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Pharmacology : Is the science that deals with the drugs names, pharmacokinetics, pharmacodynamics, side effects and clinical uses.

Pharmacotherapeutics: It is a branch of Pharmacology which deals with the proper selection and use of drugs for the prevention and treatment of disease.

Toxicology: It's the science of poisons. Many drugs in larger doses may act as poisons. Poisons are substances that cause harmful, dangerous or fatal symptoms in living substances.

Pharmacogenetics: It is a branch of Pharmacology which deals with the genetically altered drug response.

Chemotherapy: It is a branch of Pharmacology which deals with the effects of drugs upon microorganisms, parasites and cancer cell.

Pharmacology is mainly divided into two parts:

Pharmacokinetics : are studies of the ;

- Absorption
- Distribution
- Metabolism
- Excretion

Pharmacodynamics : are studies of ;

- Mechanisms of drug action (MOA)
- Pharmacological effects (therapeutic effects & toxic effects)

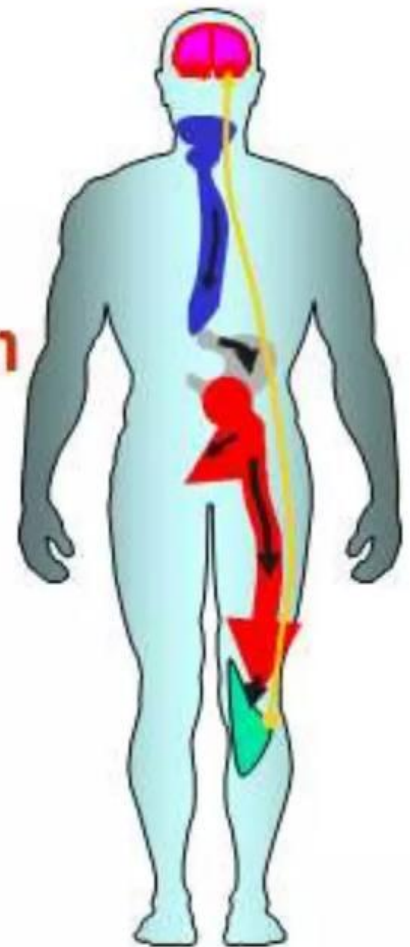
Pharmacodynamics, PD

Drug Action and Mechanism



**Absorption, Distribution,
Metabolism, Excretion**

Pharmacokinetics, PK



servignature

Drug: are the substance intended to be used for or in the diagnosis, treatment, mitigation, or prevention of any disease or disorder in human being or animal.

What is a drug classification:

Characterized by a drug's actions in the body or on target tissues.

Emetics : drugs used to induce vomiting

Antiemetics : drugs that relieve vomiting

Antidiarrheal agents: drugs used to lessen diarrhea

Cathartics : drug that increase bowel motility or loosen stools



Antacids :drug that counteract stomach acid

Diuretics : drugs that increase the production of urine

Antibiotics : drugs that kill/inhibit growth of bacteria

Anti-inflammatories : drugs that reduce inflammation

Analgesics :drugs that relieve pain and raise the pain threshold

Anesthetics :drugs that decreases feeling sensation; numbing

Anticonvulsants : drugs that inhibit seizures

Stimulants : drugs that excite the functional activity of an organ

Tranquilizers : drugs that sedate/quiet an anxious patient

Drugs

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graph TD; A[Drugs] --> B[Analgesics]; A --> C[Antipyretics]; A --> D[Antibiotics]; A --> E[Antiseptics]; A --> F[Tranquilizers]; A --> G[Sulfa drugs]; A --> H[Antihistamines]; A --> I[Bronchodilators]; A --> J[Antacids];
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Analgesics

Antipyretics

Antibiotics

Antiseptics

Tranquilizers

Sulfa drugs

Antihistamines

Bronchodilators

Antacids

Dosage forms : are the means by which drug molecules are delivered to sites of action within the body.

The need for dosage forms:

- 1- Accurate dose.
- 2- Protection e.g. coated tablets, sealed ampules.
- 3- Protection from gastric juice.
- 4- Masking taste and odour.
- 5- Use of desired vehicle for insoluble drugs.

Types of Dosage Forms

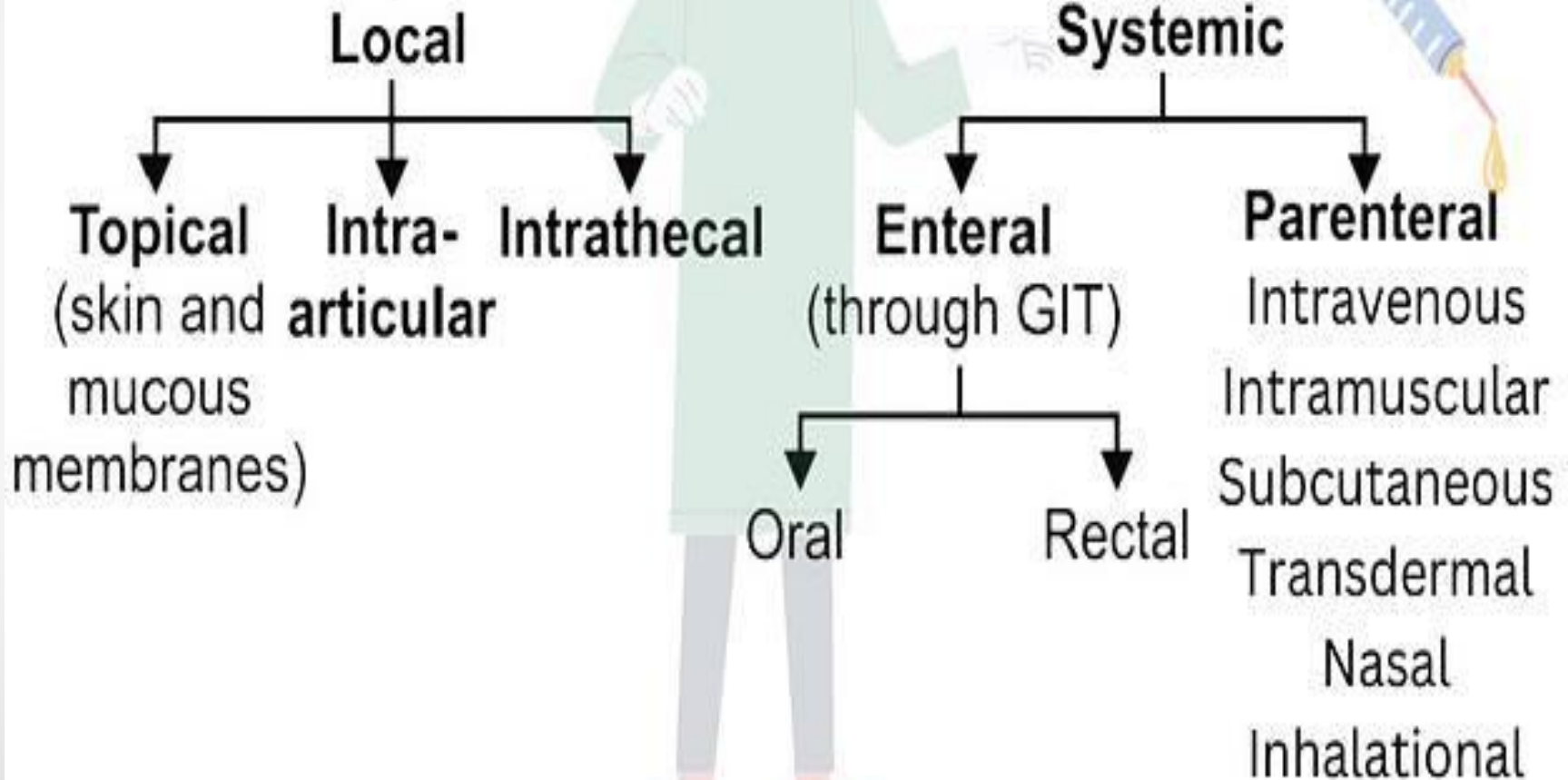
Classifications Based on Route/ Method of Administration

- Oral Dosage Forms
- Topical Dosage Forms
- Rectal Dosage Forms
- Parenteral Dosage Forms
- Respiratory/Inhaled Dosage Forms
- Vaginal Dosage Forms
- Ophthalmic Dosage Forms
- Nasal Dosage Forms
- Otic Dosage Forms

Classifications Based On the Physical Form of the Dosage Form

- Solid Dosage Forms
- Semi-solid Dosage Forms
- Liquid Dosage Forms
- Gaseous Dosage Forms

Routes of drug administration



oral route :It is the safest and most common, convenient, and economical method.

Advantages:

1. Easily self-administered
2. Low risk of infections (unlike injecting drugs)

Disadvantages:

1. Drug absorption is more complicated.
 2. Low pH of the stomach may inactivate some drugs.
- Dosage form preparations used could be liquids (e.g. syrup, suspension) or solid forms (e.g tablet, capsule)

sublingual route :The drug placed under the tongue to facilitate direct absorption to systemic circulation.

Advantages:

- Rapid absorption (results in rapid onset of action)
- Avoidance of first-pass metabolism (increase bioavailability)

Disadvantages :

May loss part of drug dose if swallowed.

inhalation route : Provide rapid drug delivery across the large surface area of the mucous membranes of the respiratory tract and pulmonary epithelium

Advantages:

1. Used for drugs that are gases (e.g., nitrous oxide) .
2. This route is effective and convenient for patients with respiratory diseases (such as asthma or chronic obstructive pulmonary disease)

Disadvantages:

1. Most addictive route
2. Difficult regulate dose
3. Many patients don't know how to use inhaler

Rectal route:

Because 50% of the drainage of the rectal region bypasses the portal circulation, the biotransformation of drugs by the liver is minimized with rectal administration.

advantage:

1. of preventing the destruction of the drug by intestinal enzymes or by low pH in the stomach.
2. The rectal route is also useful if the drug induces vomiting when given orally or if the patient is already vomiting (e.g. paracetamol suppositories).

Disadvantages:

1. May irritate the rectal mucosa.
2. Not well accepted

Solid dosage forms

Tablets



Capsules



Powders



Granules



Suppositories





Ointment



Creams



Pastes

SEMISOLID DOSAGE FORMS



Gels



Suppositories