

## **B. PHARMACOLOGY AND THERAPEUTICS**

**The course outline is as follows:**

### **1) General Pharmacology:**

1. Definition of pharmacology, objectives of learning pharmacology, definition of drug and drug nomenclature.
2. Branches/divisions of pharmacology.
3. Sources of drugs.
4. Active principles of drugs and pharmacopoeias.
5. Dosage forms and doses of drugs.
6. Route of drug administration.
7. Absorption of drugs and processes involved in drug absorption.
8. Factors modifying absorption of drugs.
9. Transport of drugs across cell-membrane.
10. Bio-availability, its clinical significance and factors affecting bio-availability.
11. Drug reservoirs, distribution and redistribution of drugs, plasma protein binding.
12. Pro-drug, bio-transformation of drugs, enzyme induction, enzyme inhibition and entero-hepatic circulation.
13. Plasma half-life of drugs, steady state concentration, its clinical importance and factors affecting it.
14. Excretion of drugs.
15. Mechanism of drug action.
16. Dose response curves, structure-activity relationship.
17. Factors modifying action and doses of drugs.
18. Pharmacokinetics, pharmacodynamics and receptors.
19. Pharmacogenetics.

### **2) Dermatological and topical drugs (Locally Acting Drugs)**

- Demulcents, emollients, irritants, counter irritants, astringents. Antiseborrhoeics, locally acting enzymes.
- Antiseptics and disinfectants.
- Ectoparasiticides.

### 3) Drugs Acting on Gastrointestinal Tract:

- Emetics and anti emetics.
- Drugs affecting motility of GIT.
- Ulcer healing drugs.
- Purgatives/ laxatives.
- Antidiarrhoeals.

### 4) Cardiovascular Drugs

- Antiarrhythmic drugs.
- Inotropic drugs.
- Antihypertensive drugs.
- Thrombolytics/ anticoagulants/ antiplatelets.
- Antihyperlipidemic drugs.
- Anti-anginal drugs.
- Drug management of CCF.

### 5) Diuretics

### 6) Autocoids

### 7) Drugs Acting on Autonomic Nervous System Cholinergic Drugs.

- Choline esters.
- Anticholine-esterases cholinomimetic alkaloids.

#### *Anti-cholinergic drugs*

- Anti muscarinic
- Anti nicotinic

#### *Sympathomimetics / adrenergic drugs:*

- Catecholamine
- Non catecholamine

#### *Sympatholytics/antiadrenergics*

- Alpha adrenergic receptor blockers.
- Beta adrenergic receptor blockers

#### *Adrenergic neuron blockers*

#### *Autonomic ganglionic blockers*

#### *Skeletal muscle relaxants*

A) neuromuscular blocking agents - d-tubocurarine, suxamethonium, etc.

B) central muscle relaxants , meprobamate, mephenesin, diazepam, etc.

## 8) Central Nervous System

- a. Sedative-hypnotics.
- b. Anti-epileptics.
- c. General anaesthetics.
- d. Local anesthetics.
- e. Drugs for movement disorder/ muscle relaxant.
- f. Alcohol.
- g. Drugs for migraine.
- h. Stimulants of the central nervous system:
  - Caffeine, theophylline, theobromine
  - Brain stem stimulants: picrotoxin, nikethamide.
  - Ethamivan, doxapram.
  - Spinal cord stimulants: strychnine.
- i. Psychopharmacology:
  - Anti-psychotics.
  - Anxiolytics.
  - Anti-depressant / anti mania drugs.
  - Alcohol and drugs of abuse.
  - Anti-parkinson drugs.
  - Anti epileptic drugs

## 9) Analgesics

- a. Opioids and narcotics analgesics.
- b. Nonsteroidal anti inflammatory drugs (nsaid).
- c. Antigout drugs.

## 10) Drugs Acting on Respiratory System

- a. Drugs used in treatment of bronchial asthma.
- b. Expectorants.
- c. Mucolytics.
- d. Antitussives.

## 11) Drugs Acting on Endocrine System

- a. Pituitary-hypothalamic drugs.
- b. Adrenocorticoids.
- c. Sex hormones
- d. Thyroid/ parathyroid drugs.
- e. Pancreatic hormones and oral anti diabetic drugs.
- f. Oral contraceptives and anabolic steroids.

## 12) Drugs Acting on Uterus

- a. Ergometrine.
- b. Terbutaline.
- c. Dinoprostone.
- d. Carboprost.
- e. Ritodrine.

f. Oxytocin.

*Antimicrobial Drugs*

- a. Sulfonamides.
- b. Penicillins.
- c. Cephalosporins.
- d. Aminoglycosides.
- e. Tetracyclines.
- f. Macrolides:  
Chloramphenicol.
- g. Quinolones.
- h. Anti- tuberculous drugs.
- i. Antileprosy drugs.
- j. Anti fungal drugs.
- k. Antiviral drugs.
- l. Anti-protozoal drugs:
  - Anti- malarial drugs.
  - Anti-amoebic drugs.
- m. Urinary tract antiseptics.
- n. Anti cancer drugs.
- o. Immunosuppressive agents.
- p. Miscellaneous.
- q. Vaccines and immunoglobulin drug interaction.

# PRACTICALS

## **A - EXPERIMENTAL PHARMACOLOGY**

Experiments designed to observe the action of drugs on animals and isolated tissue.

Experiments on the actions of selected drugs to be demonstrated to the students.

1. Effects of drugs on reflex time.
2. Effects of drugs on frog's heart in situ.
3. Effects of drugs on rabbit's eye.
4. Effects of Acetylcholine and Atropine on isolated rabbit's ileum.
5. Effects of histamine and antihistamines on isolated rabbit's ileum.
6. Schemes to find out unknown drug having stimulatory or inhibitory effect on isolated rabbit's ileum.
7. Effects of neuromuscular blocking agents on frogs rectus abdominus muscle.
8. Methodology of clinical trials.
9. Introduction to Biostatistics.

## **B. PRESCRIPTION WRITING**

### **General principles**

- General principles
- Guideline for rational use of drugs
- Prescription writing for common ailments
  - Acute watery diarrhea
  - Bacillary dysentery
  - Amoebic dysentery
  - Ascariasis
  - Tape-worm infestation
  - Acute streptococcal pharyngitis
  - Iron deficiency anemia
  - Allergic rhinitis
  - Scabies
  - Acute malarial fever
  - Cerebral malaria
  - Typhoid fever
  - Bronchial asthma
  - Hypertension
  - Migraine
  - Cardiac failure
  - Shock

## **Clinico-Pharmacological Seminars on Rational Drug Therapy and Drug Interaction should be conducted**

### **Antibiotics:**

Frequency distribution of antibiotic prescribed in different clinical settings/units.  
Rational prescribing pattern of antibiotics.

Parameters: provisional diagnosis, investigation, empirical therapy. Prescribing after culture and sensitivity.

### **Vitamins:**

Parameters

Groups of vitamin prescribed.

Vitamins prescribed on basis of therapeutic indication or empirical.

Single / multiple vitamins

Frequency of prescribing and rational use of vitamins/ otherwise.

### **Analgesics**

Parameters

- a. Frequency distribution of various groups of analgesic prescribed.
- b. Single / multiple drug prescription.
- c. Non specific indications of analgesic prescription.

### **Adverse Drug Reactions**

- a. Anti-microbials, Cytotoxic drugs , Steroids etc.

## **RECOMMENDED BOOKS**

1. **Basic and Clinical Pharmacology** by Katzung, 10<sup>th</sup> Ed., Mc Graw-Hill.
2. **Pharmacology** by Champe and Harvey, 2<sup>nd</sup> Ed., Lippincott Williams & Wilkins.