Chapter

1

Introduction

It is better to know some terms commonly used in pharmacology before going to general pharmacology.

Pharmacology is derived from Greek word, '*pharmakon*' = drug and '*logos*' = 'science' or 'study'. In short, pharmacology means, 'study of drugs' (i.e. everything about the drugs).

The term 'drug' is derived from French word 'Drough' means, 'herb'. Since in the earlier days, most of the agents used in the treatment of diseases are derived from 'herbs'.

Earlier the term 'drug' is defined as a chemical agent that is used to prevent, diagnose and cure or treat the diseases. But the oral contraceptive is used to prevent pregnancy, which is not a disease. It is physiological process and also general anesthetic does not fit in the above definition. The general anesthetic does not cure/prevent disease.

As per WHO, the definition of a drug is "any chemical agent used either to modify or explore pathological states or physiological system to the benefit of the recipients".

Pharmacokinetics (Fig. 1.1): Kinetic means, movement. It deals with the study of the movement of drug in and out of the body. That is to study what happens to the drug from the entry till it comes out of the body.

This includes absorption, metabolism, distribution and excretion of drugs and their clinical significances. In short, we can also refer this process as "what body does to the drug".

Pharmacodynamics (Fig. 1.2): Dynamic means, power. It deals with the power of the drug, i.e. to produce pharmacological actions and how it produces that actions? (Mechanism of action of drugs.) In short, it deals with the study of the pharmacological actions and mechanism of actions of drugs.

Pharmacotherapy is the application of pharmacological actions in therapy (treatment of the disease).

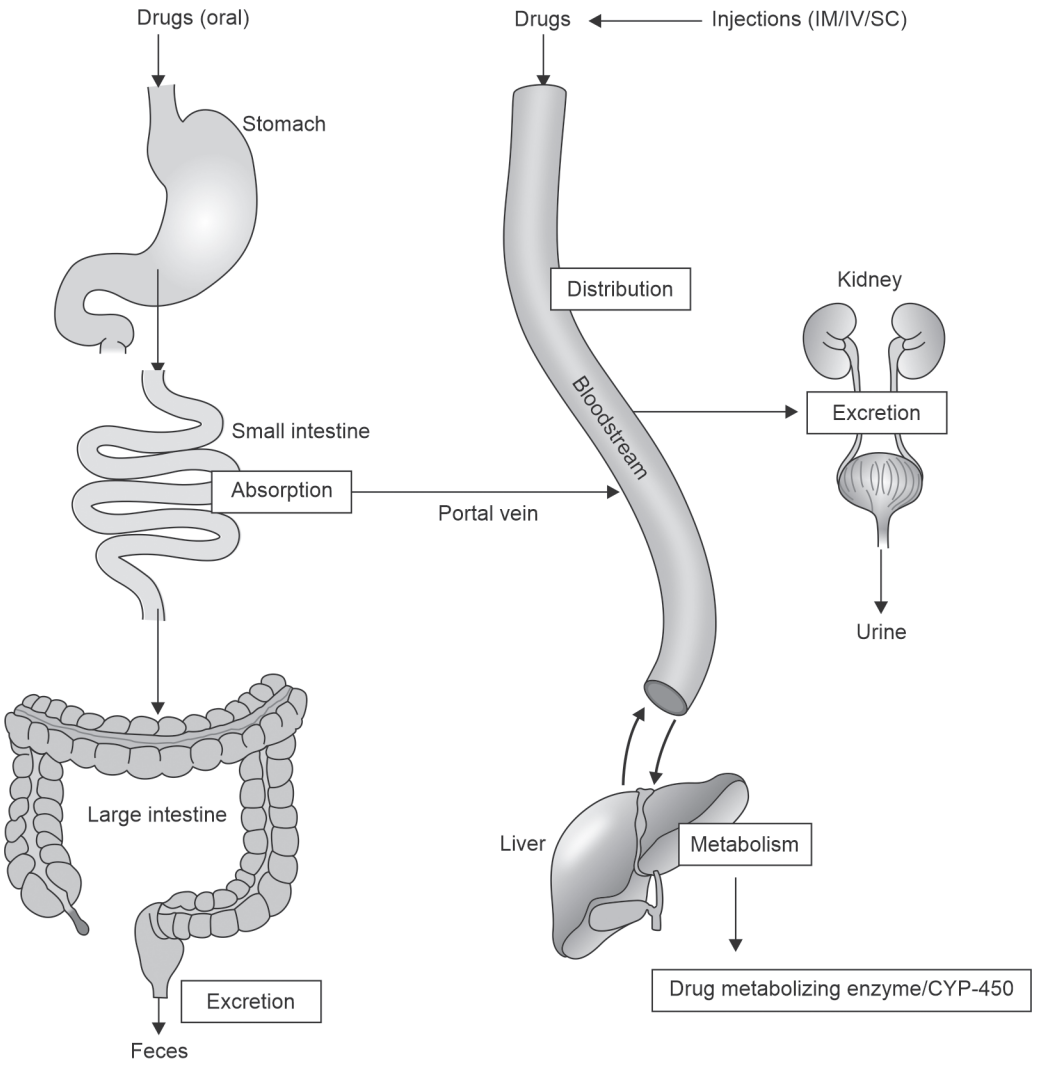

Fig. 1.1: Pharmacokinetics

Pharmacovigilance: Many rare adverse effects have been found out during the postmarketing surveillance of the drugs. So, pharmacovigilance means continuous monitoring for unwanted effects of marketed drugs. It is the science related to the detection, assessment, understanding and prevention (DAUP) of adverse effects or any other drug-related problems.

Pharmacogenetics: To study the genetic variation in drug metabolism or drug response. Example: Haemolysis is common in the individual who is showing deficiency of glucose-6-phosphate dehydrogenase (G6PDH). Example: Primaquine inhibits the enzyme G6PDH and causes hemolysis in the above-said individual.

Pharmacogenomics: Treatment of diseases by genetic material according to the gene mapping of the individual.

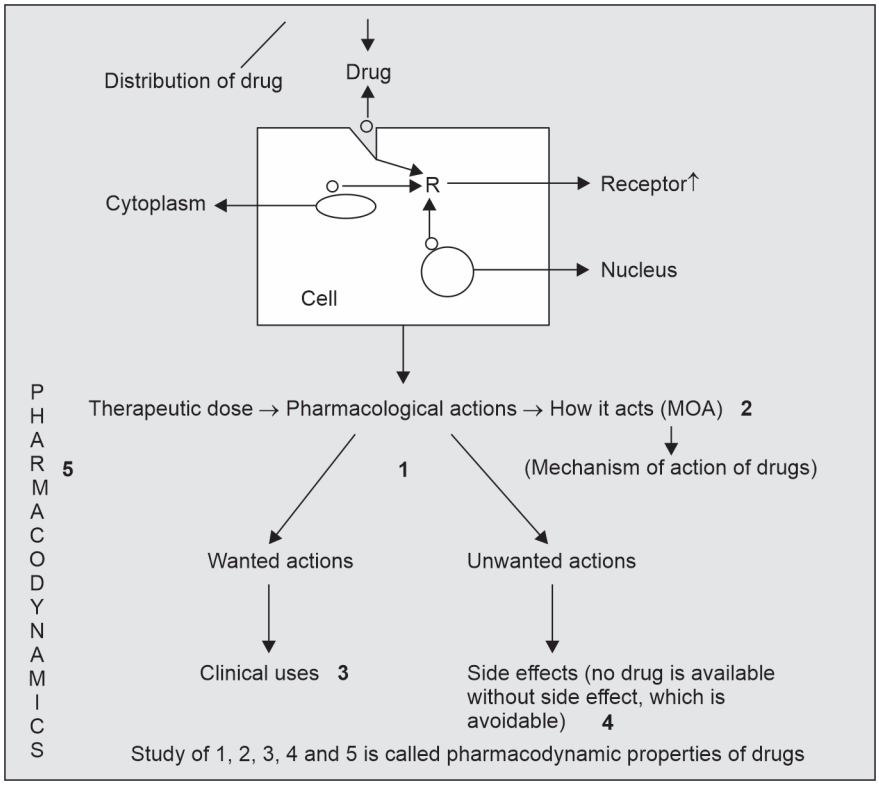

Fig. 1.2: Pharmacodynamics

Pharmacoepidemiology: It is the study of the use and effects of a drug in large population after its approval for clinical use. It is now well established. That the risk:benefit ratio of the drug can be ascertained only after the drug is used widely in the general population.

Experimental pharmacology: It is the study of effects of drugs on intact animals or isolated tissues. It is also considered as 'preclinical study' (before conducting clinical study on human) of the drug.

Clinical pharmacology: It deals with the protocols of clinical evaluation of new drug on healthy volunteers and patients. It also includes clinical trials of drugs (Phase I, Phase II, Phase III and Phase IV or postmarketing surveillance).

Chemotherapy: Deals with the study of drugs in the treatment of infectious diseases (diseases caused by microorganisms like bacteria, fungi, virus, protozoa and helminths). Cancer treatment is also included in chemotherapy because the fast dividing cancer cells resemble microorganisms.

Chemotherapeutic agents: Those drugs used either to kill or prevent the growth of microorganisms with minimum or no lethal effect to the human cells. This is called 'magic bullet'. Paul Ehrlich, the Father of Chemotherapy, has coined the term 'chemotherapy'.

NOMENCLATURE

A drug may be prescribed either by its generic name/official name or by its brand name (proprietary name). But in pharmacology, only the generic/official name should be used, not the brand names (given different names by different manufacturers).

	Official name/generic name	*Proprietary name/trade name*
1.	Paracetamol	Crocin, Dolo-650
2.	Diazepam	Valium, Calmpose
3.	Zolpidem	Zolfresh
4.	Metronidazole	Flagyl
5.	Clotrimazole	Candid

Compliance: If a patient follows fully the doctor's prescription, then the patient compliance is good. If the patients do not follow strictly as per doctor's prescription or advice is called patient's poor compliance due to many reasons.