

Oral Solid Dosage Form

By: Dr. Aali
Pharmacology Dept.
QUMS

Pharmaceutical Dosage Forms

They are classified according to:

➤ **Route of administration**

- ❖ Oral
- ❖ Topical
- ❖ Rectal
- ❖ Parenteral
- ❖ Vaginal
- ❖ Inhaled
- ❖ Ophthalmic
- ❖ Otic

➤ **Physical form**

- ❑ Solid
- ❑ Semisolid
- ❑ Liquid

Oral Solid Dosage Form

- ❖ The oral route of administration is the preferred route for most medications.
- ❖ Tablets and capsules are the most commonly encountered dosage forms.
- ❖ The advantage of tablets and capsules is that they are:
 - Convenient to carry and administer
 - Unit dose forms, so administration of accurate dose is assured.





Tablets



- ❖ Tablet is compressed solid dosage form containing active substances with pharmaceutical excipients.
- ❖ Tablet is hard, compressed medication in round, oval or square shape.
- ❖ The compressed tablet is the most popular dosage form.



Excipients

❖ Excipients can include:

- Diluents
- Binders
- Granulating agents
- Glidants (flow aids)
- Lubricants to ensure efficient tableting
- Disintegrants to promote tablet break-up in the digestive tract
- Sweeteners
- Flavours to enhance taste
- Pigments to make the tablets visually attractive or aid in visual identification of an unknown table

Advantages of the Tablet

1. They are unit dosage form, greatest dose precision.
2. Cost is lowest.
3. Lighter and compact.
4. Easiest and cheapest to package and strip.
5. Easy to swallowing.
6. Sustained release product is possible by enteric coating.
7. Objectionable odour and bitter taste can be masked by coating technique.
8. Suitable for large scale production.
9. Greatest chemical and microbial stability.

Disadvantages of Tablet

- ❖ Difficult to swallow in case of children and unconscious patients.
- ❖ Drugs with slow dissolution properties, optimum absorption in GIT may be difficult to formulate or manufacture as a tablet.
- ❖ Some drugs resist compression into dense compacts.
- ❖ Bitter tasting drugs, or sensitive drugs to oxygen may require encapsulation or coating.

Types of tablet

- ❖ Compressed tablet
- ❖ Multiple compressed tablet
- ❖ Sugar coated tablet
- ❖ Film coated tablet
- ❖ Enteric-coated tablet
- ❖ Slow-release tablets
- ❖ Chewable tablet
- ❖ Lozenge Tablet
- ❖ Buccal tablet
- ❖ Sublingual tablet
- ❖ Effervescent tablet

Coated Tablets

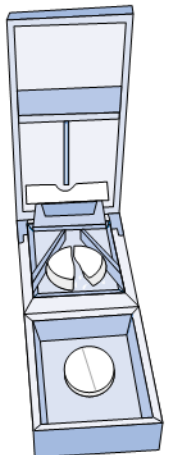
A coating may be applied to:

- 1- Hide the taste of the tablet's components.
- 2- Make the tablet smoother and easier to swallow .
- 3- Make it more resistant to the environment.
- 4- Extending its shelf life.

Compressed tablets

Raw material → Weighing → Screening → Mixing → Compression.

- ❖ Standard uncoated tablets are manufactured by compression.
- ❖ In the direct compression method of tablet production, dry ingredients are thoroughly mixed and then compressed into tablets.
- ❖ The most **compressed tablets** consist of the active ingredient and diluent, binder, disintegrator, and lubricant.
- ❖ May be Scored & double scored



Tablet splitter.

Multiple compressed tablets:

- ❖ For incompatible components these are:
- ❖ Layered tablet- either two layered (for two components) or three layered (for three components) tablet.



Sugar coated tablet

- ❖ Use sugar solution in coating tablets.
- ❖ To mask unpleasant tastes
- ❖ To produce an elegant, glossy, easy to swallow.
- ❖ Widely utilized in preparing multivitamin and multivitamin mineral combination.
- ❖ Sugar coating doubled tablet weight.



Film coated tablet

- ❖ These coatings are added by manufacturers to mask unpleasant tastes and to make the tablets easier to swallow.
- ❖ Polymers such hydroxypropylcellulose, hydroxypropylmethyl cellulose, ethylcellulose are commonly used.
- ❖ For example, amiodarone and metronidazole, both of which have a bitter taste.



Enteric coated tablet

- ❖ EC tablets are intended to pass through stomach unbroken and only dissolve when they reach intestine.
- ❖ The tablet is coated with an acid-resistant substance.
- ❖ Different polymer used for enteric coating:
 - Cellulose acetate phthalate (CAP)
 - Cellulose acetate succinate (CAS)
 - Cellulose acetate trimellitate (CAT)
 - Hydroxypropyl methyl cellulose phthalate (HPMCP,)
 - Hydroxypropyl methylcellulose acetate succinate (HPMCAS)
 - Polyvinyl acetate phthalate (PVAP)

Enteric coated tablet

- ❖ The coating may protect stomach from local damage by drug (e.g. Aspirin).
- ❖ The coating may protect drug and ensure that is released at intended site of action (e.g. **Bisacodyl, Sulfasalazine, Ascacol**).
- ❖ All EC tablets are type of delayed-release tablets but all delayed action tablets are not enteric action.
- ❖ These tablets must be swallowed whole and not crushed or chewed.

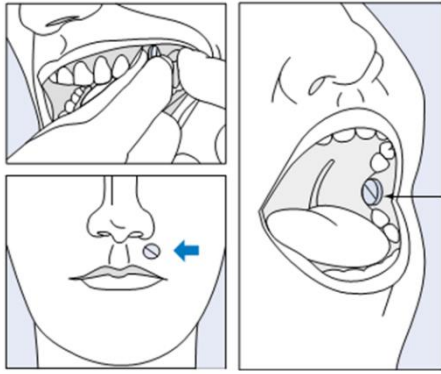
Slow-release tablets or 'SR' tablets

- ❖ These tablets are designed to release their active ingredient slowly over a period of time, usually 12–24 hours.
- ❖ They must be swallowed whole.
- ❖ If chewed or broken in the mouth there is a risk the patient would receive a toxic dose and instead of being absorbed over 12–24 hours, the full day's dose would be absorbed in 1–2 hours.
- ❖ These tablets are also known as:
 - Extended release or 'XL'
 - Long acting or 'LA'
 - Modified release or 'MR'
 - Retard
 - Slow release or Slow.

Effervescent or dispersible tablets



- ❖ These tablets will dissolve or disperse in water, making them **easier to swallow** in a quickly prepared liquid form.
- ❖ Effervescent tablets contain acid substances (**citric acid and tartaric acids**) and **carbonates** or **bicarbonates** and which react rapidly in the presence of water by releasing **carbon dioxide**.
- ❖ The **onset of action** of these tablets may be **quicker** than their equivalent solid tablet (active ingredient more readily absorbed)



Where to place a buccal tablet.

Buccal and sublingual tablets



Where to place a sublingual tablet.

- ❖ Sublingual and buccal medications are administered by placing them in the mouth.
- ❖ Under tongue (**sublingual**)
- ❖ Between gum and the cheek (**buccal**).
- ❖ The medications dissolve rapidly and absorbed through **mucous membranes** of the mouth, where they enter into the bloodstream.
- ❖ Avoid acid and enzymatic environment of stomach and drug metabolizing enzymes of the liver (**First pass effect**).
- ❖ Examples of drugs administered by this route: e.g. Nitroglycerin.

Chewable tablets



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

lozenges

- ❖ Used in oral cavity to exert local effect in mouth and throat.
- ❖ Commonly used for **localized effects**: treat **sore throat** or to control **coughing** in common cold.



Vaginal tablets (Inserts)

- ❖ These are designed to slow dissolution and release in vaginal cavity. Such as Metronidazole tablets.



Pastilles



- ❖ Solid medicated preparations designed to dissolve slowly in the mouth.
- ❖ They are softer than lozenges and their bases are either glycerol and gelatin, or acacia and sugar.

Hard gelatin capsule



Soft gelatin capsule



Capsules

- ❖ **A capsule** is a medication in a gelatin container.
- ❖ Advantage: mask the unpleasant taste of its contents.
- ❖ The two main types of capsules are:
 - 1- hard-shelled capsules**, which are normally used for dry, powdered ingredients,
 - 2- soft-shelled capsules**, primarily used for oils and for active ingredients that are dissolved or suspended in oil.

Hard gelatine capsules

- ❖ Shell consist of gelatine, sugar, water, colour agents
- ❖ Examples: antibiotics, fluoxetine, flurazepam, gemfibrozil, indomethacin.
- ❖ Avoid from excess humidity or dryness



Soft gelatine capsules (Pearls)

- ❖ Shell consist of gelatine, glycerine or sorbitol, water, colour agents.
- ❖ Oval & round shape
- ❖ For liquids materials
- ❖ Examples: vit A, vit E, Vit D, Gelofen
- ❖ Stored in tightly capped in a cool & dry place



Granules (Oral)



- ❖ They are consisting of solid, dry aggregates of powder particles often supplied in single-dose sachets.
- ❖ Some granules are placed on the tongue and swallowed with water.
- ❖ Some others are intended to be dissolved in water before taking.

Powders

- **Some antibiotics :unstable in liquid form**
 - **Amoxicillin**
 - **Cefexim**
- **Aerosolized powders**
 - **Salbutamol**
 - **Chromolin Na**
- **Bulk powders**
 - **Laxatives**
 - **Yeast powders**

Write Your Prescription

(Based on Solid Dosage Form)