ] No

Day 5 : Structural Elucidation of Phytochemicals: Saponins

Question 1 : Are saponins glycosylated compounds? [ ] Yes [ ] No

Question 2: Do saponins typically exhibit amphiphilic properties? [ ] Yes [ ] No

Day 6 :Technology interventions in exploring new opportunities and establishing natural products as modern phytopharmaceuticals

Question 1 : Have biotechnological approaches been effective in enhancing the production of natural productss? [ ] Yes [ ] No

Question 2 : Can nanotechnology-based delivery systems improve the bioavailability of phytopharmaceuticals? [ ] Yes [ ] No

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Day 7 : Active components and bioactivities from natural products

Question 1 : Do natural products contain bioactive components? [ ] Yes [ ] No

Question 2 : Are synergistic effects common among bioactive components in natural products? [ ] Yes [ ] No

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