

Introduction to general pharmacology

Pharmacology

It is the science that deals with the effects of drugs on living system.

Drug

World Health Organisation (WHO) defines drug as 'any substance or product that is used or intended to be used to modify or explore physiological systems or pathological states for the benefit of the recipient'.

Pharmacokinetics

It means the movement of the drug within the body; it includes the processes of absorption (A), distribution (D), metabolism (M) and excretion (E). It means 'what the body does to the drug'.

Pharmacodynamics

It is the study of drugs—their mechanism of action, pharmacological actions and their adverse effects. It covers all the aspects relating to 'what the drug does to the body'.

Pharmacy

It is the branch of science that deals with the preparation, preservation, standardization, compounding and proper utilization of drugs.

Therapeutics

It is the aspect of medicine that is concerned with the treatment of diseases.

Chemotherapy

It deals with the treatment of infectious diseases/cancer with chemical compounds that have relatively selective toxicity for the infecting organism/ cancer cells.

Toxicology

It is the study of poisons, their actions, detection, prevention and the treatment of poisoning.

Clinical pharmacology

It is the systematic study of a drug in humans—both in healthy volunteers and patients. It includes the evaluation of pharmacokinetic and pharmacodynamics data, safety, efficacy and adverse effects of a drug by comparative clinical trials.

Essential medicine

According to WHO, essential drugs are ‘those that satisfy the healthcare needs of the majority of the population. They should be of assured quality, available at all times in adequate quantities and in appropriate dosage forms. They should be selected concerning disease prevalence in a country, evidence on safety and efficacy, and comparative cost-effectiveness. Examples are iron and folic acid preparation for anaemia in pregnancy, antitubercular drugs like isoniazid, rifampicin, pyrazinamide, ethambutol, etc.

Orphan drugs

Drugs that are used for the diagnosis, treatment or prevention of rare diseases. The expenses incurred during the development, manufacture and marketing of drug cannot be recovered from selling the drugs by the pharmaceutical company, e.g. digoxin antibody (for digoxin toxicity), fomepizole (for methyl alcohol poisoning), etc.

Over-the-counter drugs (OTC drugs)

OTC or nonprescription drugs are the drugs that can be sold to a patient without the need for a doctor’s prescription, e.g. paracetamol, antacids, etc.

Prescription drugs

These are the drugs that can be obtained only upon producing a prescription by a registered medical practitioner, e.g. antibiotics, antipsychotics, etc.

Pharmacopoeia:

It is a book that contains a list of established and officially approved drugs having the description of their physical and chemical characteristics with tests for their identification, purity, methods of storage, etc.

Some of the pharmacopoeias are the Indian Pharmacopoeia (IP), the British Pharmacopoeia (BP), the European Pharmacopoeia and the United States Pharmacopoeia (USP). Other sources of drug information are National Formulary (NF), Martindale—the Extra Pharmacopoeia, Physician’s Desk Reference (PDR), American Medical Association Drug Evaluation, textbooks and journals of Pharmacology and Therapeutics, drug bulletins, databases like drug Micromedex, Medline, Cochrane Library, etc.

Formulary:

It provides information about available drugs—their use, dosage, adverse effects, contraindications, precautions, warnings and guidance on selecting the right drug for a range of conditions.