

Syllabus | Semester: 5

Course code with name: 13PH0502 Pharmacology-II

Scope: This subject is intended to impart the fundamental knowledge on various aspects (classification, mechanism of action, therapeutic effects, clinical uses, side effects and contraindications) of drugs acting on different systems of body and in addition, emphasis on the basic concepts of bioassay.

Objectives: Upon completion of the course the student shall be able to

1. Understand the mechanism of drug action and its relevance in the treatment of different diseases.
2. Demonstrate isolation of different organs/tissues from the laboratory animals by simulated experiments.
3. Demonstrate the various receptor actions using isolated tissue preparation.
4. Appreciate correlation of pharmacology with related medical sciences.

Teaching and examination scheme:

Teaching scheme (Hours/week)			Total credits	Examination scheme					Total Marks
Theory	Tutorial	Practical		CSE	IA	ESE	Term work	Viva	
3	1	4	6	10	15	75	15	35	150

Theory syllabus:

Teaching hours: 45 Hours

Unit-1

10 Hours

Pharmacology of drugs acting on cardio vascular system: Introduction to hemodynamic and electrophysiology of heart. Drugs used in congestive heart failure. Anti-hypertensive drugs. Anti-anginal drugs. Anti-arrhythmic drugs. Anti-hyperlipidemic drugs.

Unit-2

10 Hours

Pharmacology of drugs acting on cardio vascular system: Drug used in the therapy of shock. Hematinics, coagulants and anticoagulants. Fibrinolytics and anti-platelet drugs. Plasma volume expanders.

Pharmacology of drugs acting on urinary system: Diuretics, Anti-diuretics.

Unit-3

10 Hours

Autocoids and related drugs: Introduction to autacoids and classification. Histamine, 5-HT and their antagonists. Prostaglandins, Thromboxanes and Leukotrienes. Angiotensin, Bradykinin and Substance P. Non-steroidal anti-inflammatory agents. Anti-gout drugs. Antirheumatic drugs.

Unit-4

8 Hours

Pharmacology of drugs acting on endocrine system: Basic concepts in endocrine pharmacology. Anterior Pituitary hormones- analogues and their inhibitors. Thyroid hormones- analogues and their inhibitors. Hormones regulating plasma calcium level- Parathormone, Calcitonin and Vitamin-D. Insulin, Oral Hypoglycemic agents and glucagon. ACTH and corticosteroids.

Unit-5**7 Hours**

Pharmacology of drugs acting on endocrine system: Androgens and Anabolic steroids. Estrogens, progesterone and oral contraceptives. Drugs acting on the uterus.

Bioassay: Principles and applications of bioassay. Types of bioassay. Bioassay of insulin, oxytocin, vasopressin, ACTH, d-tubocurarine, digitalis, histamine and 5-HT

Tutorials will be based on above syllabus.

Teaching hours: 15 Hours

Practical syllabus:**Teaching hours: 04 Hours/week**

1. Introduction to in-vitro pharmacology and physiological salt solutions.
2. Effect of drugs on isolated frog heart.
3. Effect of drugs on blood pressure and heart rate of dog.
4. Study of diuretic activity of drugs using rats/mice.
5. DRC of acetylcholine using frog rectus abdominis muscle.
6. Effect of physostigmine and atropine on DRC of acetylcholine using frog rectus abdominis muscle and rat ileum respectively.
7. Bioassay of histamine using guinea pig ileum by matching method.
8. Bioassay of oxytocin using rat uterine horn by interpolation method.
9. Bioassay of serotonin using rat fundus strip by three point bioassay.
10. Bioassay of acetylcholine using rat ileum/colon by four point bioassay.
11. Determination of PA₂ value of prazosin using rat anococcygeus muscle (by Schild's plot method).
12. Determination of PD₂ value using guinea pig ileum.
13. Effect of spasmogens and spasmolytics using rabbit jejunum.
14. Anti-inflammatory activity of drugs using carrageenan induced paw-edema model.
15. Analgesic activity of drug using central and peripheral methods.

Note: All laboratory techniques and animal experiments are demonstrated by simulated experiments by softwares and videos.

Recommended Books (Latest edition):

1. Rang H. P., Dale M. M., Ritter J. M., Flower R. J., Rang and Dale's Pharmacology, Churchill Livingstone Elsevier.
2. Katzung B. G., Masters S. B., Trevor A. J., Basic and clinical pharmacology, Tata McGraw-Hill.
3. Goodman and Gilman's, The Pharmacological Basis of Therapeutics.
4. Marry Anne K. K., Lloyd Yee Y., Brian K. A., Robbin L.C., Joseph G. B., Wayne A. K., Bradley R.W., Applied Therapeutics, The Clinical use of Drugs, The Point Lippincott Williams & Wilkins.
5. Mycek M.J, Gelnet S.B and Perper M.M. Lippincott's Illustrated Reviews Pharmacology.
6. K.D.Tripathi. Essentials of Medical Pharmacology, JAYPEE Brothers Medical Publishers (P) Ltd, New Delhi.
7. Sharma H. L., Sharma K. K., Principles of Pharmacology, Paras medical publisher.
8. Modern Pharmacology with clinical Applications, by Charles R.Craig & Robert.
9. Ghosh MN. Fundamentals of Experimental Pharmacology. Hilton & Company Kolkata.
10. Kulkarni SK. Handbook of experimental pharmacology. Vallabh Prakashan.