Tablets

Topics

- **Introduction**
- **Advantages and disadvantages**
- **Types of tablets**
- **Manufacturing of tablets**
- **Evaluation**
- **Problems**

Introduction

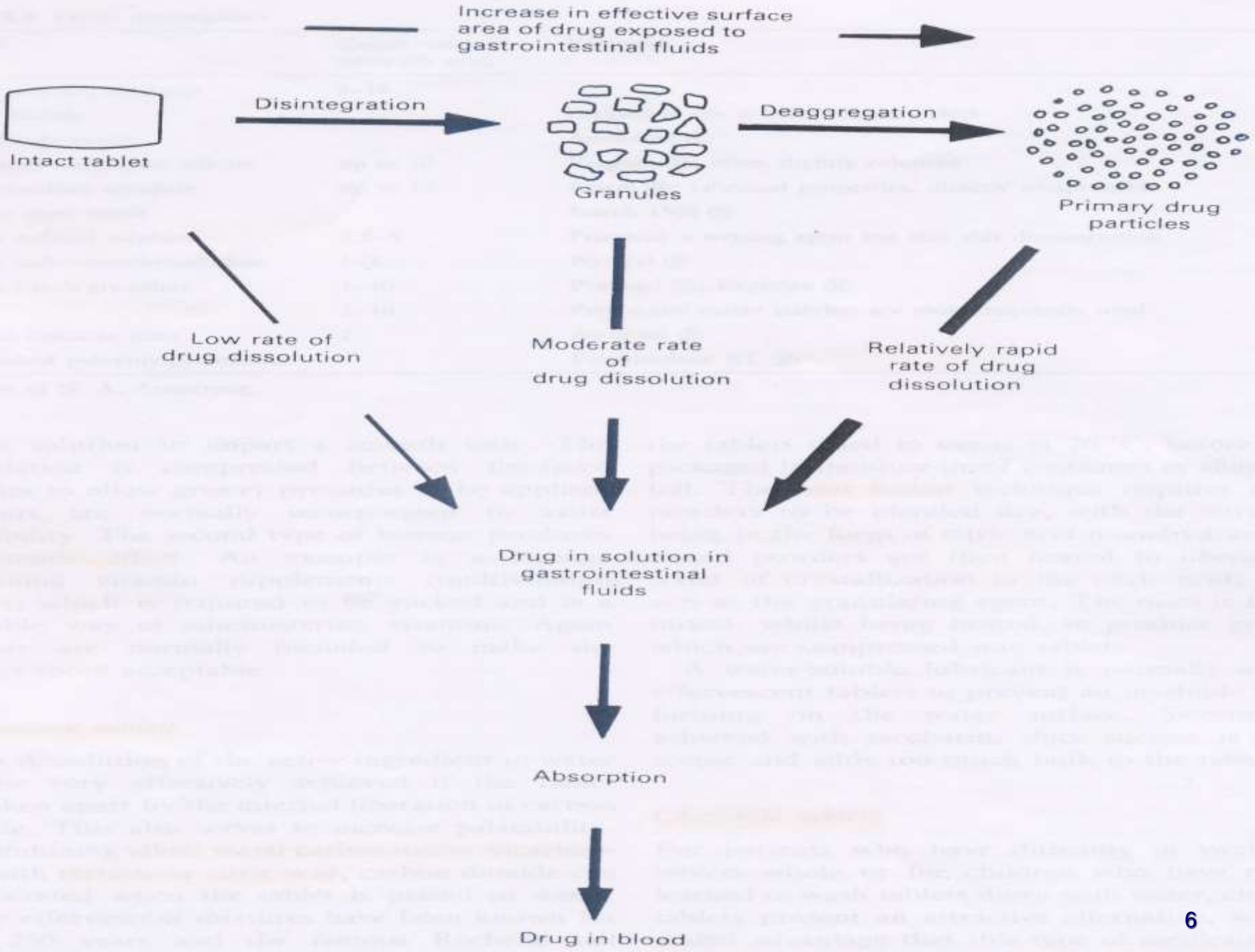
- **Are single unit solid pharmaceutical dosage forms containing drug substances and suitable excipients , prepared either by compression or molding methods.**

Advantages

- **Production aspect**
  - **Large scale production at lowest cost**
  - **Easiest and cheapest to package and ship**
  - **High stability**
- **User aspect (doctor, pharmacist, patient)**
  - **Easy to handling**
  - **Lightest and most compact**
  - **Greatest dose precision & least content variability**
  - **Coating can mask unpleasant tastes & improve pt. acceptability**

Disadvantages

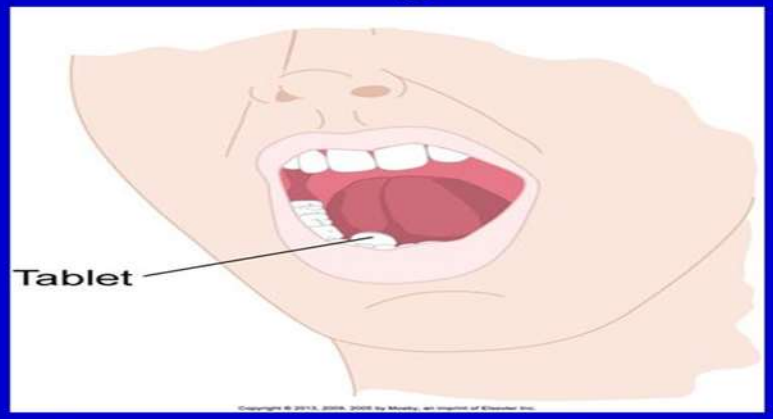
- **Some drugs resist compression into dense compacts**
- **Drugs with poor wetting, slow dissolution, intermediate to large dosages may be difficult or impossible to formulate and manufacture as a tablet that provide adequate or full drug bioavailability**
- **Bitter taste drugs, drugs with an objectionable odor, or sensitive to oxygen or moisture may require encapsulation or entrapment prior to compression or the tablets may require coating**

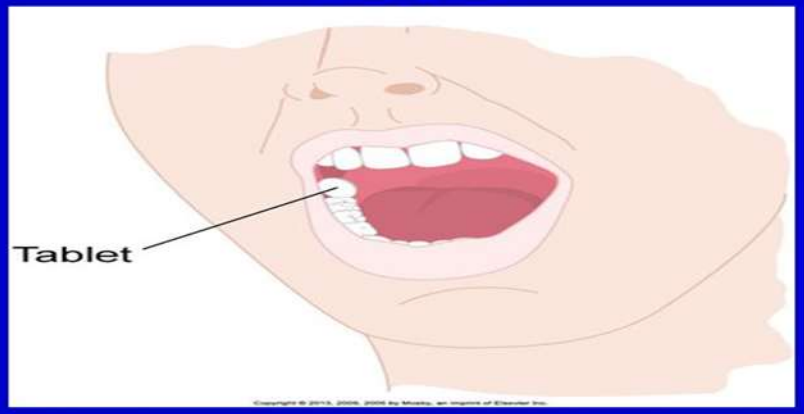

Increase in effective surface area of drug exposed to gastrointestinal fluids
Intact tablet
Disintegration
Granules
Deaggregation
Primary drug particles
Low rate of drug dissolution
Moderate rate of drug dissolution
Relatively rapid rate of drug dissolution
Drug in solution in gastrointestinal fluids
Absorption
Drug in blood

Types of tablets

- **Route of administration: Oral (swallowable), peroral (buccal, melt and sublingual), dental cones, and vaginal tablets.**

Buccal administration



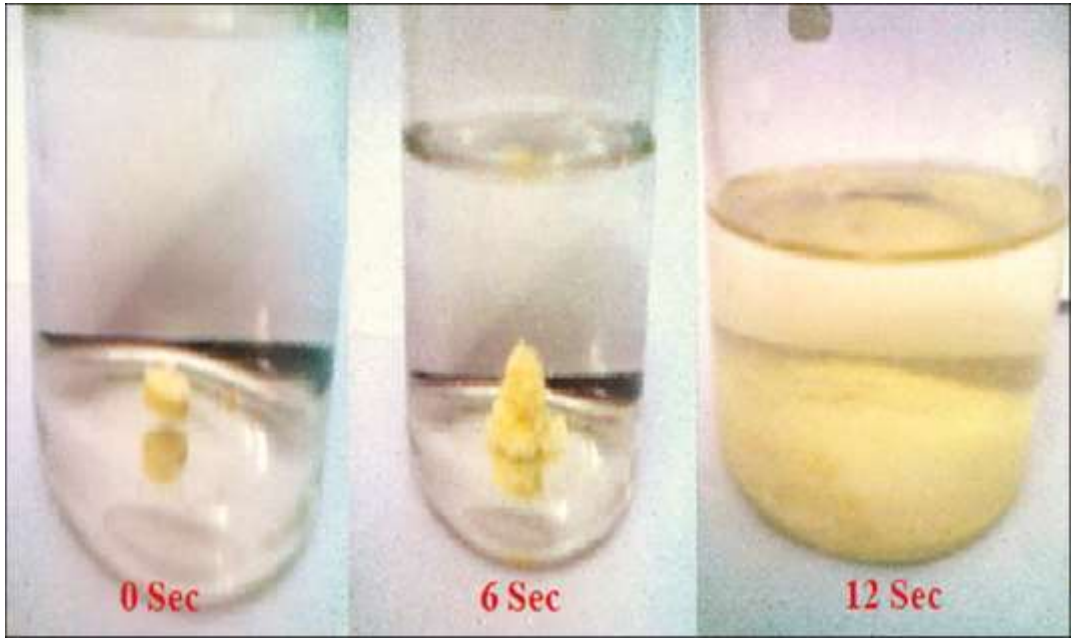


- **Buccal tablets are designed for placement under the cheek mucosa or between the lips of the gum, not contain disintegrant, with slow drug release mainly act locally.**
- **Sublingual tablets (under the tongue), without disintegrant, with rapid drug release for systemic effects.**

- **Release patterns:**

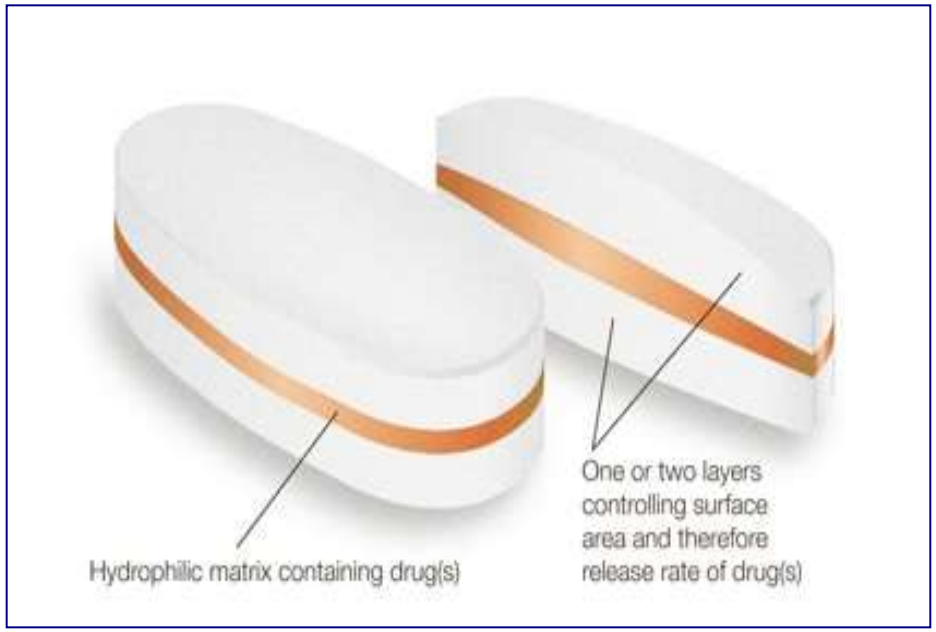
- Plain, orally disintegrating or dissolving tablets (ODTs)??, Dispersible (D), immediate-release tablets or modified released tablets (SR, CR, XR,DR), targeted, floating, bio-adhesive , OROS tablets, implants.

ODT



D

- **Production process**
  - **Molded tablets, Compressed tablets, Multiple compressed (multilayered) tablets, coated or non,**



- **Suck-able tablets: lozenges and troches. (What are the differences?)**
- **Effervescent tablets**
- **Chewable tablets: Rapid disintegration and rapid action with pleasant taste, like gummies suitable for children.**
- **Reagent tablets: For qualitative and quantitative tests, water purification, artificial sweeteners, cleaners for dentures.**
- **Tablets have different shapes: convex, oval, caplets…**

- **There is variation in the manufacturing process with variation of tablet type ??**
- **For each type, there are specific objectives?**

Manufacturing of Tablets

- ✓ **Materials**
- ✓ **Methods**
- ✓ **Equipment**

Materials used in tablet formulations

- **API.s: pure powder of drug (particle, micro-particle, nanoparticles or micronized), with optimum considerations (purity, crystallinity, particle size, moisture content ….)**
- **Additives or excipients:**

There are different classes with different functions, generally they must be pharmacologically inert, compatible, stable, feasible and cost-effective.

Fillers, diluents or bulking agents

– To make a reasonably sized tablet at least 50mg (bulkiness), improve flow properties, cohesionness and compressibility

– Found into different types:

Organic and inorganic, water in-soluble and soluble types.

- Soluble type is preferred for aims of rapid disintegration and dissolution

1) Organic type : such as

A- Lactose

- **Cheap, commonly used found into different subtypes or grades hydrous, anhydrous and spray dried lactose, hydrous type used in wet granulation, may discolor in the presence of amine drug bases or salts of alkaline cpd. (Maillard Reaction)??**
- **Spray dried lactose, considered as compression aid, with good compressibility and flow properties.**
- **A neutral or acid lubricant should be used with it??**

B- Starch:

- **Soluble organic type diluent, obtained from corn, wheat or potatoes.**
- **Has different grades with different MC, flowability and compressibility.**
- **Ex. Pre-gelatinized starch (Sta-Rx 1500) = Compression aid, binder and/or disintegrant.**