Pharmaceutical Terminology

A drug is any substance other than food, that when inhaled, injected, consumed or absorbed via a patch on the skin causes a physiological change in the body.

In pharmacology, a pharmaceutical drug or medicine, is a chemical substance used to treat, cure, prevent, diagnose a disease or promote well being.

a drug can be broadly defined as any man-made, natural, or endogenous (from within body) molecule which exerts a biochemical and/or physiological effect on the cell, tissue, organ, or organism.

Traditionally drugs were obtained through extraction from medicinal plants, but more recently also by organic synthesis.

Pharmacology

is the branch of medicine and biology concerned with the study of drug action in the biological system.

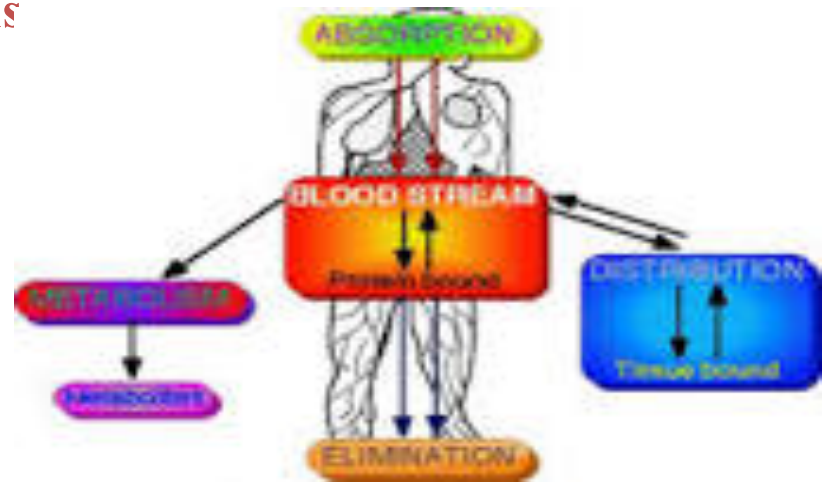
More specifically, it is the study of the interactions that occur between a living organism and chemicals that affect normal or abnormal biochemical function

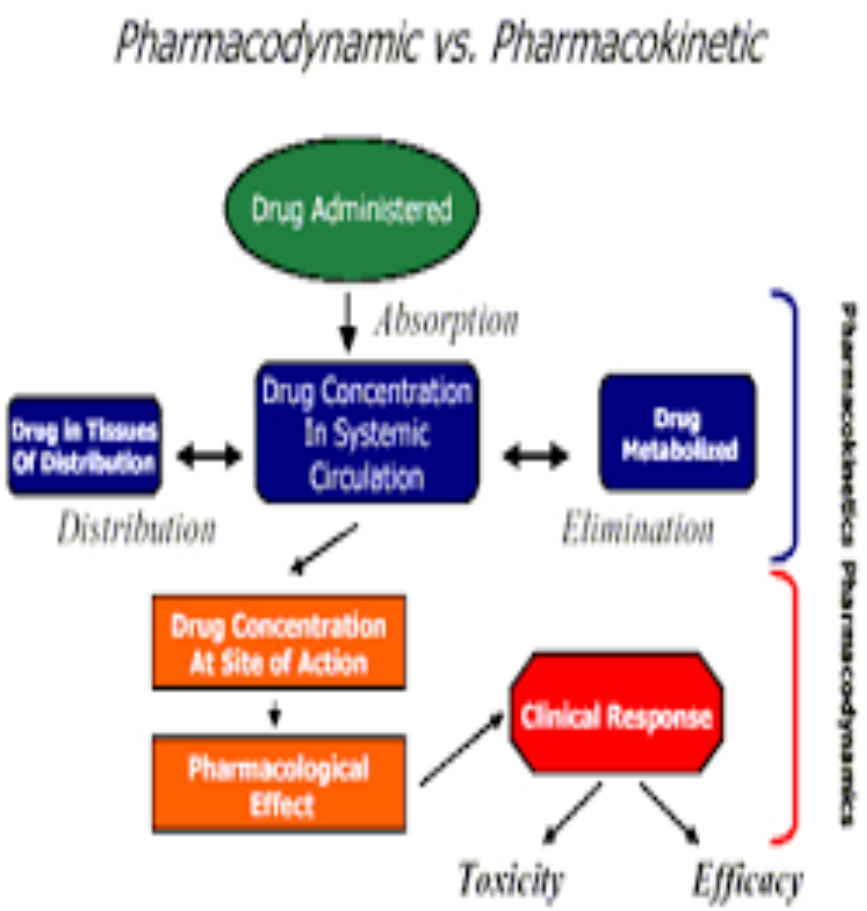
Pharmacokinetics

sometimes abbreviated as **PK** (from Ancient Greek pharmakon "drug" and *kinetikos* "moving, putting in motion";

is a branch of pharmacology dedicated to determining the fate of substances administered externally to a living organism.

- The substances of interest include pharmaceutical agents, **hormones**, **nutrients**, and **toxins**




Pharmacodynamic vs. Pharmacokinetic
Drug Administered
Absorption
Drug Concentration In Systemic Circulation
Drug in Tissues Of Distribution
Distribution
Drug Metabolized
Elimination
Drug Concentration At Site of Action
Pharmacological Effect
Clinical Response
Toxicity
Efficacy
Pharmacokinetics
Pharmacodynamics

●It attempts to discover the fate of a drug from the moment that it is administered up to the point at which it is completely eliminated from the body.

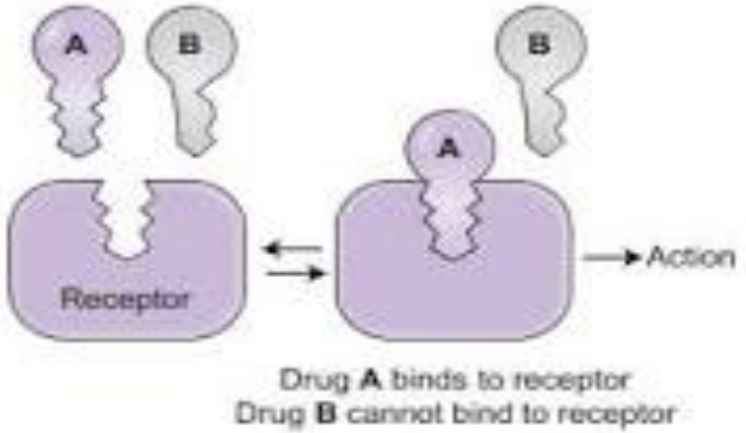
● **Pharmacokinetics** describes how the body affects a specific drug after administration through the mechanisms of absorption and distribution, as well as the chemical changes of the substance in the body by metabolic enzymes such as cytochrome P450 or enzymes, and the effects and routes of excretion of the metabolites of the drug

Pharmacodynamics

is the study of the biochemical and physiological effects of drugs on the body or on microorganisms or parasites within or on the body and the mechanisms of drug action and the relationship between drug concentration and effect.

One dominant example is drug-receptor interactions as modeled by

$$L + R \rightleftharpoons L \cdot R$$



Dose

Dose means **quantity** of medicin prescribed to be taken at one time.

Dosage is the rate of application of a dose.

Dosage forms

Dosage forms (also called **unit doses**) are essentially pharmaceutical drug products in the form in which they are marketed for use, typically involving a mixture of active drug components and nondrug components (excipients), along with other non-reusable material that may not be considered either ingredient or packaging (**such as a capsule shell, for example).**

Route of administration

● A **route of administration** in pharmacology and toxicology is the path by which a drug, fluid, poison, or other substance is taken into the body.

● Routes of administration are generally classified by the location at which the substance is applied.

● Common examples include oral and intravenous administration. Routes can also be classified based on where the target of action is.

● Action may be topical (local), enteral (system-wide effect, but delivered through the gastrointestinal tract), or parenteral (systemic action, but delivered by routes other than the GI tract).

Adverse effect

In medicine, an **adverse effect** is an undesired harmful effect resulting from a medication or other intervention such as surgery. **An adverse effect** may be termed a "side effect", when judged to be secondary to a main or therapeutic effect. If it results from an unsuitable or incorrect dosage or procedure, this is called a medical error and not a complication. Adverse effects are sometimes referred to as "iatrogenic" because they are generated by a physician/treatment.

➢morbidity,rate of disease in population

➢ mortality,state of being subject to death

➢alteration in body weight, levels of enzymes, loss of function, or

➢as a pathological change detected at the microscopic,

macroscopic or physiological level.

➢ It may also be indicated by symptoms reported by a patient.

Adverse effects may cause a reversible or irreversible change,

Indication and contraindication

Indication Is a medical condition to which certain treatment should be prescribed

Contraindication is a condition or factor that serves as a reason to withhold a certain medical treatment due to the harm that it would cause the patient.

- Contraindication is the opposite of indication,

● For example, children and teenagers with viral infections should not be given aspirin because of the risk of Reye's syndrome,

Drug interaction

- **A drug interaction** is a situation in which a substance (usually another drug) affects the activity of a drug when both are administered together. This action can be synergistic (when the drug's effect is increased) or antagonistic (when the drug's effect is decreased) or a new effect can be produced that neither produces on its own.

● Typically, interactions between drugs come to mind (drug-drug interaction). However, interactions may also exist between drugs and foods (drug-food interactions), as well as drugs and medicinal plants or herbs (drug-plant interactions). People taking antidepressant drugs such as monoamine oxidase inhibitors should not take food containing tyramine as hypertensive crisis may occur (an example of a drug-food interaction).

Pharmacotherapy

● **Pharmacotherapy** is therapy using pharmaceutical drugs, as distinguished from therapy using surgery (surgical therapy), radiation (radiation therapy), movement (physical therapy), or other modes.

● Among physicians, sometimes the term ***medical therapy*** refers specifically to pharmacotherapy as opposed to surgical or other therapy

● Pharmacists are experts in pharmacotherapy and are responsible for ensuring the safe, appropriate, and economical use of pharmaceutical drugs.

Clinical pharmacy

- **Clinical pharmacy** is the branch of Pharmacy where pharmacists provide patient care that optimizes the use of medication and promotes health, wellness, and disease prevention.
- **Clinical pharmacists** often collaborate with physicians and other healthcare professionals.

● Clinical pharmacists have extensive education in the, biomedical, pharmaceutical , socio behavioral and clinical sciences.

●Most clinical pharmacists have a Doctor of Pharmacy(Pharm.D.) degree and many have completed one or more years of post-graduate training (e.g. a general and/or specialty pharmacy residency)

● A pharmacist may become a Board Certified **Pharmacotherapy Specialist (BCPS),** a Board Certified **Oncology Pharmacist (BCOP)**, a Board Certified a Board Certified **Nutrition Support Pharmacist (BCNSP)**, a Board Certified **Psychiatric Pharmacist (BCPP)**

Therapeutic drug monitoring

- **Therapeutic drug monitoring (TDM)** is a branch of clinical chemistry and clinical pharmacology that specializes in the measurement of medication concentrations in blood. Its main focus is on drugs with a narrow therapeutic range, i.e. drugs that can easily be under- or overdosed.
- **TDM** aims at improving patient care by individually adjusting the dose of drugs for which clinical experience or clinical trials have shown it improved outcome in the general or special populations.

Patient education is the process by which health professionals and others impart information to patients and their caregivers that will alter their health behaviors or improve their health status

Patient compliance (also **adherence**, **capacitance**) describes the degree to which a patient correctly follows medical advice.

Prodrug

- A **prodrug** is a medication or compound that, after administration, is metabolized (i.e., converted within the body) into a pharmacologically active drug.
- **Inactive prodrugs** are pharmacologically inactive medications that are metabolized into an active form within the body