

Pharmacology is a science
which deals with drugs.

The word is derived from
Greek words pharmacon (an
active principle) & loges (a
discourse or treaties).

It is knowledge

of

Drug Body Interaction

Pharmacology embraces the knowledge of: *History, Source, Physical and chemical properties, Absorption, Distribution, Biotransformation & Excretion of drugs, Biochemical & Physiological Effects (including toxic), Mechanism of Action, Therapeutic & Other Uses of drugs.*

DRUG

Word drug is derived from French word drouge (a dry herb) & is defined as any substance used for the purpose of diagnosis, prevention, relief or cure of a disease in man or animal.

*Any chemical agent
which affects living protoplasm.*

*“ If you want to explain any
poison properly,
what then isn't a poison?*

*All things are poison, nothing is
without poison;*

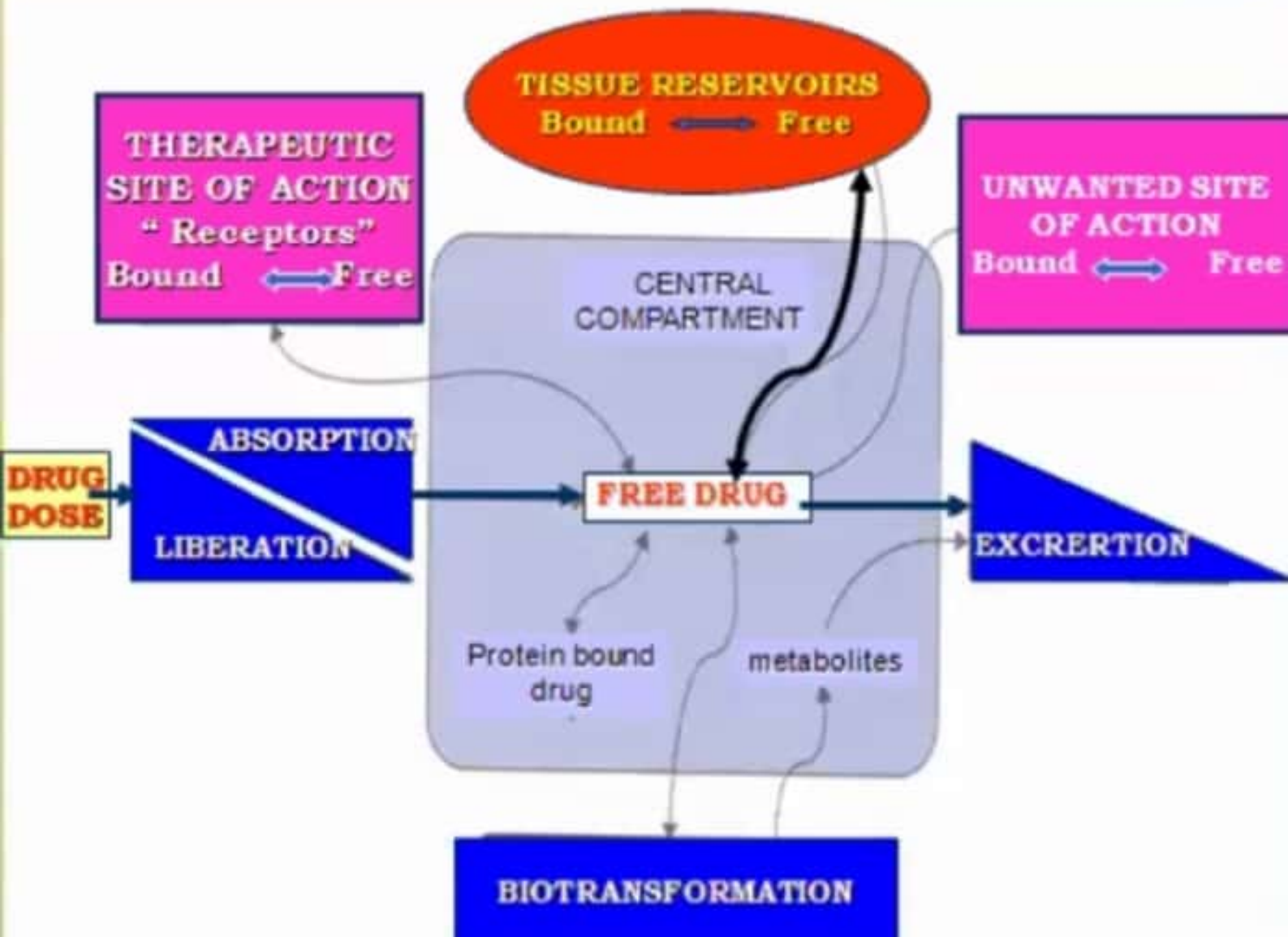
*the dose alone causes a thing
not to be poison.”*

Theophrastus von Hohenheim
(1493 – 1541 A.D.)

According to definition of WHO,
*a drug is 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 recipient.*



(kinesis → movement) i.e.

*how it moves during
absorption, distribution,
Metabolism & excretion.*

*This branch deals with
the study of “What the
body does to the drug”*

Pharmacodynamics

The word 'dynamis' means
power / activity.

Thus this branch deals
with the study of

**“ What the drug does
to the body ”**

Where it acts ?

(Site of action)

How it acts ?

(Mechanism of action)

What are the Effects ?

(Pharmacological Effects)

Normal Pharmacological Effects

Desirable & Non Desirable

& / or

Useable & Non-useable

USES & SIDE EFFECTS

Abnormal Effects

➤ Side Effects

➤ Adverse Effects

➤ Toxic Effects

➤ Intolerance
/ Tolerance

➤ Tachyphylaxis

➤ Idiosyncrasy

➤ Hypersensitivity
Reactions

CHEMOTHERAPY

It deals with effect of drugs on microorganisms & parasites, living & multiplying in living body without damage to host.

It is the treatment of systemic infections / malignancy with drugs which have selective toxicity for the infecting organism / malignant cell with no or minimal effects on the host cells.

Clinical Pharmacology

It is the scientific study of drugs in man (**healthy volunteers and / or in patients**).

It includes pharmacodynamic & pharmacokinetic **investigations of drugs in man & their therapeutic evaluation** ie it evaluates the efficacy and safety of drugs

TOXICOLOGY

It deals with the adverse effects of drugs and the toxic effects due to toxic amounts or poisoning by drugs. It is concerned not only with drugs used in therapy but also with many other chemicals responsible for household, environmental or industrial poisonings.

PHARMACY

It is the art & science which deals with preparation, compounding & dispensing of drugs and preparing suitable dosage forms.

It is a science of identification of drugs. It deals with source, identification, physical & chemical properties/ characteristics of drugs obtained from plants.

PHARMACOGENETICS

It deals with
**variations in drug
response**
due to genetic factors.

the study of immunological
this window away from the shared application.
ASPECTS OF

drug action including
effects of drugs on immune
response and
production of antibodies
in response to drugs.

PHARMACOLOGY

This branch of
Pharmacology deals
with **doses of drugs.**

PLACEBO

It is defined as an inactive, dummy preparation which is deliberately used for its nonspecific, psychological effect on a pt with symptoms or an illness.

Iatrogenic Diseases

'Iatrogenic' means 'caused by physician'.

When the harmful effects of a drug, being used for the treatment of a disease, produce a pathological condition, independent of the disease, it is called as iatrogenic disease.

***eg** adrenocorticosteroids cause Cushing's Syndrome.*

In order to ensure the maintenance of good standard of drugs, many countries of world publish their own pharmacopias.

PHARMACOPIA is an official book published under legal authority of government of the country who appoint pharmacopia commission & its committees of experts to prepare pharmacopias & to revise it after every 5 yrs.

Pharmacopoeia is an authoritative list

of useful drugs which gives all the details about drugs such as molecular and structural formulae, method of preparation, actions, uses and adverse effects.

- Pharmacopias describes standards of drugs included in it. It gives description of their physical properties & tests for their identity, purity & potency.
- Drugs manufactured & sold in country must conform to the specifications & standards laid down in pharmacopia.

- Examples are British pharmacopia, US pharmacopia, international pharmacopia etc.
- In pakistan, we follow British pharmacopia (first published in 1860) although we have our own pakistan national formulary.
- Drugs listed in pharmacopia are called official drugs. *It is for the guidance of physician and pharmacist.*

Drug Nomenclature

A drug has three categories of names.

a). Chemical Name:

It describes the substance

*chemically eg alpha-aminobenzyl
penicillin. It is long and
cumbersome.*

*A code name may be assigned
by the manufacturer, e.g., RO 15-
1788 – later named flumazenil.*

c) Proprietary Name or Brand Name

This name is given by
pharmaceutical

company and it is its trade
mark and property.

One drug may have multiple
proprietary names.

ORPHAN DRUGS: A drug for a rare disease (one affecting fewer than 20000 people in USA).

These are drugs or biological products for Diagnosis / Treatment / Prevention of *Rare Disease* or condition.

It is expected that the cost of developing and marketing them will not be recovered from their sales.

Examples: *Sodium nitrite*, *Protamine sulfate*, *Calcitonin*.

- **ADULTERATED DRUG:** A drug which consists in whole or in part of any filthy, putrid or decomposed substance or it has been mixed with any substance so as to reduce its quality or strength or has been manufactured, packed or held under unsanitary conditions where it may be contaminated.
- **COUNTERFEIT DRUG:** A drug the label or outer packing of which is an imitation of or resembles or so nearly resembles the label or outer packing of a