

INTRODUCTION TO DOSAGE FORM



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DOSAGE FORM OF DRUGS

Dosage forms are the means by which drug molecules/APIs are delivered to sites of action within the body to produce optimum desired effects and minimum adverse effect.



Introduction

➤ **Dosage form (Medicines) = API + Excipients**

The means (or the form) by which drug molecules are delivered to sites of action within the body.

➤ **Drug (Active pharmaceutical ingredients)**

Chemical compound intended for use in diagnosis, treatment, or prevention, of disease.

OR

The Active Pharmaceutical Ingredient (API) is the part of any drug that produces its effects.

➤ **Excipients**

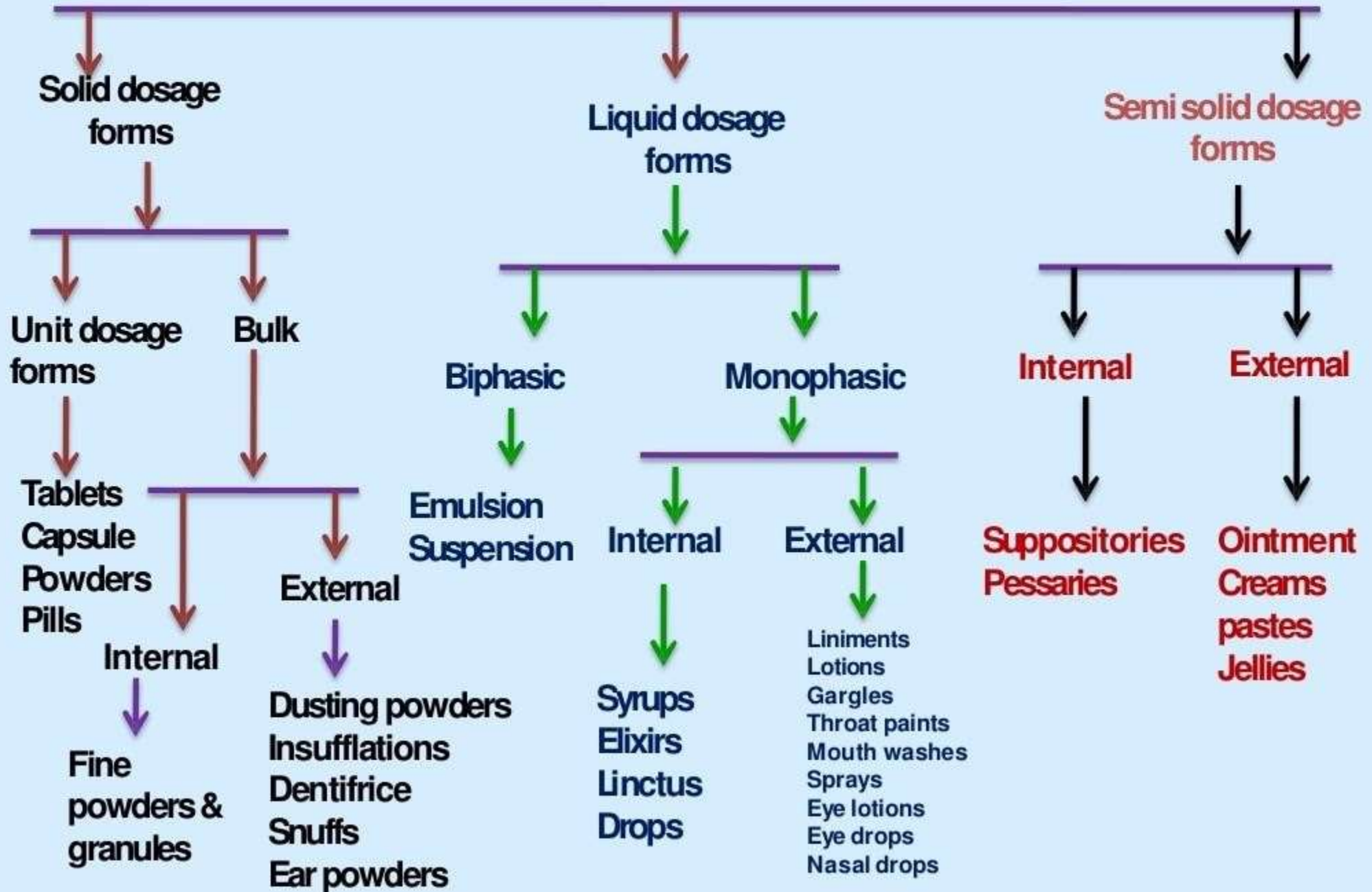
- Do not increase or affect the therapeutic action of the active ingredient.
- Inactive ingredients may also be referred to as inert ingredients or excipients, and generally have no pharmacological effect.
- Examples of inactive ingredients include binding materials, dyes, preservatives, and flavoring agents, sweetening agents, coloring agents etc.

NEED OF DOSAGE FORMS

- Provide safe and convenient delivery of accurate dosage.
Example – Tablets, capsules, syrups
- Protection of a drug substances from atmospheric oxygen or moisture. **Example – Coated capsules, sealed ampules**
- Protection of a drug substances from gastric acid after oral administration. **Example – Enteric coated tablets**
- Conceal bitter taste, or odor of a drug substances.
Example – Capsules, coated tablets, flavored syrups
- Provide liquid preparation of drug that insoluble or unstable in the desired vehicle. **Example – Suspension**
- Provide liquid dosage forms of substances soluble in desired vehicle. **Example – Solution.**

- Provide optional drug action from topical administration sites. **Example – Ointment, cream, ear and nasal preparations.**
- Provide for insertion of a drug into one of the body's orifices. **Example – Rectal and vaginal suppositories.**
- Provide extended drug action through controlled release mechanisms. **Example – Controlled release tablets, capsules, suspensions.**
- Provide for the placement of drugs within body tissues. **Example – Implants.**
- Provide for the optimal drug action through inhalation therapy. **Example – Inhalants.**

Classification



CLASSIFICATION OF SOLIDS

SOLID ORAL DOSAGE FORMS

Tablets

Capsules

Powder

Granules

CLASSIFICATION OF LIQUIDS

Monophasic Liquid Dosage Forms

Liquid for External administration

Liquids used in Mouth

- Gargles
- Mouthwashes
- Throat paints

Liquid applied to the skin

- Lotions
- Liniments
- Collodions
- Paints

Liquids instilled into Body Cavities

- Eye Drops
- Ear Drops
- Nasal Drops
- Douches
- Enemas

Liquid for Internal administration

- Syrups
- Mixtures
- Elixirs
- Linctuses

Biphasic Liquid Dosage Forms

Solids in Liquid

Oral

SUSPENSION

Parenteral

External

LOTION

Liquid in Liquid

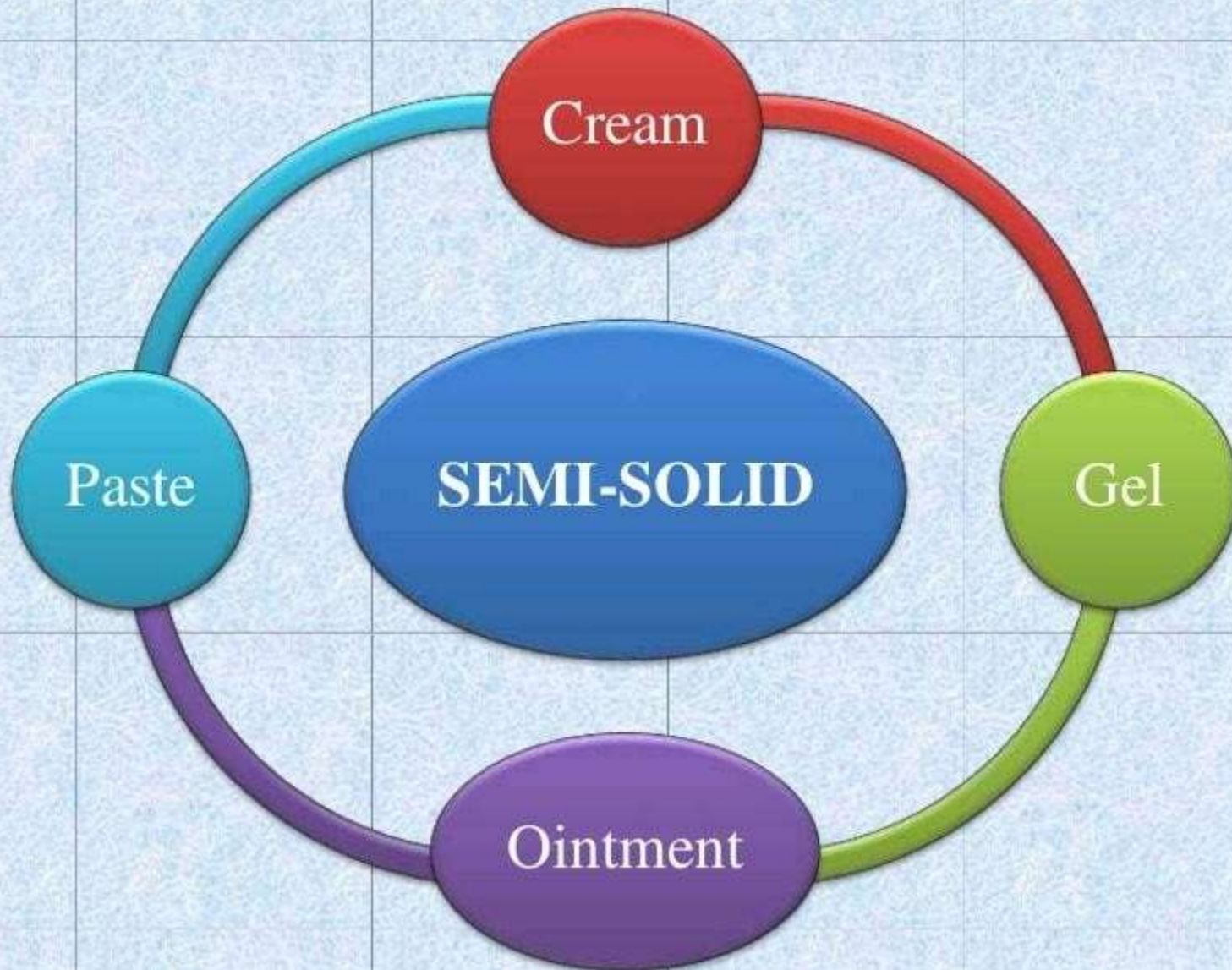
Oral

EMULSION

External

LINIMENTS

SEMI-SOLID DOSAGE FORMS



SOLID DOSAGE FORMS



1 -TABLET

- A tablet is unit dose of one or more medicament. Prepare by compression or mould method.
- Common excipients used in tablet are :
 - ✓ **Diluents** – Provide bulkiness of tablet.
 - ✓ **Disintegrants** – To ensure that the tablet breaks up in the digestive tract.
 - ✓ **Binder** – Important for granulation of powder.
 - ✓ **Glidants and Lubricants** – Provide good flow and ensure efficient tableting.
 - ✓ **Sweeteners and Flavors** – To mask the taste of APIs.
 - ✓ **Pigments** – To mask uncoated tablets visually attractive.
- A coating may be applied to mask taste, smooth tablet for easy swallow, extending shelf life, and prevent gastric degradation of drug.



2 - BUCCAL AND SUBLINGUAL TABLET

- **Buccal tablets** placing between the gum and the cheek.
- **Sublingual tablets** placing under the tongue.
- Medicaments of both systems rapidly dissolve in mouth and absorbed through the mucous membrane of mouth.
- Drug reaches in systemic circulation without affecting by gastric juices and metabolizing enzymes of the liver.
- Examples – **Vasodilators, Steroidal hormones.**



3 - EFFERVESCENT TABLET



- **Effervescent tablets** are uncoated and generally contain acid substances (citric and tartaric acids) and carbonates or bicarbonates , which react rapidly in presence of water and release carbon dioxide.
- They are intended to be dissolved or dispersed in water before use, it provide :
 - ✓ Tablet immediately dissolve or dispersed
 - ✓ Pleasant taste of carbonated drink

4 - CHEWABLE TABLET

- They are tablets that chewed prior to swallowing.
- They are designed for administration to children e.g. vitamin products.



5 - CAPSULES

- Solid unit dosage form that contain a solid, semi-solid, and liquid fill and a gelatin shell.
- Common excipients used in capsules are :
 - ✓ **Gelatin** – Commonly used as gelling agent.
 - ✓ **Plasticizers** – To ensure elasticity or mechanical stability.
 - ✓ **Additional Additives** – Preservative, coloring and opacifying agents .
- They are mainly two types are :
 - ✓ **Hard gelatin capsules** used for dry powder ingredients.
 - ✓ **Soft gelatin capsules** used for semi-solid and for active ingredients that are dissolved or suspended in oil.



6 - LOZENGE



- It is a solid preparation that used to medicate the mouth and throat for the slow administration of indigestion or cough remedies.
- It consisting of sugar and gum, the latter giving strength and cohesiveness to the lozenge and facilitating slow release of the medicament.

7 - PASTILLES



- It is a solid medicated pill or candy preparation that design to dissolve slowly in the mouth.
- They are softer than lozenge and their base are glycerol, gelatin, acacia and sugar.

8 - DENTAL CONES



- A tablet form intended to be placed in the empty socket following a tooth extraction, for preventing the local multiplication of pathogenic bacteria associated with tooth extractions.
- These tablets contain an excipients like – lactose, sodium bicarbonate, and sodium chloride etc.
- Cones may contain an antibiotic or antiseptic.

9 - PILLS



- It is a solid oral dosage form which consists of spherical masses prepared from one or more APIs with inert excipients.
- Pills are now rarely used.

10 – ORAL GRANULES

- They are consisting of solid, dry aggregates of powder particles with irregular shape often supplied in single-dose sachets.
- Some granules are placed under the tongue and swallowed with water and other are intended to be dissolved in water before taking.
- Effervescent granules evolve carbon dioxide when added to water.



11 – ORAL POWDER

- Bulk Powders are multi dose preparations consisting of solid, loose, dry particles of varying degrees of fineness.
- Contain one or more active ingredients, with or without excipients and, if necessary, coloring matter and flavoring substances.
- Usually contain non-potent medicaments such as antacids since the patient measures a dose by volume using a 5 ml medicine spoon.

LIQUID DOSAGE FORMS

1 – ORALSOLUTION

- Oral solutions are clear Liquid preparations for oral use containing one or more active ingredients dissolved in a suitable vehicle.



2 – ORALEMULSION

- Oral emulsions are stabilized oil-in-water dispersions, either or both phases of which may contain dissolved solids either oil is dispersed in finely divided form in water or vice versa.



3 – ORALSUSPENSION

- Biphasic liquid preparations for oral use containing one or more active ingredients suspended in a suitable vehicle. It sediment which is readily dispersed on shaking to give a uniform suspension which remains sufficiently stable to enable the correct dose to be delivered.



4 – SYRUP

- It is a concentrated aqueous solution of a sugar, usually sucrose to which medicaments are added.
- Flavored syrups are a convenient form of masking disagreeable tastes.



5 – ELIXIR

- It is pleasantly flavored clear liquid oral preparation of potent or nauseous drugs.
- The vehicle may contain a high proportion of ethanol or sucrose together with antimicrobial preservatives which confers the stability of the preparation.



6 – MOUTHWASHES

- These are similar to gargles but are used for oral hygiene and to treat infections of the mouth.



7 – LINCTUSES



- It is viscous, liquid oral preparations that are usually prescribed for the relief of cough. It contain high proportion of syrup and glycerol which have a demulcent effect on the membranes of the throat.
- The dose volume is small (5ml) and, to prolong the demulcent action, they should be taken undiluted.

8 – ORALDROPS

- Oral drops are liquid preparations for oral use that are intended to be administered in small volumes with the aid of a suitable measuring device.
- They may be solutions, suspensions or emulsions.



9 – GARGLES

- They are prepared in a concentrated solution with directions for the patient to dilute with warm water before use.
- They are aqueous solutions used in the prevention or treatment of throat infections.



10 – LOTIONS

- It is mono-phasic liquid preparations (aqueous) for external application without friction either dabbed on the skin or applied on a suitable dressing and covered with a water proof dressing to reduce evaporation.



11 – NASAL DROPS & SPRAYS

- Drugs in aqueous solution may be instilled into the nose from a dropper or from a plastic squeeze bottle.
- Used for local effect, e.g. antihistamine, decongestant.



11 – COLLODION

- Collodion is a solution of nitro cellulose in ether or acetone, some times with the addition of alcohols.
- As the solvent evaporates, it dries to a celluloid-like film.
- It is highly flammable.
- **Compound Wart Remover** consists of acetic acid and salicylic acid in an acetone collodion base used in treatment of warts by Keratolysis.



12 – PAINTS

- Paints are mono-phasic liquids for application to the skin or mucous membranes.
- **Skin paints** contain volatile solvent that evaporates quickly to leave a dry resinous film of medicament.
- **Throat paints** are more viscous due to a high content of glycerol that designed to prolong contact of the medicament with the affected site.



SEMI-SOLID DOSAGE FORMS



1 – OINTMENTS

- Ointments are semi-solid, greasy preparations for application to the skin, rectum or nasal mucosa.
- Base is usually anhydrous and immiscible with skin secretions.
- Ointments may be used as emollients or dissolved medicaments to the skin.

2 – GELS



- In gel a liquid phase is constrained within a 3-D polymeric matrix (consisting of natural or synthetic gum) having a high degree of physical or chemical cross-linking.
- It is used for medication, lubrication and some miscellaneous applications like carrier for spermicidal agents to be used intra vaginally.

3 – CREAMS



Oil-in-water (O/W)

- It composed of small droplets of oil dispersed in a continuous aqueous phase.
- Less greasy and more easily washed off using water.

Water-in-oil (W/O)

- It composed of small droplets of water dispersed in a continuous oily phase.
- More difficult to handle but used for hydrophobic drug preparation.
- Reduces water loss from the stratum corneum maintain moisture of skin.

4 – PASTES



- Pastes are basically ointments into which a high percentage of insoluble solid has been added.
- The extra ordinary amount of particulate matter stiffens the system.
- It provide less heating and penetration than ointment.
- It make good protective barrier when placed on the skin, the solid they contain can absorb and thereby neutralize certain noxious chemicals before they ever reach the skin.

Greasy Pastes

- Leaser's paste

Non-greasy Paste

- Bassorin paste

THANK YOU

