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CH S 504: Medicinal and Natural Products Chemistry

COURSE OUTCOME:

- Students will gain an understanding on the classification and nomenclature of drugs, modern theories of drug action and drug design.
- Students will able to know classification, synthesis and mode of action of antipyretic analgesis drugs, general anesthetics, local anesthetics, cardiovascular drugs, antineoplastic agents and antiviral drugs with suitable examples.
- Students will get a good understanding of isolation, classification,
- methods of structure elucidation and synthesis of various types of alkaloids, terpenoids and steroids with suitable examples.

UNIT- I:

[12 Hours]

Drugs: Introduction, Classification and nomenclature of drugs. Theories of drug action- Occupancy theory, Induced fit theory and Perturbation theory. Analogues and Prodrugs, Factors governing drug design. Rational approach to drug design, Variation method of drug designing, Physico-Chemical factors, stereochemistry and biological activities. Factors governing the ability of drugs.

Antipyretic Analgesics: Classification, synthesis & mode of action of Phenacetin, Aspirin, Cinchophen, Phenazone and Mefenamic acid.

General Anesthetics: Introduction and classification, synthesis & mode of action of methoxy fluorane, Thiopental sodium and Fentanyl citrate.

Local anesthetics: Introduction and classification, synthesis & mode of action of benzocaine, α -Eucaine, Lignocaine hydrochloride and Dibucaine hydrochloride.

UNIT- II:

[12 hours]

Cardiovascular drugs: Introduction & classification, Synthesis & mode of action of Hydralazine, Methyldopa, Diazoxide, Procainamide, Propranolol, Prenylamine.

Antimalarials: Introduction and classification, Synthesis & mode of action of Chloroquinephosphate, Pamaquine and pyrimethanin.

Antineoplastic agents: Introduction and classification, Synthesis & mode of action of Mechlorethamine hydrochloride, Busalfan triethylenemelamine, Methotrexate and

Flurouracil. Antiviral drugs: Introduction, classification, Synthesis & mechanism of action of Methisazone, Idoxuridine and Amantidine hydrochloride.

UNIT- III:

[12 Hours]

Alkaloids: Isolation, classification and general methods of structure elucidation. Structure and synthesis of Papaverine, Adrenaline and Reserpine.

Terpenoids: Introduction, classification, isoprene rule and methods of structure determination. Structure and synthesis of Geraniol, Menthol, α -Pinene, Camphor and Zingiberene.

Steroids: Introduction, Blanc's rule, Chemistry of Cholesterol, Oestrone, Progesterone and Androsterone.

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CH S 505: BIOORGANIC CHEMISTRY

COURSE OUTCOME:

Students will be able to:

- Understand the configuration and conformation of monosaccharides, chemistry of important derivatives of monosaccharides, structure, synthesis, industrial and biological applications of disaccharides, general methods of determination of polysaccharide structures, photosynthesis, fermentation, structure and industrial applications of polysaccharides.
- Explain the peptide bond formation, synthetic protocol for peptides, solution and solid phase peptide synthesis, Methods of peptide structure determination, different types protein structures, non-steroidal hormones, nucleosides, nucleotides,
- Synthesis of nucleosides, nucleotides and polynucleotides, structure and functions of nucleic acids.
- Learn the classification, nomenclature, sources, deficiency diseases, biological functions and chemistry of Vitamin A1, B3, B5, C and K1.
- Know the classification and chemistry of antibiotics like Penicillin V, Streptomycin, chloramphenicol and tetracyclins

UNIT I

[12 Hours]

Carbohydrates Configuration and conformation of (D & L) monosaccharides, Hudsons rule, Mutarotation, Anomeric effect, Epimerization. Chemistry of important derivatives of monosaccharides: Glycosides (ethers, esters, acetals, ketals), deoxysugars, aminosugars, Structure of disaccharides-maltose, cellobiose and sucrose, Industrial & biological applications. General methods of structural degradation of polysaccharides- methylation &

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Resource Persons



Dr. Ram Bhat
Sr. Director

Millennium Research Laboratories, Inc, USA



Dr. Bhaskar Naik
Founder & MD., Petropath Ltd.,
Owner of Naik Laboratories, Bengaluru



Dr. Vijayaraj K. K.
Senior Manager

R&D, Jubilant OraxImago, Canada



Sri. Gokuldas Nayak
Joint Director,
Dept. of Industries & Commerce
Govt. of Karnataka



Dr. V. Pardhasaradhi

VP and Agrosiences Business Unit Head
Eurofins Advinus Ltd., Bengaluru



Dr. Shridhara K.
Technical Coordinator
ArkGen Pharma Pvt. Ltd., Bengaluru



Dr. Shashidhar

Director
Kohlen Laboratories LLP, Mysore

Patron

Prof. P. S. Yadapadithaya, Hon'ble Vice Chancellor

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Program Schedule

Thursday, 17-12-2020

- 10.00am-10.30am Inauguration
- 10.30am-11.30am **Lecture 1: Dr. Ram Bhat, Sr. Director, Millennium Research Laboratories, Inc, USA**
Title The Next Challenges and Opportunities
- 11.45am-12.45pm **Lecture 2: Dr. Bhaskar Naik, Founder & MD., Petropath Drilling Fluids India Pvt Ltd, Owner of Naik Laboratories, Bengaluru**
Title Small & Medium Size Enterprise Opportunities for Chemistry Graduates

Friday, 18-12-2020

- 09.00am-10.00am **Lecture 3: Dr. Vijayaraj K. K., Senior Manager R&D, Jubilant Draximage, Canada**
Title Molecular Imaging & Wonderful Opportunities for Chemistry Professionals
- 10.15am-11.15am **Lecture 4: Dr. V. Pardhasaradhi, Vice President – Agrosience Services Eurofins Advinus Limited, Bengaluru**
Title Environmental Risk Assessment of Chemicals
- 11.30am-12.30pm **Lecture 5: Dr. Shridhara K, Technical Coordinator ArkGen Pharma Pvt., Ltd., Bengaluru**
Title How to become a successful Entrepreneur

Saturday, 19-12-2020

- 10.30am-11.30am **Lecture 6: Sri. Gokuldas Nayak, Joint Director Dept. of Industries & Commerce, Govt. of Karnataka**
Title State Government Support to MSMEs
- 11.45am-12.45pm **Lecture 7: Dr. Shashidhar, Director, Kohlen Laboratories LLP, Mysore**
Title Employee to entrepreneur-taking the leap
- 12.45pm-01.15pm Valedictory



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Resource Persons

 Dr. Ram Bhat Sr. Director Millennium Research Laboratories, Inc. USA	 Dr. Bhaskar Naik Founder & MD., Petropath Ltd. Owner of Naik Laboratories, Bengaluru	 Dr. Vijayaraj K. K. Senior Manager R&D, Jubilant Draximags, Canada
 Dr. V. Pardhasaradhi VP and Agrotech Business Unit Head Eurestis Advinus Ltd., Bengaluru	 Sri. Gokuldas Nayak Joint Director Dept. of Industries & Commerce Govt. of Karnataka	 Dr. Shridhara K. Technical Coordinator ArkGen Pharma Pvt. Ltd., Bengaluru
 Dr. Shashidhar Senior Kohlen Laboratories LLP, Mysuru	Patron Prof. P. S. Yadapadithaya, Hon'ble Vice Chancellor	
Prof. Boja Poojary Convener	Prof. G. K. Nagaraja Chairman	Sri K. Raju Mogaveera, IAS Registrar
Organizing Committee		
Prof. Balakrishna Kalluraya	Prof. B. Narayana	Prof. B. Vishalakshi
Prof. Jagadeesh Prasad D.	Dr. M. R. Maddani	

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12.45pm-01.15pm	Valedictory

Department of Studies in Chemistry, Mangalore University and Department of Industries & Commerce, Government of Karnataka, Mangalore District Industries Centre jointly organised an international webinar on Prospectives of Entrepreneurship for Chemists (PEC 2020) during December 17 - 19, 2020.

As the title of webinar indicates, this webinar was mainly focussed on enlightening the prospectives of entrepreneurship to chemists. In this context, Eminent Scientists from various industries and organizations across India and abroad were invited as resource speakers to deliver the lectures.

Day 1 activities were initiated by inaugurational function. Sri. Gokuldas Nayak, Joint Director, Dept. of Industries & Commerce, Govt. of Karnataka was our guest of honor. Prof. P. S. Yadapadithaya presided over the Inauguration function on 17th December 2021. After the Inauguration, Dr. Ram Bhat, Sr. Director, Millennium Research Laboratories, Inc, USA, delivered the lecture on 'The Next Challenges and Opportunities'. The 2nd lecture was delivered by Dr. Bhaskar Naik, Founder & MD., Petropath Drilling Fluids India Pvt

Ltd, Owner of Naik Laboratories, Bengaluru on the topic 'Small & Medium Size Enterprise Opportunities for Chemistry Graduates'.

On Day 2, Dr. Vijayaraj K. K., Senior Manager R&D, Jubilant DraxImage, Canada delivered the lecture on 'Molecular Imaging & Wonderful Opportunities for Chemistry Professionals'. Subsequently, Dr. V. Pardhasaradhi, Vice President – Agrosience Services, Eurofins Advinus Limited, Bengaluru presented on the topic 'Environmental Risk Assessment of Chemicals'. The 3rd lecture on Day 2 was presented by Dr. Shridhara K., Technical Coordinator, ArkGen Pharma Pvt., Ltd., Bengaluru on 'How to become a successful Entrepreneur?'

On Day 3, the first lecture was given by Sri. Gokuldas Nayak, Joint Director, Dept. of Industries & Commerce, Govt. of Karnataka on the topic 'State Government Support to MSMEs'. Later on, Dr. Shashidhar, Director, Kohlen Laboratories LLP, Mysore delivered the lecture on 'Employee to entrepreneur-taking the leap'.

Faculties of various institutions, Graduate and Post graduate chemistry students, Guest faculties and other invitees participated in the webinar. Overall around 300 participants benefited from this webinar. Feedback from participants showed that, they enjoyed the webinar and appreciated all the resource persons and lectures delivered. All the resource persons were very happy to interact with participants. Finally the webinar ended up with valedictory program.

