



UGC - Human Resource Development Centre

Pt. Ravishankar Shukla University, Raipur



In Association with
University Institute of Pharmacy,
Pt. Ravishankar Shukla University, Raipur
Organized
Online Multidisciplinary Refresher Course in
Pharmacy
December 6 to 20, 2021
Report

Name of Course/Program:	Online Multidisciplinary Refresher Course in Pharmacy
Name of Contact person from HRDC:	Dr. Arvind Agrawal
Date of Course/Program:	06.12.2021 to 20.12.2021
Name of Convenor:	Dr. Swarnlata Saraf, Professor and Director University Institute of Pharmacy, Pt. Ravishankar Shukla University, Raipur
Name of Course Coordinator:	Dr. Preeti K. Suresh, Professor and Dean University Institute of Pharmacy, Pt. Ravishankar Shukla University, Raipur
Theme of Course/Program:	Modern Tools in Drug Discovery and Pharmaceutical Technology
Number of Participants:	39
State wise number of participants:	11 Chhattisgarh, 03 Himachal Pradesh, 05 Assam, 04 Telangana, 03 Maharashtra, 02 UP, 06 MP, 03 Hyrayana and 01 Gujarat 01 Andhra Pradesh
Gender wise number of participants:	14 Female and 25 Male
Number of Resource Persons	36
Name and Signature of Course Coordinator	
Prof. Preeti K. Suresh University Institute of Pharmacy, Pt. Ravishankar Shukla University, Raipur (C.G.)	Dr. Arvind Agrawal Assistant Professor HRDC, Pt. RSU, Raipur (C.G.)

Refresher Course in Pharmacy

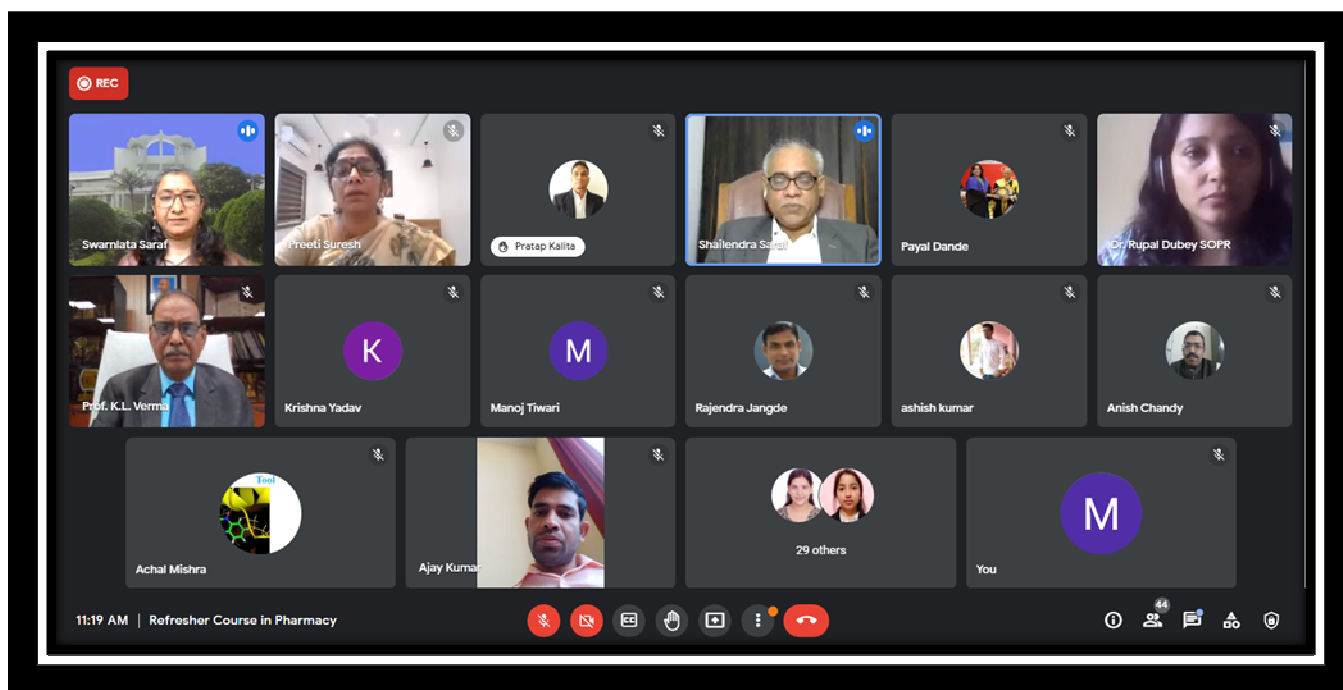
(06.12.2021 - 20.12.2021)

A Refresher Course in “Pharmacy” was organized by Human Resource Development Centre, Pt. Ravishankar Shukla University Raipur, in collaboration with University Institute of Pharmacy, Pt. Ravishankar Shukla University, Raipur from 06th -20th, December 2021. The course was attended by Thirty-Fiveregistered participants from across the country. **32 outstation and 05 local participants** attended the Refresher Course. **Thirty-six** resource persons delivered lectures and deliberated during the two-week program.

DAY 1

Session I (10.30-12.00) Inaugural Function

The Programme commenced with the Inaugural Function at 10.00 a.m. with **Prof. Keshari Lal Verma, Hon'ble Vice-Chancellor, Pt. Ravishankar Shukla University, Raipur as the Chief guest.** Prof. Shailendra Saraf, Director-HRDC, Prof. Swarnlata Saraf, Convenor of the Program and Prof. Preeti K. Suresh, Course-Coordinator of the Refresher Course were also present during the Inaugural Function. At the outset, the Chief Guest for the function was accorded a warm welcome. The session proceeded with the self-introduction of the participants. Prof. Preeti K. Suresh delivered the welcome address. Prof. Swarnlata Saraf gave an overview of the theme of the Refresher Course and the emerging trends and challenges in Pharmacy. Prof. Shailendra Saraf, Director-HRDC also addressed the gathering and underlined the need of such courses for faculty members in updating themselves with the developments in the field of Pharmacy. In the Inaugural Address, Prof. Keshari Lal Verma, Hon'ble Vice Chancellor focused on the relevance of the refresher courses, and how such courses provide opportunities for serving teachers not only to keep abreast of the latest advances in their subject area but also a forum to exchange experiences with their peers. The session ended with vote of thanks by Dr. Arvind Agrawal.



Session II (12:15 to 13:45)

1. The session on 'Tools in Development of Drug Delivery Systems' was conducted by the Resource Person **Prof. Mala D. Menon**, Professor Emeritus, Bombay College of Pharmacy Kalina, Santacruz (E), Mumbai. The lecture gave an insight on the drug development and tools used therein. Dr. Menon observed that the earlier



serendipity approach of drug development is no longer valid in today's research scenario. Computer aided drug design is already a well-known *in silico* approach in drug discovery. In drug development – design of dosage forms/delivery systems also, there are several tools being developed and used which can help speed up and optimize the formulations or processes

in manufacturing. The session focused on some tools in the various areas of drug design and development, viz. targeting of drugs/delivery systems; taste masking; particle design and lung aerosol dynamics simulations. The lecture gave key points on E-Nose & E-Tongue Tools, a new concept to work on bitter phytoconstituents. The informative session also emphasized on the importance of research collaboration between academic institutions and pharmaceutical industry.

Session III (14.15 to 15.45) & Session IV (16.00 to 17.30)

2. Dr. Om Silakari, Molecular Modeling Lab, Department of Pharmaceutical Sciences & Drug Research, Punjabi University, Patiala



(Punjab) conducted the sessions on 'Pharmacophore Mapping' and 'Pharmacophore Mapping - Applications'.

The lecture on Pharmacophore Mapping discussed at length the following with relevant examples:

- Cartesian co-ordinates to determine 3D structure of components.
- Molecular mechanics to calculate to assess potential.
- Molecular recognition in Drug Quantum mechanics.
- Molecular docking analysed by molecular dynamics.
- Conformational analysis and preparation of molecule.

The concluding lecture on Pharmacophore Mapping and its applications covered the following key points with lucid examples and case studies:

- Applicability of 3D structure of components in herbals.
- Molecular docking applications
- Conformational analysis and preparation of molecule from phytoconstituents

DAY 2

Session I (10.30-12.00)



3. Dr. Ajay J. Khopade, President F R&D at Sun Pharmaceutical Industries Limited, Vadodara, Gujarat delivered the session on 'Reformulation Strategies addressing unmet needs for product life cycle'.

The session focused on the drug delivery technologies as one of the product life cycle extension strategies to combat generic competition and harness value of the product to the maximum. Dr. Khopade gave an outline of the principles of improved usage and compliance, safety and efficacy and indication extension. He shared some of the successful examples from pharmaceutical industry. The presentation covered few successful case studies and his experience that has endured all the developmental, clinical and regulatory challenges to eventually enter into the market.

Session II (12.15-13.45)



4. Dr. Shubhini A. Saraf, Professor, School of Biomedical & Pharmaceutical Sciences, Babasaheb Bhimrao Ambedkar University, Lucknow conducted the session on 'Pharmaceutical Technology: Bioelectronics and beyond'.

The informative session opened the gateway to the new world of bioelectronics, that are relevant to the pandemic and post-pandemic world. The session gave insights on the emerging fields related to Pharmacy education & training, transferable skills for pharma professionals, complex drug release profiles, 3-D printing in medicines, Fish-shaped micro-robots to deliver chemotherapeutic drugs, wearable antibacterial device, Hydro gel wound treatment for antibacterial activity, body sensors printed directly on skin, diagnostic tools for infectious diseases etc, and brain-computer interface translation imagined writing, drug-development pipelines, CuPiD System Training, Advanced Medical Devices as per D&C Acts.

Session III (14:15 to 15:45)



5. Prof. Kamla Pathak, Dean, Faculty of Pharmacy, University of Medical Sciences, Saifai, Etawah (UP), conducted the session on '3D Printing Methodologies and Their Pharmaceutical Applications'.

Prof. Pathak highlighted that the growing demand for customized pharmaceuticals and medical devices has impacted the growth of additive manufacturing in the recent years. The 3D printing has become one of the most revolutionary and powerful tools serving as a technology of precise manufacturing of individually developed dosage forms, tissue engineering and disease modelling. 3D printing is a confluence of chemistry, optics and robotics research. The current achievements include multifunctional drug delivery systems with accelerated release characteristic, adjustable and personalized dosage forms, implants and phantoms corresponding to specific patient anatomy as well as cell-based materials for regenerative medicine. Many 3D printing techniques developed in the recent past were highlighted. It was illustrated how the technique is useful for development of personalized dosage forms and medical devices manufacturing. Therefore, future research should prioritize the development of pediatric and geriatric dosage forms in personalized dosing and dimension-specific drug formulations to ensure desired therapeutic effect. Increasing amount of drug development studies proves undeniable benefits of this technology but the full success will be obtained after leading elaborated new dosage forms on an industrial scale.

Session IV (16:00 to 17:30)



6. Prof. B. Mishra, Department of Pharmaceutical Engineering and Technology, Indian Institute of Technology (BHU), Varanasi, conducted the session on 'Pastillation Technology for Controlled and Pulsatile Drug Delivery'. The participants were apprised of the various aspects of this technology. Pastillation is a robust

technology in the chemical industry to convert hazardous chemical powders to solidified hemispherical pellets, called Pastilles using large equipment called "rotoformer". In this process the dusty chemicals are heated to convert them into a melt and then this melt is dropped on a cold surface to solidify the melt into pastilles. Pastilles can be formed in a wide range of size with diameters ranging from 1 to 30mm. These are stable formulation with high uniformity. Prof. Mishra shared his study on the pastillation technology, for the development of oral modified release multiparticulate delivery system of Doxofylline, which can be used for the better treatment of asthma and COPD. Using this technology, a small setup of laboratory scale equipment was employed to prepare the pastilles and the issues like improved patient compliance with enhanced therapeutic efficacy of Doxofylline was addressed. Controlled release pastilles were prepared using lipids carrier for improving patient compliance. Whereas issue of enhanced therapeutic efficacy of doxofylline, specifically for the management of nocturnal asthma, was addressed by designing immediate release pastilles using PEG as drug carrier, which was further enteric coated to achieve the required drug release profile. The developed formulations were characterized for their physicochemical characteristics, in-vitro performance and in-vivo behaviour. The laboratory scale preparation of pastilles, experimental details and the findings were presented in detail. This study was the first one of its kind in the pharmaceutical field utilizing pastillation technology.

Day 3



Session I (10.30-12.00)

7. Dr. Subheet Kumar Jain, Department of Pharmaceutical Sciences, Guru Nanak Dev University, Amritsar, Punjab conducted the session on 'Importance of Translational Research in Pharmaceutical Field.'

In his lecture, Dr. Subheet Kumar Jain elaborated on the various facets of developing concept and product by translational research, which will fulfill the needs of society. He also explained the various aspects of translational research such as:

- How interdisciplinary/multidisciplinary approach is a key component for translational research
- Journey of product from benchtop to bedside to community (Translating knowledge gained from laboratory into clinical practice to improve health by integration of activities)
- Selection of research problem – Need, 3Ps (Patient, Physician and Payer)
- Case study of development of Amphotericin-B
- Development of carrier based dermaceuticals
- Commercial viability of the product
- Future scope in translational research

Session II(12.15-13.45)



8. Dr. Sunil Kumar Dubey, General Manager, Medical Research R&D, Health care Division, Emami Ltd, Kolkata (West Bengal) conducted the session on 'PK/PD modeling simulation of nano carrier system for better efficacy'. In his lecture, Dr. Sunil Kumar Dubey discussed the myriad aspects of PK/PD modeling and its simulation.

During the session, various aspects of PK/PD were dwelt upon and included:

- Design and evaluation of lipoprotein-based Donepezil nanocarriers for enhanced brain uptake through oral delivery and details of different parameters used for pharmacokinetic studies and validation of HPLC method
- Bioanalytical methods/photodynamic therapy compartmental pharmacokinetics of HPPH
- Preclinical pharmacokinetics and pharmacokinetic modelling study of 4-hydroxyisoleucine LC-MS-MS
- Preclinical pharmacokinetics and pharmacokinetics modelling study of Trigonelline UPLC-MS-MS
- Comparative study of PK/PD of Trigonelline and 4-hydroxyisoleucine
- Future scope in PK/PD

Session III (14:15 to 15:45)



9. Dr. Sushil Kashaw, Associate Professor, Department of Pharmaceutical Sciences, Dr. Harisingh Gour Vishwavidyalaya, Sagar (MP) conducted the session on ' Drug design and discovery through structure-based drug design approach.

Dr. Kashaw elucidated the three stages of *in silico* drug discovery process *viz.*, therapeutic target identification, specificity by adding at binding site and *in silico* ADMET profiling. The drug discovery process was elaborated with appropriate examples of direct and indirect design, including ligand based drug design.

Protein ligand docking and active-site directed docking were discussed with relevant examples of approved and in-use drugs. Process of drug discovery comprising of lead identification, optimization thereof and development process with respective timelines were elaborated upon. Role of computational chemistry, in genomics, proteomics and biopharmaceuticals was highlighted in genome-based drug discovery.

Session IV (16:00 to 17:30)



10. Prof. Vandana Patravale, Department of Pharmaceutical Sciences & Technology, Institute of Chemical Technology, Mumbai, (Maharashtra) conducted the session on 'Computational Pharmaceutics: Opportunities and Challenges'. Prof. Patravale observed that the advent of computers has undoubtedly revolutionized the world, but their entry in the domains of pharmaceutical science has uplifted its significance to another level. Artificial intelligence (AI) is on its way to break several barriers that confronted humans through several centuries. Pharmaceutical science is equally and positively impacted by the inclusion of numerous emerging concepts based out of AI, in regular practice. The session focused on the importance of computational science in the field of drug discovery, which is an incessantly growing field, even today. However, use of computational tools in the field of formulation design and development is still a nascent but dynamic concept. Scientists are always on a lookout for tools which can aid in rational design of formulations but also curb the extensive loss of man and materials in the process. Computational tools can bridge this gap and offer a highly cost and time-effective approach in this direction. These tools can be utilized right from pre-formulation up to in vivo activity prediction with a sound correlation if applied with prior knowledge of their key concepts. Study of molecular aspects of formulation and all of its components would help in understanding the formulation in simulation conditions. The increasing market of biopharmaceuticals has driven this industry to take utmost interest in this upcoming computational trend. The prime applications of these tools in excipients screening, drug-excipient interactions, drug-receptor interactions, solubility predictions, enzyme inhibition, protein-peptide interactions, bio-membrane permeation, were explained with representative examples.

Day 4



Session I (10.30-12.00)

11. Prof. O. P. Katare, University Institute of Pharmaceutical Sciences, Panjab University, Chandigarh conducted the session on 'Research A Mindset: How to develop a million dollar Q (sharing my UIPS JOURNEY chasing EXCELLENCE through liposomes)'.

Prof. Katare observed that Pharma Profession is passing through unprecedented transition times, facing the COVID-19 like challenges demanding much more than the ordinary efforts. He reiterated that research is the key to open a new window as it provides innumerable opportunities for the prepared scientists. The new National Education Policy (NEP-2020) is all set to bring a paradigm shift in the mindset of all stakeholders to think different, something original. But how to go for it, remains the much sought-after question. The presentation dwelt on the multifaceted dimensions and deliberated that it demands a high degree of desperation. Prof. Katare shared his academic and research sojourn at UIPS, Panjab University Chandigarh. While sharing his experience through the liposomal technology and beyond, the success story highlighted and sensitized towards the spirit involved therein.

Some patented nano liposomal products were discussed. The talk integrated the philosophy into the world of science while taking on the multiple dimensions relating to research and its translation, academia and industry connects, entrepreneurship and so on and so forth. Prof. Katare expressed that it calls for the open mindedness to look towards taking research and humanity forward.

Session II (12.15-13.45)

X12.Prof. Ranjit Singh, Vice-Chancellor, Shobhit University, Gangoh, Saharanpur (UP) conducted the session on 'Third Decade of Twenty First Century- Challenges and Opportunities'.



The session focused on Technology literacy which is the ability of an individual, working independently and with others, to responsibly, appropriately and effectively use technology tools to access, manage, integrate, evaluate, create and communicate information. The third decade of twenty first century has already begun. The educators and other experts have been reiterating that we all need improved or new skillset for this decade otherwise we will not be able to contribute and participate in global economy. Prof. Ranjit Singh emphasized that these skills include but not limited to critical thinking, effective communication, creativity, innovation, problem solving, decision making, perseverance, team work, collaboration, information literacy, technology skills, digital literacy, cross-cultural understanding, agility, adaptability, and leadership. The COVID-19 pandemic which is still in the picture has made us to learn many lessons. The advent of National Education Policy-2020 and its implementation has opened up a plethora of challenges and opportunities wherein complete revamping of the education sector is envisaged. This all makes upskilling an essential element for success at all levels and education sector including research is no exception. The interactive session discussed the challenges and possibilities in view of the influence of disrupting technologies in every aspect especially the academics & research.

Session III (14:15 to 15:45)&Session IV (16:00 to 17:30)

Micro Teaching



13.The session of Micro-teaching commenced with the formal welcome of the evaluator of the session **Prof. Kanchan Kohli**, Director (Research and Publications) Lloyds Institute of Pharmacy and Technology, Greater Noida (UP). The basic motive behind the session was to strengthen the skills of teaching of the participants. The participants played the instructor's role and presented short lessons of 6-minute duration to their peers. The participants were evaluated for the teaching skills and received feedback on their performance. In total 17 participants gave the presentation on different topics of pharmaceutical sciences like Chromatography, Different types of dosage forms, Isomerism, Evaluation of cosmetics, Gas chromatography, Absorption of drugs and factorial designs. All participants delivered their technical talks on the selected topics. The session could strengthen participants' teaching skills and supported their mastery on the technical content.

Day 5

Session I (10.30-12.00)



14.**Prof. Vimal Kumar**, Dean, School of Pharmacy, ITM (SLS) Baroda University, Vadodara, Gujarat conducted the session on 'Supercritical Fluid Technology: Modern tool in herbal drug discovery and development'. In herbal drug research, supercritical fluid technology (SFT) is a cutting-edge environmentally friendly and green technology with multiple applications. A current global trend shows an increasing concern for safe, eco-friendly and pollution free manufacturing processes under green chemistry. Prof. Vimal Kumar in his talk, highlighted the application of SFT in providing a total solution to these challenges. SFT is a process using a supercritical fluid as a solvent. When a fluid is taken above its critical temperature (T_c) and critical pressure (P_c), it

exists in a condition called the supercritical fluid state. The physico-chemical properties of a fluid in the supercritical state are in between those of a typical gas and liquid. Carbon dioxide is most commonly used Supercritical Fluid (SF) as it is safe, inexpensive, non-toxic, non-inflammable and inert to most of the materials as well as its solvating strength is adjusted by modifier (methanol). SFT processes can be modeled to acquire useful information for better understanding of the extraction, mechanisms and optimization of the extraction procedures. In recent years, Supercritical Fluid Extraction (SFE) has emerged as a highly promising modern technology for production of chemical and biological based medicines and nutraceuticals from natural products with high potency of active ingredients for modern therapeutic use. Due to increasingly stringent environmental regulations, SFT has gained wide acceptance in recent years as an alternative to conventional solvent extraction for natural compounds as well as in many analytical and industrial processes. Prof. Vimal Kumar emphasized that in view of India's rich biological and marine resources, SFT has high potential in producing nutraceuticals, foods, flavors, fragrances, cosmetics, and biologically active compounds and thereby achieving a significant value addition to export of new pharmaceuticals.

Session II (12.15-13.45)



15. Prof. Krishnapriya Mohanraj, Head, Department of Pharm. Analysis, Bombay College of Pharmacy, Kalina, Santacruz (E), Mumbai (Maharashtra) conducted the session on 'Investigations on utility of LC-MS/MS and related techniques on impurity profiling'.

The contents of the session included the fundamentals and case studies. The session started with the brief introduction about impurities, i.e., the definition of impurities, types of impurities and their sources. The speaker elaborated on the five types of impurities which included elements, organic compounds, polymorphs, residual solvents, enantiomers and diastereomers, and how they are detected using hyphenated techniques. Prof. Krishnapriya discussed about impurity profiling, the

need for profiling, which included sources of impurities in API and goals of impurity investigations, both process related and degradation related impurities. The session also focused on merger of techniques i.e., LC, MS, LC-MS and LC-MS/MS. Tandem mass spectrometry was explained stating the introduction, advantages and limitations of mass spectrometry. Later the types of tandem mass analyzers were discussed individually, equipment and working of triple quadrupole mass analyzer and ion-trap analyzer. The speaker explained by citing the example impurity profiling of nitrosamine, wherein different nitrosamine impurities, their names, structures and limits prescribed were mentioned. The chromatograms of the impurities and results were shown during the presentation.

Session III(14:15 to 15:45)&Session IV (16:00 to 17:30)

Micro Teaching

The session of Micro-teaching started by the formal welcome of the evaluator of the session, **Dr. M.S. Sudheesh**, Amrita Health Science Campus, Amrita Vishwa Vidyapeetham, Ponekkara, Kochi, Kerala. The basic motive behind the session was to evaluate the teaching skills of participants within the given time limit of 6 minutes.



In total 18 participants gave the presentation on different topics of their individual choice from the pharmaceutical sciences. All participants taught small topics on the selected technical subject, with their peer group as the audience. The participants actively partook in the session and presented their talk with the aid of PowerPoint Presentations. The activity, also assisted the participants in developing greater awareness of their individual differences. The resource person of the session evaluated the participants and gave valuable feedback and suggestions that can be implemented in their real classroom teaching.

Day 6 Session I (10.30-12.00)



Dr. Amit Alexander, Associate Professor, National Institute of Pharmaceutical Education and Research, Guwahati conducted the session on 'Understanding the principles of Pharmacokinetic compartmental analysis'. The session focused on the following key points:

- Two compartmental analysis
- Mathematical expression of 2-compartmental model.
- Distribution phase and elimination phase of compartment models
- Primary and Secondary Compartment equations.

Session II (12.15-13.45)



Dr. Jayant Karajgi, COO, Formulations Shilpa Medicare Ltd., Mumbai, Maharashtra

Conducted the session on 'Pharmaceuticals Packaging'.

The session focused on the key points pertaining to regulatory aspects of packaging, development of packaging part in R&D, prevention of adulteration in packaging and commercial part.

Session III (14:15 to 15:45)

21. Dr.Nitin Kumar Jain, Scientist, Department of Biotechnology, Ministry of Science and Technology, New Delhi conducted the session on ' Biosafety Regulation:



Development of Biopharmaceuticals. ' The talk covered the biosafety regulatory applicable in development of r-DNA products and high-risk category research and development work. Transparent and credible biosafety regulatory framework is the key to leverage modern biotechnology for sustainable growth and development. In India, regulatory framework for activities related to GMOs and products thereof is governed by the “Rules for the Manufacture, Use, Import, Export and Storage of Hazardous Microorganisms/Genetically Engineered Organisms or Cells, 1989” (Rules, 1989) under the provisions of the Environment (Protection) Act, 1986.

The Rules, 1989 empowers regulatory decision making for development of genetically modified organisms including crops and pharmaceuticals from research stage to large scale commercial use. The Rules are primarily implemented by Ministry of Environment & Forest and the Department of Biotechnology, Ministry of Science & Technology through various statutory committees.

The Genetic Engineering Appraisal Committee, the apex body functioning under Ministry of Environment & Forest, is responsible for the approval of activities of involving large scale use of recombinant products in research and industrial production. The Review Committee on Genetic Manipulation serviced by the Department of Biotechnology reviews research projects involving high risk category. RCGM also publishes manuals of procedure, guidelines for the regulatory processes in research and applications of genetically modified organisms.

Session IV (16:00 to 17:30)

22.Prof. B. Mishra, Departmental of Pharmaceutical Engineering and Technology, Indian Institute of Technology (BHU), Varanasi, conducted the session on 'Risk



Management of Effective Medication'. Prof. Mishra started his talk by first explaining the environmental factors such as heat, moisture, light and microbial contamination which affects the efficacy of the medicines. These factors cause instability in the medicine such as colour change, unwanted chemical reactions, etc. Prof. Mishra also highlighted the environmental factors inside the body such as meals which are co-administered with the medicines, drug-food interactions, drug-drug interactions and drug-disease interactions. Prof. Mishra also dwelt on the importance and meaning of instructions mentioned on labels of medicinal products. He elucidated the actual meaning of expiry/expiry date/best before/shelf life, etc. Some realtime examples on instability factors of medicines were also described. The session was interactive and well received by the participants



Day 7

Session I (10.30-12.00)&Session II (12.15-13.45)

The two sessions of the day were devoted to Seminar presentation by the participants. The Resource Person and Evaluator for the session was **Dr. Neeraj Upmanyu**, Registrar, National Institute of Pharmaceutical Education and Research, Hajipur. The basic motive behind the session was to provide a platform to the participants to actively engage in group teaching and learning arrangements with respect to specific topics. It not only served as a means of delivering information but also discuss pertinent issues. With interactions and discussion, the activity could focus on the analytical, evaluation and observational abilities to facilitate deeper

insight and understanding of the various topics. Seminar Presentation was done by the participants in the allotted time limit of 6 minutes. In total 19 participants gave the presentation on various recent topics. The Resource person for the session evaluated the presentations and gave feedback and suggestions to the participants.

Session III (14.15-15.45)

25. Prof. Meenakshi Bajpai, Head, Institute of Pharmaceutical Research, GLA University, Mathura, (U.P.) conducted the session on 'FDA approved medical devices(2021)'. Access to good quality, affordable, and appropriate health products is indispensable to advance universal health coverage, address health emergencies, and promote healthier populations. Without medical devices, common medical procedures like bandaging a sprained ankle, diagnosing HIV/AIDS, implanting an artificial hip or any surgical intervention would not be possible. Medical devices are used in many diverse settings, for example, by laypersons at home, by paramedical staff and clinicians in remote clinics, by opticians and dentists and by health-care professionals in advanced medical facilities, for prevention and screening and in palliative care. Such health technologies are used to diagnose illness, to monitor treatments, to assist disabled people and to intervene and treat illnesses, both acute and chronic. Today, there are an estimated 2 million different kinds of medical devices on the world market, categorized into more than 7000 generic device groups. Medical devices range from simple tongue



depressors and bedpans to complex programmable pacemakers, and closed loop artificial pancreas systems. Medical devices include in vitro diagnostic (IVD) products, such as reagents, test kits, and blood glucose meters. Certain radiation-emitting electronic products that have a medical use or make medical claims are also considered medical devices. Examples of these include diagnostic ultrasound products, x-ray machines and medical lasers. Prof. Bajpai explained the various FDA approved medical devices with their salient features.

Session IV (16:00 to 17:30)

26.



Dr. Shubhini A. Saraf, School of Biomedical & Pharmaceutical Sciences, Babasaheb Bhimrao Ambedkar University, Lucknow conducted the session on 'Molecular Pharmaceutics and Dynamics of Nanoformulation'. Prof. Shubhini Saraf discussed the potential advantages of nanoformulations in augmenting the bioavailability and therapeutic potential of drugs. Case studies were discussed at length to outline the role of molecular dynamics simulation to design tools for drug delivery applications.

Day 8

Session I (10.30-12.00)

27. Prof. Padma Devarajan, Dean-Research and Innovation, Department of



Pharmaceutical Sciences and Technology, Institute of Chemical Technology, Mumbai conducted the session on 'Designer Nanoparticles for Splenotropic Delivery – A Serendipity'. Splenotropic drug delivery systems designed to enhance splenic uptake, have immense clinical significance for intracellular infections including leishmaniasis, trypanosome, splenic TB, AIDS, malaria, and

hematological disorders such as hairy cell leukemia, idiopathic thrombocytopenic purpura, and autoimmune hemolytic anemia. The spleen receives barely 15% of an injected dose following intravenous injection of nanocarriers due to rapid clearance from the blood stream by the MPS. Splenotropy therefore demands engineering of particulate carriers that upon intravenous injection avoid clearance by hepatic Kupffer cells while permitting access and retention in the spleen. Splenotropic behavior was surprisingly displayed by lipid-polymer nanoparticles (LIPOMER) of doxycycline hydrochloride. This serendipitous finding, the science and translational aspects of this new nano DDS were discussed by Prof. Devarajan. She also discussed the application of live cell imaging in the study. The lecture was followed by an open session where the participants raised queries that were addressed by Prof. Devarajan.

Session II (12.15-13.45)

28. Dr. N.P. Yadav, Principal Scientist CSIR-Central Institute of Medical and Aromatic Plants, Lucknow (U.P.) conducted the session on 'Skin Analyzer as a Tool



for the Assessment of Severity of Psoriasis Skin'. He discussed about the application of skin analyzer tool for the calculation of PASI scoring, development of imiquimod induced Psoriasis model and application of Lavender oil for psoriasis treatment. He also discussed

about level of upregulatory cytokines in normal as well as psoriatic skin that serves as a differentiator between normal and diseased skin. He elaborated on the role of different herbal oils, and its application to cure psoriasis.

Session III (14.15-15.45)& Session IV(16.00-17.30)



29. Prof. Zulfikar Ali Bhat, Department of Pharmaceutical Sciences, University of Kashmir was the resource person for the two sessions devoted to Seminar Presentation by the participants. The session provided an opportunity to the participants to actively engage in group teaching and learning. The interactions and discussion during the activity brought a deeper insight and understanding of the various topics. Seminar

Presentation was done by the participants in the allotted time of 6 minutes. Prof. Bhat evaluated the presentations critically and gave feedback and suggestions to the participants.

Sr. No.	NAME	TITLE OF THE PRESENTATION
20.	Dr. Junaid Khan	Drugs: How they do act?
23.	Dr. Raveesha Periga	Assessment of pharmacognostical finding of <i>Myxopyrum smilacifolium</i> blume
25.	Dr. Shweta Mishra	Molecular modelling study, synthesis and pharmacological evaluation of benzimidazole
26.	Dr Vikash Budhwar	Plasma drug concentration
27.	Dr. Rajendra Sahu	Pharmacognostic characteristics and in vitro evaluation of antioxidant potential of <i>Elacoceapus ganitus</i>
28.	Dr. Ashwanee Kumar Sahu	Evaluation of phytochemistry, antioxidant, antimicrobial and pharmacological activity of corn silk
29.	Dr. Yugal Kishore Rajput	Synthesis, characterization and antimicrobial activity of pyrazole containing sulphonamide compounds.
30.	Dr. Madhulika Pradhan	Omicron-A new episode in the COVID-19 pandemic.
31.	Ms. Ratnali Bania	Microencapsulation
32.	Ms. Swabnam Khataniar	Drug stability
33.	Ms. Juti Rani Devi	Introductory approach to targeted drug delivery system
34.	Dr. Krishna Yadav	Evolution of learning
35.	Dr. Achal Mishra	Docking study of Quinoxalene derivative as selective dihydro folate reductase (DHFR) inhibitor.
36.	Dr. Anish Chandy	Strategy development of target specific drug delivery for cancer.

39.	Dr. Rajendra Jangde	Development of liposomal encapsulated quercetin for wound healing
21.	Dr. Somesh Kumar Saxena	Targeted therapy for cancer
22.	Dr. Rupal Dubey	Nanoparticles- Fascinating tool for drug delivery to brain

Day 9

Session I (10.30-12.00)



31. Dr. Ashok Omary, Senior Pharma Professional, Ex-President (Ideal Cures Pvt. Ltd.), Mumbai, Maharashtra conducted the session on 'Innovation in Pharmaceutical Dosage Forms'. Dr. Omary observed that the modern tools in drug discovery and pharmaceutical technology can simply facilitate and speed up the work. Ultimately the objective and focus have to be very clear.

The application of modern or present-day approaches will be helpful only if we have a systematic approach and understanding of the subject. Drug discovery is not a simple task, whether we talk of small molecules or big molecules (biological products, proteins, peptides, monoclonal antibodies and even biosimilars). What is practical, demonstrable and remunerative is the Innovation. The application of innovative ideas and scientific innovative approaches which are result/goal oriented can be pursued at the post-graduate and doctoral project levels. The pharmaceutical dosage forms present a very wide platform to experiment and evolve something anticipated, desired or projected. The drug discovery and technological advancements are very serious matters and may not be achieved in a short duration of 6 months to 1 or 3 years, and that too singlehandedly. There is a need to have research groups for specialized area whether it is Nanomedicines or Drug Substance and Route of Synthesis. The research must continue to a meaningful conclusion. Dr. Omary gave insights on the tools, techniques and applications for improvement, upgradation, application of technology, data retrieval and data analysis, Artificial Intelligence (AI), digitization, electronics and specific software for quick results, alternate or patent non-infringing techniques and Intellectual Property Rights (IPR). He stressed on the need for

continuous research to arrive at meaningful conclusion and protect our inventions to maintain the life cycle of the products and the inventions.

Session II (12.15-13.45)

32.Dr. Anurag Sood,EVP and Head – BRAIN, Dr. Reddy’s Laboratories, Hyderabad,



Telangana conducted the session on ‘Tools and Technologies for Drug Discovery and Development’.Dr. Anurag Sood explained that the process of drug discovery and development is resource and time intensive and it takes several years of research and millions of dollars to bring one new drug and product to commercialization. In the course of

discovery - development journey there is high attrition that further increases the overall cost and time of development. The increasing pressures of optimizing the discovery – development process and make it more efficient (for cost and time) as well as for increasing the probability of success has given impetus to developing enabling tools and technologies. There are multitude of approaches being developed and utilized on continuous basis. Dr. Soodhighlighted few methods that are gaining importance and being practiced in research and development.

Session III (14.15-15.45)

Dr. Preeti Kothiyal,Pro Vice **Chancellor** (Health Sciences), Dev Bhoomi,



Uttarakhand University, Dehradun, Uttarakhand conducted the session on ‘Renaissance in Pharmacy education – Harnessing new modes of Teaching’.Dr. Preeti Kothiyal in her address reiterated that learning needs to be practical application of knowledge and common sense. In this technology driven era and with tech savvy students, it becomes imperative to harness new modes of teaching-

learning. More so, when there is an information boom on the web, the focus should be more on grooming graduates who have nurtured critical thinking skills, creativity

and skills of problem solving. Dr. Kothiyal observed that statistics reveal that, by 2030, India will have the largest population in the world in higher education age bracket and one in every four graduates in the world will be a product of Indian Higher Education System. We could emerge as a global supplier of skilled manpower. With this backdrop, it is essential to strengthen the pedagogy with a blended approach and that the information provided in classrooms is not only 'retained' but also 'analyzed' to assess and solve complex problems. The blended teaching approach with teaching- tools like-Peer Tutoring, E- Tutoring, Online Platforms, Peer Review, Academic Audits and Faculty Development Programs. These minor changes/ incorporations in our daily practice would culminate in large changes in the profession. Harnessing new modes of teaching learning in pharmacy education will help navigate its future and move towards this bold and aspirational vision.

Session IV(16.00-17.30)

Prof. Swarnlata Saraf, Director, University Institute of Pharmacy, Pt. Ravishankar Shukla University, Raipur, (C.G.) coordinated the session on Project Presentation by



the participants. The participants were divided into teams for research project presentation at the start of the Refresher Course. The presentations were on diverse and interesting topics. The list of participants along with their group and presented topics are listed. Prof. Swarnlata Saraf evaluated the project presentation and gave valuable inputs and suggestions.

Day 10

Session I (10.30-12.00)

35.Dr. Subhash Pande, Senior Pharma Professional (Ex-Lupin, Glenmark, Zydus Cadila, Ahmedabad, Gujarat) conducted the session on



“Pharmacy Education and its Applications in Pharmaceutical Industry”. Dr. Subhash Pandey reiterated that Pharmaceutical

Science is an applied science where the balance between theory and its applications are to be understood and appreciated. Further, he stressed that the training of teachers and students should be updated with time to explore new technologies and



product management throughout its life cycle. Today the Pharma industry is growing exponentially and trained, skilled and qualified manpower is needed on continuous basis. Thus, we must accept the challenge of providing quality manpower and shift our focus from quantity and must stand by the current requirements as per emerging scenario.

Session II (12.15-13.45) and Session III (14.15-15.45)

Prof. RoopKrishen Khar, Director, B.S. Anangpuria Educational Institutions Faridabad, Haryana conducted the session on Project Presentation. The participants were divided into teams for research project presentation at the start of the Refresher Course. The group presentations were on diverse and interesting topics. The list of participants along with their group and presented topics are listed below:

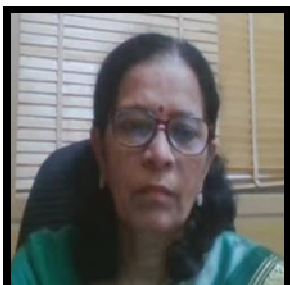
Group No.	NAME	TITLE OF THE PRESENTATION
7	Dr. Shweta Mishra	Enhancement of stability of riboflavin by formulation and evaluation of its β -cyclodextrin complexes
	Dr. Vikash Budhwar	
	Dr. Rajendra Sahu	
	Dr. Ashwanee Kumar Sahu	
8	Dr. Yugal Kishore Rajput	Preparation and Evaluation of Novel Topical Formulation for the Effective Management of Soriasis
	Dr. Madhulika Pradhan	
	Ms. Ratnali Bania	
	Ms. Swabnam Khataniar	
9	Ms. Juti Rani Devi	A comparative study of approved drugs for SARS- CoV-2 by molecular docking
	Dr. Krishna Yadav	
	Dr. Achal Mishra	
	Dr. Anish Chandy	

The resource person, Prof. R.K. Khar evaluated the project presentation and gave valuable comments and suggestions.

Session IV (16.00-17.30)

Prof. Sanju Nanda, Dean, Department of Pharmaceutical Sciences, Maharshi Dayanand University, Rohtak, Haryana conducted the session on 'Research in Cosmeceuticals with New Tools & Technologies, Enhancing Beauty with Science'.

During her talk, she observed that skin is not a wrapping paper and dwelt upon the importance of cosmetics for skin protection, nourishment and beautification. The presentation gave an overview of the applications of cosmetics, present scenario and the wide application of novel drug delivery systems in cosmetics along with the importance of herbal formulation as cosmeceuticals. During the interaction, she also dealt with the essentials for the teaching profession and the need to innovate, educate, improvise and disseminate.



Day 11

Session I (10.30-12.00)

Dr. BalaPrabhakar, Dean, School of Pharmacy & Technology Management, SVKM'sNMIMS, Mumbai conducted the session on 'Innovative approaches for drug delivery'. Dr. Prabhakar shared the various novel strategies for provide local or systemic targeted delivery including nanospheres, nanocapsules, nanotubes, liposomes, micelles, polymer nanoparticle conjugates and dendrimers. Approaches for specific delivery in the organelles and cytoplasm increase the drug loading capacity and combat against rare diseases originating from the nuclear genome and in gene therapy of mitochondria for pro-apoptotic anticancer therapy. Graphene nanoparticles, nanoconjugates and quantum dots are being developed and has grabbed the attention of many due to the surface structure of the compound along with the ability of stacking and form a layered thickness. Microarray patches



are one of the methods where the formulation is targeted through the skin and is delivered in the required dose, eliminating the pain, cold chain storage requirement and more precise delivery to immunologically rich environments. The needles are formed with help of 3-D

printing in the desired shape and size of the patches and needles. Super magnetic iron oxide nanoparticles for the specific intake and targeted attachment due to the magnetic susceptibility are loaded with drugs to give a controlled delivery of the drug from the outer layer of the drug loaded nanoparticles. Integration of artificial intelligence and machine learning in the pharmaceutical industry accelerates the processes with the help of molecular docking and deep learning modules leading to a better understanding of the possibility of optimum interaction of the drug with receptors. Micro and nanobots have been developed for targeted delivery and formed in different sizes and shapes controlled magnetically and release of the drug at the site of action. Numerous other delivery systems such as



lipoplexes and polyplexes, cubosomes, exosomes, micro-nano motors and dendrimers are also contributing to the developments. The innovative delivery systems show a future for safer and targeted delivery of drugs more efficiently and efficaciously in the management and cure of acute and chronic disorders.

Session II (12.15-13.45)

Dr. Anshuman Dixit, Scientist-E, Institute of Life Sciences, Bhubaneswar, Odisha conducted the session on 'The role of bioinformatics in current pharmaceutical research'. Dr. Dixit gave insights on Bioinformatics, the discipline that addresses the need to manage and interpret the data that in the past decade was massively generated by genomic research. This discipline represents the convergence of genomics, biotechnology and information technology, and encompasses analysis and interpretation of data, modeling of biological phenomena, and development of algorithms and statistics. Vital aspects of molecular dynamics analysis, virtual screening, protein-structure function studies with special reference to protein kinases were highlighted. Identification of drug targets, roles of RNA in cancer, development of database, drug discovery, molecular dynamics, and structure-function relationships in proteins were also illustrated with case studies.

Session III (14.15-15.45)

Prof. Indu Pal Kaur, Chairperson, University Institute of Pharmaceutical Sciences, Panjab University, Chandigarh conducted the session on 'CurPro: Wound dressing sponge (S) containing nanocurcumin (Cur) and live Lactobacillus Plantarum (Pro) for infected wounds.'

Prof. Indu Pal Kaur shared her work on solid lipid nanoparticle based drug delivery system that endeavoured to explore synergistic effect of solubilised, stabilised, slow releasing nanocurcumin (solid lipid nanoparticles; Cur) and a probiotic, Lactobacillus plantarum UBLP-40 (Pro) combination for wound healing. Sterile sponge wound dressing was developed to incorporate Cur and Pro into an optimised polymer-based sponge dressing (CurPro S). Latter, showed 560% enhanced antimicrobial effects against planktonic and biofilms of skin pathogen, Staphylococcus aureus 9144. CurPro S was confirmed to degrade and release live probiotic cells, which germinated in the wound bed. Safety and stability of the dressing was confirmed. The dressing exhibited



faster wound closure; decrease in bioburden, TNF- α , MMP-9 and LPO levels; and increase in VEGF, TGF- β and antioxidant enzymes (catalase, GSH) in comparison to Cur and probiotic alone dressings confirming a synergistic effect on multiple healing processes. During the session the hypothesis and the results obtained for this novel study

were discussed in detail.

Session IV (16.00-17.30)



Dr. Sushama Talegaonkar, School of Pharmaceutical Sciences, Delhi Pharmaceutical Science and Research University, New Delhi conducted the session on 'Adaptation of the quality by design concept in early pharmaceutical development of biopolymeric nanocarriers'. The session focused on factorial design, with design and development of

Lignin nanocarriers with the aid of the factorial design software being discussed in

detail, The role of lignin, a natural polymer was highlighted specially with reference to its potential as antioxidant, bio-adhesive, UV protectant properties, etc. Preparation, characterization and biosafety of blank lignin nanoparticles (BLNPs), impact of BLNPs in cancer cell lines and the genotoxicity studies of the of BLNPs were also discussed

Day 12

Session I (10.30-12.00)

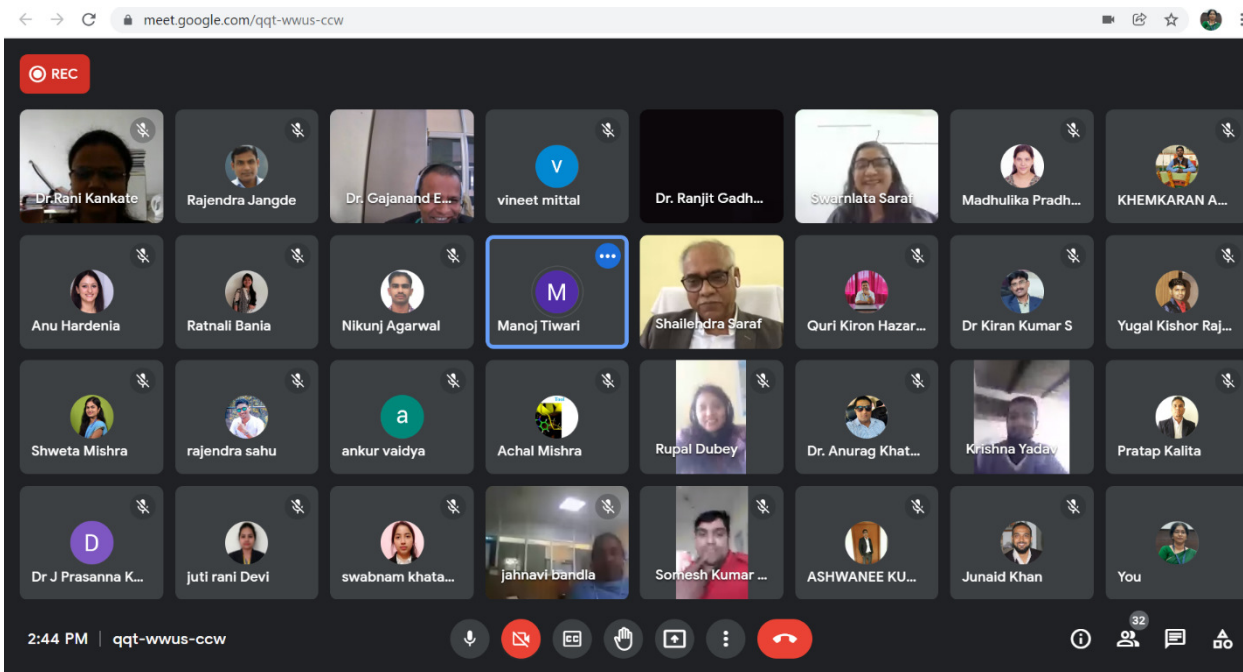


M.E. Kannan, VP & Head Pharmaceutical Technology Center, Zydus Cadila, Ahmedabad conducted the session on 'Modern Tool in Pharmaceutical Technology (Application of NIR/PAT tools in Pharmaceutical Dosage Forms)'. **The session enlightened on** the application of NIR/PAT tools in pharmaceutical dosage forms. The use of NIR/PAT tools in qualitative and quantitative analysis like raw material analysis, polymorphism study among others. Valuable insights were gained on the development of quantitative NIR model. Hot melt extrusion technique and its applications with different polymers were also elaborated upon. The interactive session resolved the doubts and queries raised by the participants.

Session II (13.45-14.45)-Valedictory Ceremony

The two-week Refresher Course culminated with the valedictory session. The session was graced by Prof. Shailendra Saraf, Prof. Swarnlata Saraf, Prof. Preeti K. Suresh, Dr. Arvind Agrawal, members of HRDC and the teacher participants. Prof. Preeti K. Suresh, Course Coordinator welcomed the gathering and presented a brief report of the program with the design and conduct of the Refresher Course. Prof. Swarnlata Saraf, Convenor of the program addressed the participants and accentuated on the role of teachers in the nation building on a sustainable basis and the need to augment their skills regularly. Prof. Shailendra Saraf, Director-HRDC, PRSU in his valedictory address congratulated the participant teachers for successful

completion of the course and expressed that the acquired knowledge and skills will be percolated to the student community and benefit their parent institutions as well. The participants of the Refresher Course registered their feedback at the end of every session on the prescribed format. Additionally, few of the participants gave their general feedback about the entire course during the valedictory program. They opined that the course was extremely informative and the invited academicians and experts as resource persons were highly resourceful and articulate during their sessions and deliberations. They appreciated that the sessions were rich in content. The suggestions given by participants to include topics like entrepreneurship in the future courses were also noted. The program concluded with the vote of thanks by Dr. Arvind Agrawal in which he extended gratitude to the esteemed guests, distinguished speakers, faculty members and teacher participants for their active participation.



REC

Swarnlata Saraf

Manoj Tiwari

Rajendra Jangde

Shallendra Saraf

ankur vaidya

Rupal Dubey

vineet mittal

rajendra sahu

Achal Mishra

KHEMKARAN A...

Dr. Gajanand En...

Dr.Rani Kankate

Anu Hardenia

Dr. Ranjit Gadha...

Yugal Kishor Raj...

Madhulika Pradh...

ASHWANEE KU...

Junaid Khan

jahnavi bandla

Somesh Kumar ...

Quri Kiron Hazar...

Shweta Mishra

Dr Kiran Kumar S

Ratnali Bania

vineet mittal has left the meeting

Nikunj Agarwal

Dr. Anurag Khat...

Krishna Yadav

Pratap Kalita

Dr J Prasanna K...

swabnam khata...

juti rani Devi

Yod

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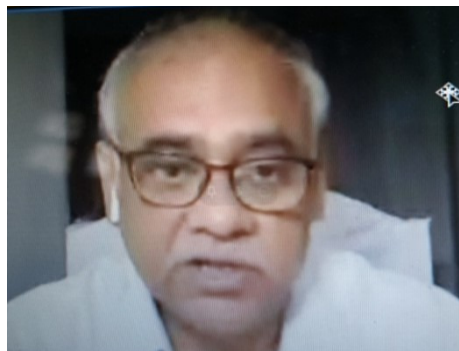
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Info, Participants (32), Chat, Settings

Organizing Team



Prof. K. L. Verma
Vice Chancellor
Pt. Ravishankar Shukla
University, Raipur (C.G.)



Dr. Shailendra Saraf
Director
HRDC, Pt. Ravishankar Shukla
University, Raipur (C.G.)



Prof. Preeti K Suresh
(Course Coordinator)
University Institute of
Pharmacy, Pt. Ravishankar
Shukla University, Raipur
(C.G.)



Prof. Swarnlata Saraf
(Convener)
University Institute of
Pharmacy, Pt. Ravishankar
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Dr. Arvind Agrawal
(HRDC Course Coordinator)
University Institute of
Pharmacy, Pt.
Ravishankar Shukla
University, Raipur (C.G.)

UGC - HRDC, PRSU, Raipur
Time Table: Refresher Course on Pharmacy
(06/12/2021 to 20/12/2021)

Multidisciplinary Refresher Course in Pharmacy (06-20 December, 2021) UGC-Human Resource Development Centre <i>In association with</i> University Institute of Pharmacy Pt. Ravishankar Shukla University, Raipur 492 010, Chhattisgarh							
Day/ Date	Session -I (10:30 to 12:00)		Session -II (12:15 to 13:45)		Session -III (14:15 to 15:45)		Session -IV (16:00 to 17:30)
Day 01 (06.12.21)	Registration Inauguration Induction		Lecture-1 Tools in the Design and Development of Drug Delivery Systems Prof. Mala D. Menon Bombay College of Pharmacy, Kalina, Santacruz (E) Mumbai		Lecture-2 Pharmacophore Mapping: A tool for rational drug designing Dr. Om Silakari Molecular Modeling Lab, Department of Pharmaceutical Sciences & Drug Research, Punjabi University, Patiala, Punjab		Lecture-3 Pharmacophore mapping: Applications Dr. Om Silakari Molecular Modeling Lab, Department of Pharmaceutical Sciences & Drug Research, Punjabi University, Patiala, Punjab
Day 02 (07.12.21)	Lecture-4 Reformulation strategies addressing unmet needs for product life cycle extension Dr. Ajay J. Khopade Vice President F R&D at Sun Pharmaceutical Industries Limited, Vadodara, Gujarat	Tea Break	Lecture-5 Pharmaceutical Technology: Bioelectronics and beyond Prof. Shubhini A. Saraf School of Biomedical and Pharmaceutical Sciences, Babasaheb Bhimrao Ambedkar University, Lucknow, 226025	Lunch Break	Lecture-6 3D Printing Methodologies and their Pharmaceutical Applications Prof. Kamla Pathak Dean, Faculty of Pharmacy University of Medical Sciences, Saifai, Etawah (U)	Tea Break	Lecture-7 Pastillation Technology for Controlled and Pulsatile Drug delivery Prof. B. Mishra Department of Pharmaceutical Engineering and Technology, Indian Institute of Technology (BHU), Varanasi-221 005.
Day 03 (08.12.21)	Lecture-8 Importance of Translational Research in Pharmaceutical Field Prof. Subheet Jain Dept. of Pharm. Sciences Guru Nanak Dev University, Amritsar, Punjab-143005	Tea Break	Lecture-9 PK/PD Modelling and Simulation Studies of Lipoprotein Based Nanoparticles and Phytochemicals Dr. Sunil Kumar Dubey General Manager Medical Research R&D Healthcare Division Emami Ltd, Kolkata (WB)	Lunch Break	Lecture-10 Drug Design and Discovery through structure-based drug design approach Dr. Sushil Kashaw Dept. of Pharmaceutical Sciences, Dr. H.S. Gour Vishwavidyalaya, Sagar (MP)	Tea Break	Lecture-11 Computational Pharmaceutics: Opportunities and Challenges Prof. Vandana Patravale Department of Pharmaceutical Sciences and Technology, Institute of Chemical Technology, Mumbai

Day 04 (09.12.21)	<p>Lecture-12 Research A Mindset: How to develop is a million dollar Q (sharing my UIPS JOURNEY chasing EXCELLENCE through liposomes)</p> <p>Prof. O. P. Katare University Institute Pharmaceutical Sciences, Panjab University, Chandigarh</p>	<p>Lecture-13 Third Decade of Twenty First Century – Challenges and Opportunities</p> <p>Prof. Ranjit Singh Vice-Chancellor Shobhit University, Gangoh, Saharanpur UP</p>	<p>Micro Teaching (1-10)</p> <p>Prof. Kanchan Kohli Director (Research & Publications) Lloyds Institute of Pharmacy and Technology Greater Noida</p>	<p>Micro Teaching (11-20)</p> <p>Prof. Kanchan Kohli Director (Research & Publications) Lloyds Institute of Pharmacy and Technology Greater Noida</p>
Day 05 (10.12.21)	<p>Lecture-14 Supercritical Fluid Technology: Modern Tool in Herbal Drug Discovery and Development</p> <p>Prof. Vimal Kumar Dean, School of Pharmacy, ITM (SLS) Baroda University, Vadodara</p>	<p>Lecture-15 Investigations on Utility of LC-MS/MS and Related Techniques on Impurity Profiling</p> <p>Prof. KrishnapriyaMohanraj Head, Department of Pharm. Analysis, Bombay College of Pharmacy, Kalina, Santacruz (E), Mumbai</p>	<p>Micro Teaching (21-30)</p> <p>Dr. M.S. Sudheesh Amrita Health Science Campus, Amrita Vishwa Vidyapeetham, Ponekkara, Kochi 682041, India.</p>	<p>Micro Teaching (31-39)</p> <p>Dr. M.S. Sudheesh Amrita Health Science Campus, Amrita Vishwa Vidyapeetham, Ponekkara, Kochi 682041, India.</p>
Day 06 (11.12.21)	<p>Lecture-16 Understanding the principles of Pharmacokinetic compartmental analysis</p> <p>Dr. Amit Alexander Associate Professor, National Institute of Pharmaceutical Education and Research, Guwahati</p>	<p>Lecture-17 Stepchild of Pharmacy Education</p> <p>Dr. Jayant Karajgi COO, Formulations SHILPA MEDICARE LTD Mumbai, Maharashtra</p>	<p>Lecture-18 Biosafety Regulation: Development of Biopharmaceuticals</p> <p>Dr. Nitin Kumar Jain Scientist, Department of Biotechnology, Ministry of Science and Technology, New Delhi</p>	<p>Lecture-19 Risk Management for Effective Medication</p> <p>Prof. B. Mishra Department of Pharmaceutical Engineering and Technology, Indian Institute of Technology (BHU), Varanasi-221 005.</p>

Multidisciplinary Refresher Course in Pharmacy (06-20 December, 2021)

UGC-Human Resource Development Centre

In association with

University Institute of Pharmacy

Pt. Ravishankar Shukla University, Raipur 492 010, Chhattisgarh

Day/ Date	Session -I (10:30 to 12:00)		Session -II (12:15 to 13:45)		Session -III (14:15 to 15:45)		Session -IV (16:00 to 17:30)
Day 07 (13.12.21)	<p align="center">Seminar (1-10)</p> <p>Dr. Neeraj Upmanyu Registrar National Institute of Pharmaceutical Education and Research, Hajipur</p>	—	<p align="center">Seminar (11-20)</p> <p>Dr. Neeraj Upmanyu Registrar National Institute of Pharmaceutical Education and Research, Hajipur</p>	—	<p align="center">Lecture-20 FDA-Approved Medical Devices (2021)</p> <p>Prof. Meenakshi Bajpai Head, Institute of Pharmaceutical Research GLA University, Mathura</p>	—	<p align="center">Lecture-21 Molecular Pharmaceutics and dynamics of nanoformulations</p> <p>Prof. Shubhini A. Saraf School of Biomedical and Pharmaceutical Sciences, Babasaheb Bhimrao Ambedkar University, Lucknow, 226025</p>
Day 08 (14.12.21)	<p align="center">Lecture-22 Designer Nanoparticles For Splenotropic Delivery - A Serendipity Prof. Padma Devarajan Department of Pharmaceutical Sciences and Technology, Institute of Chemical Technology, Mumbai</p>	—	<p align="center">Lecture-23 Skin analyser as a tool for the assessment of severity of psoriasis skin</p> <p>Dr. N. P. Yadav Principal Scientist CSIR-Central Institute of Medicinal and Aromatic Plants, PO CIMAP, Lucknow</p>	—	<p align="center">Seminar (21-30)</p> <p>Prof. Zulfikar Ali Bhat Department of Pharmaceutical Sciences, University of Kashmir Hazratbal, Srinagar - 190006</p>	—	<p align="center">Seminar (31-39)</p> <p>Prof. Zulfikar Ali Bhat Department of Pharmaceutical Sciences, University of Kashmir Hazratbal, Srinagar - 190006</p>
Day 09 (15.12.21)	<p align="center">Lecture-24</p> <p>Innovation in Pharmaceutical Dosage Forms Dr. Ashok Omray Senior Pharma Professional Ex-President (Ideal Cures Pvt. Ltd.), Mumbai</p>	—	<p align="center">Lecture-25</p> <p>Tools and Technologies for Drug Discovery and Development Dr. Anurag Sood EVP and Head - BRaIN <u>Dr. Reddy's Laboratories</u> Hyderabad, Telangana</p>	—	<p align="center">Lecture-26</p> <p>Renaissance in Pharmacy Education - Harnessing New Modes of Teaching Learning</p> <p>Dr. Preeti Kothiyal Pro Vice-Chancellor (Health Sciences) Dev Bhoomi Uttarakhand University, Dehradun</p>	—	<p align="center">Project Presentation (1-3)</p> <p>Prof. Swarnlata Saraf Director University Institute of Pharmacy Pt. Ravishankar Shukla University, Raipur, Chhattisgarh</p>

<p>Day 10 (16.12.21)</p>	<p>Lecture-27 Pharmacy Education and its Applications in Pharmaceutical Industry</p> <p>Dr. Subhash Pande Senior Pharma Professional Ex Lupin, Glenmark, Zydus Cadila, Ahmedabad, Gujarat</p>	<p>—</p>	<p>Project Presentation (4-6)</p> <p>Prof. RoopKrishen Khar Director, B.S. Anangpuria Educational Institutions Faridabad (Haryana)</p>	<p>Project Presentation (7-9)</p> <p>Prof. RoopKrishen Khar Director, B.S. Anangpuria Educational Institutions Faridabad (Haryana)</p>	<p>Lecture-28 Research in Cosmeceuticals: Need for Consciousness in Science</p> <p>Prof. Sanju Nanda Dept. of Pharm. Sciences, M.D. University, Rohtak (Haryana)</p>
<p>Day 11 (17.12.21)</p>	<p>Lecture-29 Innovative approaches for drug delivery</p> <p>Dr. Bala Prabhakar Dean, School of Pharmacy & Technology Management, SVKM's NarseeMonjee Institute of Management Studies (NMIMS), Mumbai</p>	<p>—</p>	<p>Lecture-30 The role of bioinformatics in current pharmaceutical research</p> <p>Dr. Anshuman Dixit Senior Scientist Institute of Life Sciences, Bhubaneswar</p>	<p>Lecture-31 CurPro S: Wound dressing sponge (S) containing nanocurcumin (Cur) and live Lactobacillus Plantarum (Pro) for infected wounds</p> <p>Prof. Indu Pal Kaur Chairperson University Institute Pharmaceutical Sciences, Panjab University, Chandigarh</p>	<p>Lecture-32 Adaptation of the quality by design concept in early pharmaceutical development of biopolymeric nanocarriers</p> <p>Dr. Sushama Talegaonkar School of Pharm. Sciences Delhi Pharmaceutical Science and Research University, PushpVihar, Sector 3, New Delhi-17</p> <p>Test (MCQ)</p>
<p>Day 12 (20.12.20)</p>	<p>Lecture-33 Modern Tools in Pharmaceutical Technology (Application of NIR/PAT Tools & Application of Hot Melt Extrusion Techniques)</p> <p>M.E. Kannan VP & Head Pharmaceutical Technology Center, Zydus Cadila, Ahmedabad</p>	<p>—</p>	<p>Valedictory & Concluding Session</p>		

Refresher Course – Pharmacy

(06.12.2021 to 20.12.2021)

Participants List

Course Coordinator - Prof. Preeti K Suresh

S. No.	Name of Participants	Email Address	Mobile Number	Photo	Name of College	Affiliated University
01.	Dr. PayalDande	payal.dande@nmi ms.edu	0992345636 9		SVKM's NMIMS, School of Pharmacy & Technology Management Shirpur, Dhule, (M.H.)	SVKM's NMIMS,
02.	Dr. S. Kiran Kumar	dr.kirankumar.mp hphd@gmail.com	9885890330		JJ College of Pharmacy, Maheshwaram, Telangana	Jawaharlal NehruTechnological University Hyderabad,Hyderabad, Telangana
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04.	Pratap Kalita	pratapkhalita0@gm ail.com	9859697207		Pratiksha Institute Of Pharmaceutical Sciences, Guwahati, Assam	Assam Science & Technology University, Guwahati, Assam
05.	Quri Kiron Hazarika	qurikiron25@gma il.com	6001129286		Pratiksha Institute of Pharmaceutical Sciences, Guwahati, Assam	Assam Science & Technology University, Guwahati, Assam
06.	Dr. Sweety Lanjhiyana	slanjh@gmail.co m	0982655554 6		School of Pharmacy, Chouksey Engineering College, Bilaspur, (C.G.)	Chhattisgarh SwamiVivekanand Technical University, Bhilai, (C.G.)
07.	KhemkaranA hirwar	Khempharma@ya hoo.co.in	8319142986		School of Pharmacy, Sant Gahira Guru University, SargujaAmbikapur, (C.G.)	Sant Gahira Guru University, SargujaAmbikapur, (C.G.)
08.	Ankur Vaidya	ankur_vaidya2000 @yahoo.co.in	8755046155		Pharmacy College Saifai, Uttar Pradesh University of Medical Sciences, Saifai, Etawah, (U.P.)	Uttar Pradesh University of Medical Sciences, Saifai, Etawah, (U.P.)
09.	Dr. Gajanand Engla	gajanand54@gma il.com	9926816493		School of Pharmacy, Devi AhilyaUniversity , Indore, (M.P.)	Devi Ahilya University, Indore, (M.P.)
10.	Dr. Ranjit Vinayak Gadhave	ranjitgadhave@g mail.com	9763444689		School of Pharmacy, MIT World Peace University, Pune, (M.H.)	Dr. Vishwanath Karad MIT World Peace University, Pune, (M.H.)
11.	Dr. Rani ShantaramKa nkate	ranipharmacy@g mail.com	9503058875		MET'S Institute of Pharmacy, Bhujbal Knowledge City, Nashik, (M.H.)	Savtribai Phule Pune University, Pune, (M.H.)
12.	Dr. Upasana Yadav	upasana.yadav@it mbu.ac.in	9687547651		ITM School of Pharmacy, Paldi, Gujarat	ITM(SLS) Baroda University, Paldi, Gujarat

S. No.	Name of Participants	Email Address	Mobile Number	Photo	Name of College	Affiliated University
13.	Nikunj Agarwal	nikunj7861@gmail.com	8770576128		United Institute of Pharmacy, Naini, Prayagraj, (U.P.)	Dr. A.P.J. Abdul Kalam Technical University, Lucknow, (U.P.)
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Refresher Course – Commerce and Management
(11.11.2021 to 25.11.2021)

Participants List
Course Coordinator - Prof. A.K. Shrivastav
Chairperson and Reporter List

S. No.	Date	Session I and II		Session III and IV	
		Chairperson Session I (10:30 to 12:00)	Reporter Session II (12:15 to 13:45)	Chairperson Session III (14:15 to 15:45)	Reporter Session IV (16:00 to 17:30)
1	06.12.2021	Dr PayalDande	Dr.S.Kiran Kumar	Dr.J.Prasanna Kumari	Pratap Kalita
2	07.12.2021	Quri Kiron Hazarika	Dr Sweety Lanjhiyana	KHEMKARAN AHIRWAR	Ankur Vaidya
3	08.12.2021	Dr. Gajanand Engla	Dr. Ranjit Vinayak Gadhawe	Dr.RaniShantaramKankate	Dr. Upasana Yadav
4	09.12.2021	Nikunj Agarwal	Sunil Kum ar Dwivedi	Dr. Anu Hardenia	RajashakarPerusomula
5	10.12.2021	Dr. Anurag Khatkar	Dr. JahnviBandla	Vineet Mittal	Mohammed Junaid Khan
6	11.12.2021	Somesh Kumar Saxena	Dr. Rupal Dubey	Dr. RaveeshaPeeriga	Dr. Sudha Vengurlekar
7	13.12.2021	Shweta Mishra	Dr. Vikas Budhwar	Rajendra	Ashwaneer Kumar Sahu
8	14.12.2021	Yugal Kishor Rajput	Madhulika Pradhan	Ratnali Bania	Ms. SwabnamKhataniar
9	15.12.2021	Juti Rani Devi	Dr. Rajendra Kumar Jangde	Dr.S.Kiran Kumar	Dr PayalDande
10	16.12.2021	Pratap Kalita	Ajay Kumar	Dr Sweety Lanjhiyana	Quri Kiron Hazarika
11	17.12.2021	Ankur Vaidya	KhemkaranAhirwar	Ashish Kumar	Dr. Gajanand Engla
12	20.12.2021	Dr. Upasana Yadav	Dr.RaniShantaramKankate	Dr. Achal Mishra	Anish Chandy

Assessment Criterion and Marking:

Multiple-choice objective tests:	30
Seminars / participant presentation:	15
Project / survey / others:	20
Micro-teaching / participation:	10
Holistic response:	25
Total:	100

Grading pattern (based on Marks)

- A+ : 85 percent and above
- A : 70 percent to less than or equal to 84 percent
- B : 60 percent to less than or equal to 69 percent
- C : 50 percent to less than or equal to 59 percent
- F : Below 49 percent

Those teacher participants who score F grade are required to repeat the program after a gap of one year without financial commitment to UGC-HRDC.

Online Delivery Platform: GOOGLE MEET

