Introduction to Solid Oral Dosage Forms

Types:	Tablets, Capsules, Lozenges, Pastilles, Powders, Granules
Advantages:	Convenient, stable, accurate dosing, taste masking, potential for controlled release
Disadvantages:	Difficult to swallow, unsuitable for liquid drugs

Alternative Tablet Manufacturing Methods

Pre-compression:	Used when moisture/-heat-sensitive; uses slugs or roller compaction
Direct Compression:	Simple and cost-effective; uses flowable drug/diluent mix (e.g. Avicel, Zeparox)

Capsule vs Tablet decision factors

Company policy, market research, competitor products

Equipment, production costs, unit dose, dissolution rate, drug stability

Quality Control (QC)

Official tests (BP/EP)

For all tablets:	Uniformity of content
Uncoated tablets:	Weight uniformity, disintegration, dissolution

Unofficial tests

Hardness, friability

Tablets

Definition:	Solid mass compacted using a tablet machine: typically 50-500mg
Properties:	Strong, Bioavailable, stable, elegant, uniform in weight and content
Types:	Standard, Soluble/Dispersible, Effervescent, Chewable, Buccal, Sublingual, Enteric-coated, Controlled release

Tablet coatings

Purposes:	Protect drug, taste/appearance, ID, stability, controlled release

Tablet coatings (cont)

Types:

Sugar coating:	Multistage, increases weight, glossy finish
Film coating:	Popular, automated, controlled release capable, minimal weight gain
Press coating:	Rare, separates incompatible ingredients

QC test details

Disintegration:	6 tubes in 37°C bath; usually ≤15 minutes
Dissolution:	Basket/paddle/cell method; ≥70–75% drug released in 45 mins
Hardness (Crushing):	Measured force to break tablet
Friability:	Weight loss after 100 rotations (≤1% allowed)

Tablet Manufacturing – Moist Granulation

Mixing with Diluents:	Lactose, cellulose, calcium salts, starches, sugars	
Blending with Binder:	Water, methylcellulose, starch paste, gelatin, etc.	
Screening:	Mesh size affects granule size	
Drying:	Tray/fluid bed dryer; granules re-screened post-drying	
Additives:	Lubricants:	Stearates, PEGs, sodium benzoate
	Glidants:	Talc, fumed silica
	Disintergrants:	Starch, alginic acid, cellulose

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Capsule Manufacturing

Hard capsules:	Filled with powders, granules, tablets, pastes
	Must not react with gelatin or leak
Softgels:	Filled, formed, sealed in one go using rotary die machine
	Fill is sealed between two gelatin ribbons

Specialised Solid Forms

Lozenges:	Local effect; slow dissolve in mouth, no disintegrant
Chewables:	Rapid breakdown in mouth, no disintegrant
Dispersible/Soluble Tablets:	Dissolve/disperse in water; water-compatible disintegrant required
Effervescent Tablets:	Rapid disintegration via fizz; no standard lubricants
Sublingual/Buccal Tablets:	Dissolve in mouth for fast absorption; no disintegration needed

Tablet compression

Stages:	Lower punch creates cavity → powder fills → upper punch compresses → tablet ejected	
Machines:	Single stroke press:	Small-scale
	Rotary press:	Large-scale, 10,000+ tablets/min
Issues:	Picking, sticking, capping, lamination, weight variation, mottling	

Functional Coatings

Enteric Coating:	pH-dependent solubility; protects from stomach acid
Controlled release:	Diffusion-controlled, Erosion-based, Osmotic systems

Capsules

Shell:	Gelatin (Type A – acid hydrolysis; Type B – base hydrolysis)	
Types:	Hard capsules:	Two-piece, filled with dry/semi-solid materials
	Soft capsules (softgels):	One-piece, filled with non-aqueous liquids

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