

Tablets

Introduction to Tablet

- Tablets are solid dosage forms containing active pharmaceutical ingredients (APIs) and excipients, intended for oral administration.
- They are the most commonly used form of drug delivery due to their ease of administration, accurate dosing, stability, and cost-effectiveness.



Definition

- A tablet is a compressed unit dose of medication prepared by compressing powders or granules into a solid form.

Advantages of Tablets

- **Convenience:** Easy to carry, store, and administer.
- **Accurate Dosage:** Provides precise and consistent dosing.
- **Stability:** Longer shelf-life compared to liquid forms.
- **Cost-Effective:** Economical to produce and package.
- **Versatility:** Can be designed for immediate or controlled release.

Disadvantages of Tablets

- **Swallowing Difficulty:** May not be suitable for children or elderly patients.
- **Absorption Issues:** Delayed onset of action compared to liquid or injectable forms.
- **Processing Challenges:** Requires specialized equipment and conditions.

Ideal Characteristics of Tablets

An ideal tablet should possess the following features:

1. Physical Properties:

- Uniform weight, size, and shape.
- Smooth surface with no cracks or chips.
- Proper hardness and mechanical strength to withstand handling.

2. Chemical Properties:

- Chemically stable to prevent degradation of API.
- Compatible with excipients.

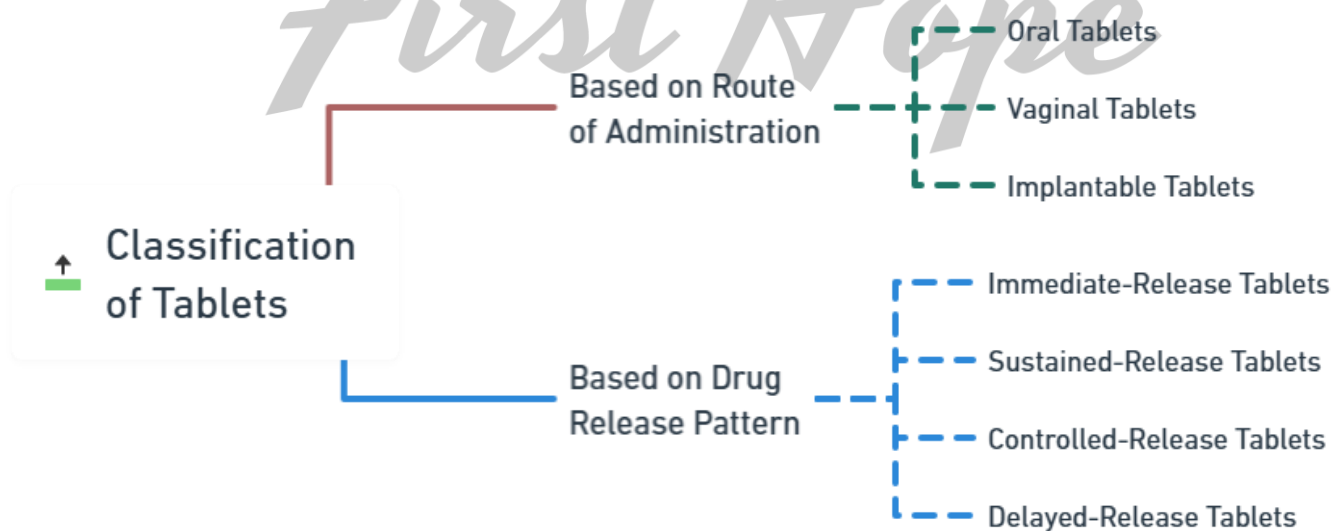
3. Biopharmaceutical Properties:

- Must disintegrate and dissolve quickly to release the drug.
- Provides predictable bioavailability.

4. Functional Properties:

- Should be free of contaminants.
- Easy to swallow and palatable.

Classification of Tablets



A. Based on Route of Administration:

1. Oral Tablets:

- **Conventional Tablets:** Disintegrate and dissolve in the gastrointestinal tract (e.g., Paracetamol).
- **Chewable Tablets:** Meant to be chewed before swallowing (e.g., Antacids).
- **Effervescent Tablets:** Dissolve in water before administration (e.g., Vitamin C).
- **Sublingual Tablets:** Dissolve under the tongue for rapid absorption (e.g., Nitroglycerin).

- **Buccal Tablets:** Dissolve in the buccal pouch for slow absorption (e.g., Fentanyl).

2. Vaginal Tablets:

- Inserted into the vagina for localized treatment (e.g., Clotrimazole).

3. Implantable Tablets:

- Placed under the skin for long-term drug release (e.g., Hormonal implants).

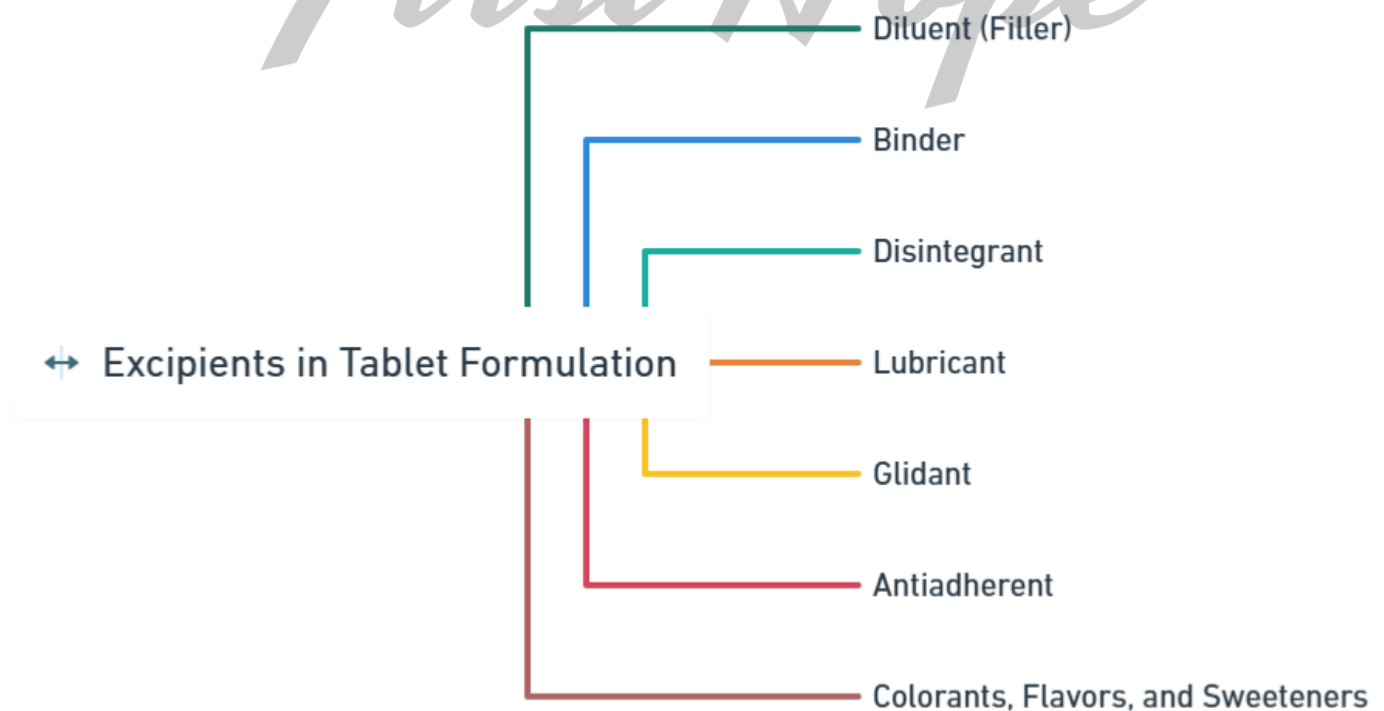
B. Based on Drug Release Pattern:

1. **Immediate-Release Tablets:** Quickly disintegrate and release the drug.
2. **Sustained-Release Tablets:** Gradual release over time.
3. **Controlled-Release Tablets:** Precisely control the drug release rate.
4. **Delayed-Release Tablets:** Release drugs at a specific site in the GIT (e.g., Enteric-coated tablets).

Excipients Used in Tablet Formulation

- Excipients are inactive substances used to aid the manufacturing process and enhance the performance of the drug.

They serve multiple functions:



1. Diluent (Filler)

- Increases bulk to produce an acceptable tablet size.
- **Examples:** Lactose, microcrystalline cellulose (MCC), dicalcium phosphate.



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