

MARINE PHARMACOLOGY

Objectives

- To understand the concepts of Pharmacodynamic and pharmacokinetics
- To identify the isolation techniques
- To understand the Pharmacological screening and evaluation of drugs
- To analyse drug discovery, drug designing
- To acquire knowledge of natural substances isolated from the marine world, their use in clinical or preclinical pharmacology.

UNIT—I Introduction to marine pharmacology - Basic principles, Pharmacodynamic; receptors and ion channels, Chemical forces, types of activities: pharmacokinetic; absorption, distribution, metabolism, excretion and toxicity (ADME theory).

UNIT II – Isolation techniques - Chromatography- Types of chromatography; paper chromatography, thin layer chromatography, ion exchange chromatography, molecular exclusion chromatography, column chromatography, gas chromatography and HPLC. Mass spectrometry, GC-MS, LC-MS and MALD-MS.

UNIT III - Pharmacological techniques - Pharmacological screenings, Ethical committee, bioassay, LD₅₀ and ED₅₀, experiments on isolated organs and tissues; Heart, skeletal muscle and smooth muscles. Pharmacological evaluation of drugs. Routes of administration, clinical trials.

UNIT IV – Drug discovery - Pipe line of drug discovery, drug designing, theory and types of drug designing; rational drug designing, ligand based drug designing, computer aided drug designing, combinatorial chemistry, Pharmacophore, QSAR. Molecular mechanism of drugs.

UNIT V – Drugs from sea - Marine natural products, anti-bacterial, anti-fungal, anti-inflammatory, anti-tumor compounds from marine sources. Toxins – types, chemistry and pharmacology, and importance

References:

- Katzung, B.G. (2004). *Basic and Clinical Pharmacology*, 9th edition. 350pp.
- Appasamy, D.H. and Zaborsky, O.R., (eds) (1993). *Marine Biotechnology: Pharmaceutical and bio- active native products*. Plenum press, New York.

Course outcome

After completion of the course, students will be able to

- understand the concepts of Pharmacodynamic and pharmacokinetics
- compare the isolation techniques
- discuss the Pharmacological screening and evaluation of drugs
- appreciate the importance of drug discovery, drug designing
- acquire knowledge of natural substances isolated from the marine world, their use in clinical or preclinical pharmacology