

Quality Improvement Programmes held at MCOPS

Manipal College of Pharmaceutical Sciences (MCOPS), a constituent college of Manipal University, conducted two AICTE- sponsored quality improvement programmes in June and July 2014. The first of these was between 16 and 28 June with the theme- Management of Innovative Drug Development. The second one had the theme: Discovery, Development and Design of Drugs from Nature. It was held between 14 and 26 July.

QIP 1

Dates: 16 -28 June 2014

Theme: Management of Innovative Drug Development

The departments of Pharmaceutical Quality Assurance, Pharmaceutical Chemistry and Pharmaceutical Management had the responsibility to co-ordinate the QIP, with each department having to conduct programmes for four days.

16 to 19 June 2014: Department of Pharmaceutical Quality Assurance:

Dr. Krishnamurthy Bhat (Head of the department) gave an overview of the programme under his department.

Mr. B Babu of JSS College of Pharmacy, Ooty delivered a talk on the role of LCMS in drug discovery. In the afternoon session, there was a demonstration by two faculty members of the host department, Dr. Prashant Musmade and Mr. Swapnil J Denge, on extraction techniques for bioanalysis. They also demonstrated the working of DSC.

Three lectures were delivered during the morning session of Day 2. Dr. Prashant Musmade spoke on LC and the optimization of analytical and bioanalytical methods. In his talk on Open Lab, Mr. B S Muddukrishna (MCOPS) detailed on the need of the open lab for the present day industrial scenario. The third talk of the morning was from Mr. Mohan Kalaskar (RC College of Pharmaceutical Sciences, Shirpur). His talk was on research approaches to herbal drugs and methods of isolation of phytoconstituents. The afternoon was devoted to demonstration of the instrumentation and techniques of HPLC and HPTLC. Dr. Sajjad Hussein and Mr. Muddukrishna were the resource persons.

Three faculty members of the department- Dr. P C Jagadish, Dr. Sudhir Moorkoth and Dr. Sajjad Hussein- delivered talks on the morning of the third day (18 June). While Dr. Jagadish talked on "Ionization and analyzers in Mass Spectroscopy", Dr. Moorkoth spoke on Biosimilars in US markets. Dr. Hussein dealt with the regulatory scenario of nano medicine in developed market. In the afternoon, Dr. Moorkoth demonstrated the working of LCMS.

Three lectures were delivered on the fourth day by faculty of Quality Assurance Department. Dr. S G Vasantharaju spoke on the current perspective and

regulatory status of orphan drugs. Mr. Swapnil Dengle described the characterisation of amorphous pharmaceuticals while his colleague Dr. Sajjad Hussein dealt with the dos and don'ts in liquid chromatography. In the afternoon, a demonstration of GCMS and FTIR was made by Dr. Vasantharaju.

20 to 24 June: Department of Pharmaceutical Chemistry

On Day 1 (20 June), Dr. Alex Joseph (Associate Professor, MCOPS) was the first speaker on behalf of the department. His talk titled, "Drug repositioning: Teaching new tricks to old dogs" was the new uses of established drugs. Following this talk, the Head of the department, Dr. G Gautham Shenoy delivered a lecture on the emergence of peptide-based drugs and peptides in drug targeting. Bioinformatics is an upcoming field with extensive application in biological and health sciences. Mr. Manoj Bhat (Manipal School of Life Sciences-MSLS) gave a talk on bioinformatics and its use in drug discovery. Mr. Aravind Pai (Assistant Professor, MCOPS) gave an update on discovery and development of anticancer drugs.

There was a demonstration on the utility of Sci-Finder database in drug discovery. Mr. Manish from Sci-Finder Edge gave the demonstration.

The second day (21 June) began with a talk from Ms. Ruchi Verma (Assistant Professor, MCOPS) on recent developments in tuberculosis research, while the next speaker, Dr. R S Jeyaprakash (Assistant Professor, MCOPS) spoke on recent activities in the field of drug development for malaria. For any drug candidate to become a useful medicine, it should have proper physicochemical properties. Dr. G Varadaraj Bhat (Associate Professor, MCOPS) dealt with this issue in his talk. Managing metabolic disorders is a complex and hard task. Dr. Ashok Tiwari (Senior Scientist, IICT, Hyderabad) delivered a talk on "Research towards managing hyperglycaemic metabolic overload." Mr. Aravind Pai demonstrated "Parallel Synthesis" as applied to drug molecules in the afternoon session.

The third day (23 June) was devoted to discuss newer methods in drug discovery such as protein preparation, docking studies and analysis of results. Dr. Ravikumar and Dr. A Rathore were the resource persons. The duo then demonstrated the Schrodinger Software to provide the participants with hands-on experience.

On Day 4 (24 June), the first speaker was Dr. Satish Rao (MSLS). He explained the *in vitro* methods of toxicity profiling of new drug candidates. Later, Dr. Suvarna G Kini (Associate Professor, MCOPS) spoke on the innovations in drug discovery. Senior faculty member of the department, Mr. P V R Chowdary discussed the recent developments in the management of hypertension. The last speaker of the session, Mr. Vijayabhaskar (MCOPS) dealt with the development of beta secretase inhibitors as possible treatment for Alzheimer's disease.

Ms. Sukriti Nigam demonstrated the working of cyclic voltameter and explained its utility in drug discovery.

25 to 28 June: Department of Pharmacy Management

The first day's programme began with a talk from Dr. N Udupa (professor, pharmacy management) on Nanotechnology in Healthcare. He detailed how this technology can bring extensive benefit in the field of healthcare. Dr. D Sreedhar (Head of the department) delivered a lecture on "Incremental Innovations in Pharmaceutical Industry." Pharma companies often commit blunder in their anxiety to promote blockbuster drugs. Dr. Veerendra Ligade (assistant professor) brought out these aspects of drug promotion and advertisements in his lecture. The afternoon session was devoted to presentation of case studies and discussion on them.

Dr. Anantha Nagappa Naik (professor) was the first speaker on Day 2. He discussed the subject of pharmaceutical care in his talk titled, "Pharmaceutical Care – the missing link in therapeutics." Mr. Pradeep Muragundi of the same department dealt with cost effectiveness of innovative drugs in his lecture. Again, as on the first day, the afternoon session was used for case studies and discussions.

Dr. K G Rajendran (Eris Lifesciences, Ahmedabad) gave a talk on "Disease mongering and drug marketing." After his lecture, the participants were taken to the instrumentation lab in Manipal Institute of Technology for a demonstration on NMR spectroscopy. Research scholars, Mr. Uday Venkat and Mr. Asim Priyendu conducted the proceedings of the afternoon on the third day through HRQL activity.

The programmes under the aegis of the department got over the morning session on the fourth day. Two lectures were delivered in the available time. The first was from Dr. Ravindra Rao (MIM, Manipal), who spoke on the innovative marketing strategies of drug companies. The second lecture was from Mr. Vasudeva Shenoy. He dwelt on the problems in clinical research and possible solutions to the problems. Certificates were distributed to the participants in a brief ceremony after the conclusion of the talks.

QIP 2

Dates: 14 to 26 July 2014

Theme: Discovery, Development and Design of Drugs from Nature

On 14 July, Dr. G K Prabhu, Registrar, Manipal University inaugurated the 12-day QIP in the presence of Dr. C Mallikarjuna Rao (principal), Dr. M Sreenivasa Reddy (vice principal) and Dr. C S Shreedhara (professor and head of pharmacognosy department).

14 to 17 July: Department of Pharmacognosy

Dr. Sathyanarayana (principal, Muniyal Institute of Ayurvedic Medical Sciences) was the first speaker. He talked on the concept of bioavailability and explained the role of bioenhancers in Ayurveda and contemporary research. A demonstration on HPLC was made in the afternoon by Mr. Raviraj (research scholar)

Herbal drug standardization was the topic on which two faculty members of the department, Dr. Richard Lobo and Dr. Ashwath Ram gave their lectures. Dr. Saleemulla Khan's was the third lecture of the morning session. He dealt with high-throughput screening. All the talks received approbation from the participants.

The participants were taken to Alva's Medicinal Garden and herbal formulations manufacturing at Mijar, about 45km from Manipal in the afternoon session. The well-maintained garden has over 250 species of medicinal plants. Delegates got first hand information on the type of preparations made and the processes employed at the manufacturing unit.

The ocean offers a huge treasure of drugs. Dr. Manjunath Setty (professor) gave an exhaustive account of the drugs and the therapeutic potential that waits to be exploited. It was then the turn of Mr. Vasudev Pai to enlighten the participants on the herbs that could be employed to treat dementia.

Heavy metals are very toxic and must be properly removed from plant drugs. The process is termed phytoremediation. Dr. Smitha Hegde (professor, St. Aloysius College, Mangalore) gave an excellent talk on this topic.

Dr. Saleemulla Khan conducted the demonstration on the working of the autoanalyzer in the afternoon session.

The fourth and final day of the programme under Pharmacognosy department began with Dr. K S Chandrashekhar. His talk was on "Bioactivity-guided Fractionation". Following this, there was a talk on the role of X-ray crystallography in drug design from Dr. Abdul Ajees (Department of Atomic and Molecular Physics, Manipal Institute of Technology). Dr. A V Bhandarkar (KLE

College of Pharmacy, Hubli) was the third speaker of the morning. He spoke on extraction of nutraceuticals from plants. The programme wound up with a demonstration of HPTLC by Ms. Shilpi Chaudhary (research scholar).

18 to 22 July: Department of Pharmaceutical Biotechnology

The session under the auspices of the department of pharmaceutical biotechnology (PBT) got under way on 18 July with a talk from Dr. Girijasankar (professor, College of Pharmaceutical Sciences, Andhra University). He gave an overview of Biosurfactants with lucid explanation on the definition, concepts and advantages of microbial biosurfactants over chemical surfactants. Dr. V M Subrahmanyam (professor, PBT, MCOPS) followed it up with a talk on large-scale production of biosimilars and the innovations in production technologies. Dr. J Venkata Rao (professor and head, PBT, MCOPS), who delivered the last lecture of the morning spoke on soil screening for exploration of promising microbial metabolites. Besides narrating his experience and expertise in the field, Dr. Rao also apprised the participants of the work done in his department in the recent years.

A two-hour talk from Dr. Anita Krishnan (senior scientist and head, Bioanalytical Division, Lupin, Pune) on quality control aspects of Biosimilars pertaining to industry was the feature of the morning session on Day 2. Another senior scientist, Mr. Shashank Kumar (Biogenomics, Mumbai) detailed the road map to Biosimilars in his talk.

The faculty of the department were the resource persons on the third day. Dr. Jesil Mathew (associate professor) gave an exhaustive account of the emerging trends in probiotics. Ms Angel Alex (assistant professor) spoke on pharmacogenomics in drug discovery while Mr. Venkatesh Kamath (assistant professor) dealt with the biotechnological markets in India, particularly in the pharmaceutical sector.

On the fourth day, there were lectures from Mr. Girish Pai (assistant professor, pharmaceuticals department, MCOPS), Mr. Venkatesh Kamath and Dr. V M Subrahmanyam. Mr. Pai spoke on the development of good products bereft of market complaint and Mr. Kamath dwelt on antibiotic use, resistance development and the consequences. Dr. Subrahmanyam talked about the enzyme chitinase and explained the ways to deal with this enzyme.

The afternoon session on each day was earmarked for demonstrations. Experiments on cell and molecular biology, bioprocess engineering and microbiology were conducted under the supervision of Ms. Angel Alex and Mr. Venkatesh Kamath. Research scholars of the department- Narayanan, Hitesh and Mradul- gave a helping hand.

23 to 26 July 2014

Department of Pharmaceutics

Dr. K B Koteshwara (Professor and Head of the department) was the first speaker on Day 1. His topic was, "Drugs from Nature- Then and Now". He gave several examples to press home his points that plant drugs, although known since antiquity, still have a big role in modern therapeutics. A talk from Dr. Shaila Lewis followed, which dealt with techniques to improve oral delivery of phytochemicals. The use of planetary ball mill and working of supercritical fluid particle generator were demonstrated during the afternoon session. Mr. Lalith Kumar (assistant professor, pharmaceutics) and Mr. Muthukumar carried out the demonstrations.

Three lectures from faculty of the department were held on the morning of Day2. Dr. Srinivas Mutalik (associate professor) dealt with novel delivery of phytochemicals while Dr. Mahalaxmi R (associate professor) spoke on reverse pharmacology. Dr. Usha Y Nayak (assistant professor) talked about herbal biosciences. In the afternoon, there were demonstrations by research scholars Roopesh and Pallavi, on the use of sophisticated instruments such as Zetasizer and SPF analyzer.

Dr. R Nagaraju, a professor from Padmavathi Women's University Tirupati began the proceedings of Day 3 with a lecture on strategies to be adopted for drug discovery from natural products. Later, a faculty member from the host department, Dr. Anup Naha spoke on natural oils, which are used for self-emulsifying drug delivery systems. Demonstration on the making of nanosuspension was conducted in the afternoon.

Two guest speakers from industry were the resource persons for the morning's proceedings on Day 4. Dr. G Subramanian (Senior Scientist, Novartis, Hyderabad), who began the session, explained how industry would proceed from discovery stage to product development. Dr. Sandeep Verma (Himalaya Drug Company) spoke on "Cell Biology in pursuit of Herbal Drug Development", with a special mention on anti-aging skin products.

The valedictory function was held in the afternoon. Certificates were distributed to the participants.