



Tablet Dosage Form

Lab 1

Tablets

Tablets are solid dosage form usually prepared with the aid of suitable pharmaceutical excipients.

They may vary in:

1. size,
2. shape,
3. weight,
4. hardness,
5. thickness,
6. disintegration and
7. dissolution characteristics.

And in other aspects; depending upon their **intended use and method of manufacture.**

Ingredients used in tablets

- **Drugs**
- **Fillers or diluents (bulking agent)**
 - To make a reasonably sized tablet e.g. Starch, lactose
- **Binders:**
 - To promote adhesion of particles of formulation and enable granulation also maintenance of integrity of final tablet e.g. PVP, acacia, starch

Binders may be added as:

- ☐ Dry powder in dry granulation
- ☐ Solution in wet granulation

- **Disintegrants**
 - To promote breakup of the tablets into small particles
 - To promote rapid release of the drug and thus rapid availability.
e.g. Starch, cellulose derivatives and avicel pH 101, 102 (absorb water and swell thus increase the internal pressure of tablet then rupture of tablet into small granules).
- **Lubricants**
 - To reduce the friction during tablet ejection between the walls of the tablet and the walls of the die cavity e.g. Steric acid and its derivatives.

● Glidants

- Reducing friction between the particles
- To improve the flow properties of the granulations

e.g. Silica derivatives

● Antiadherants

- To prevent adherence or sticking of the tablet granules or powder to the punch faces and dies e.g. Talc

● Dissolution (enhancers and retardants)

● Wetting agents: increase wettability by using surfactant like SLS






● Antioxidants

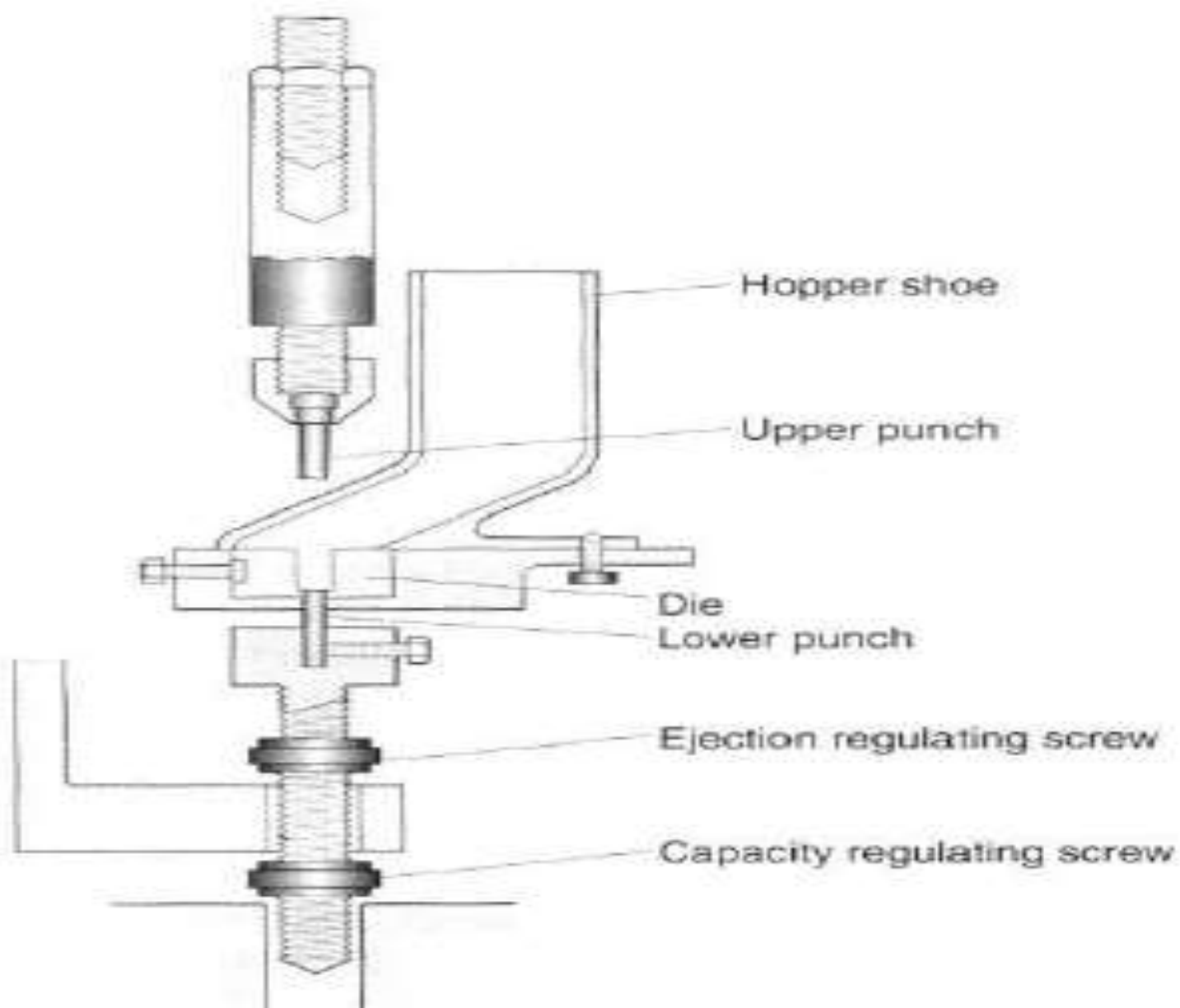
● Preservatives

● Coloring agents: improve appearance and distinguish products from each other.

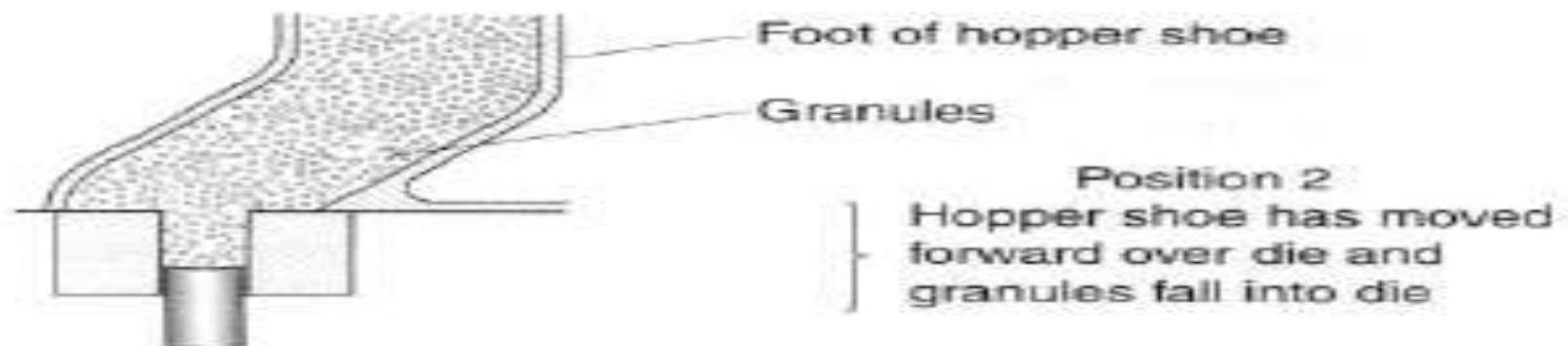
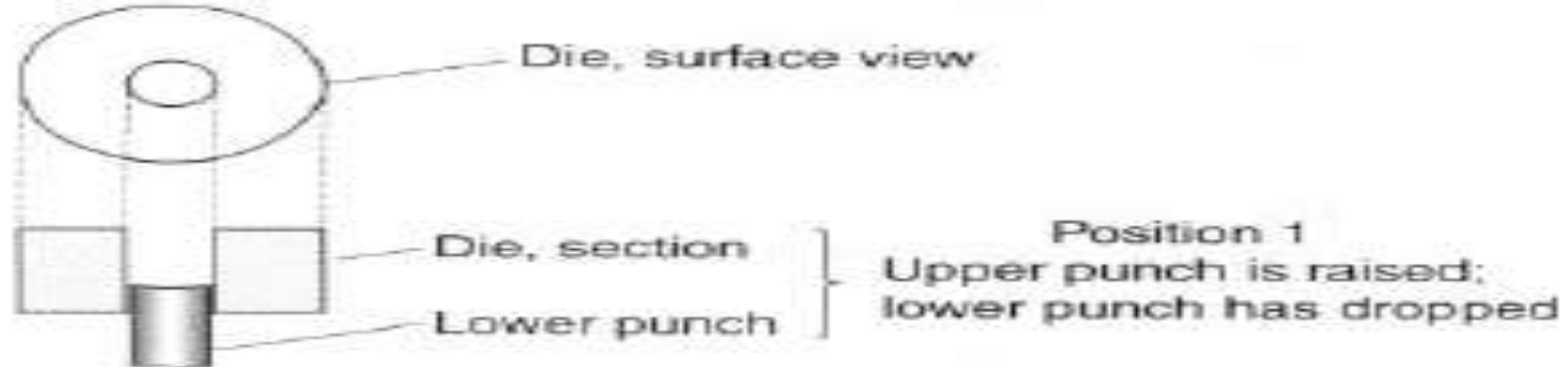
● Flavoring agents and sweetening agents: improve taste and flavor like lozenges and chewable tablets e.g. mannitol and artificial sweetener.

Tablet compression machine

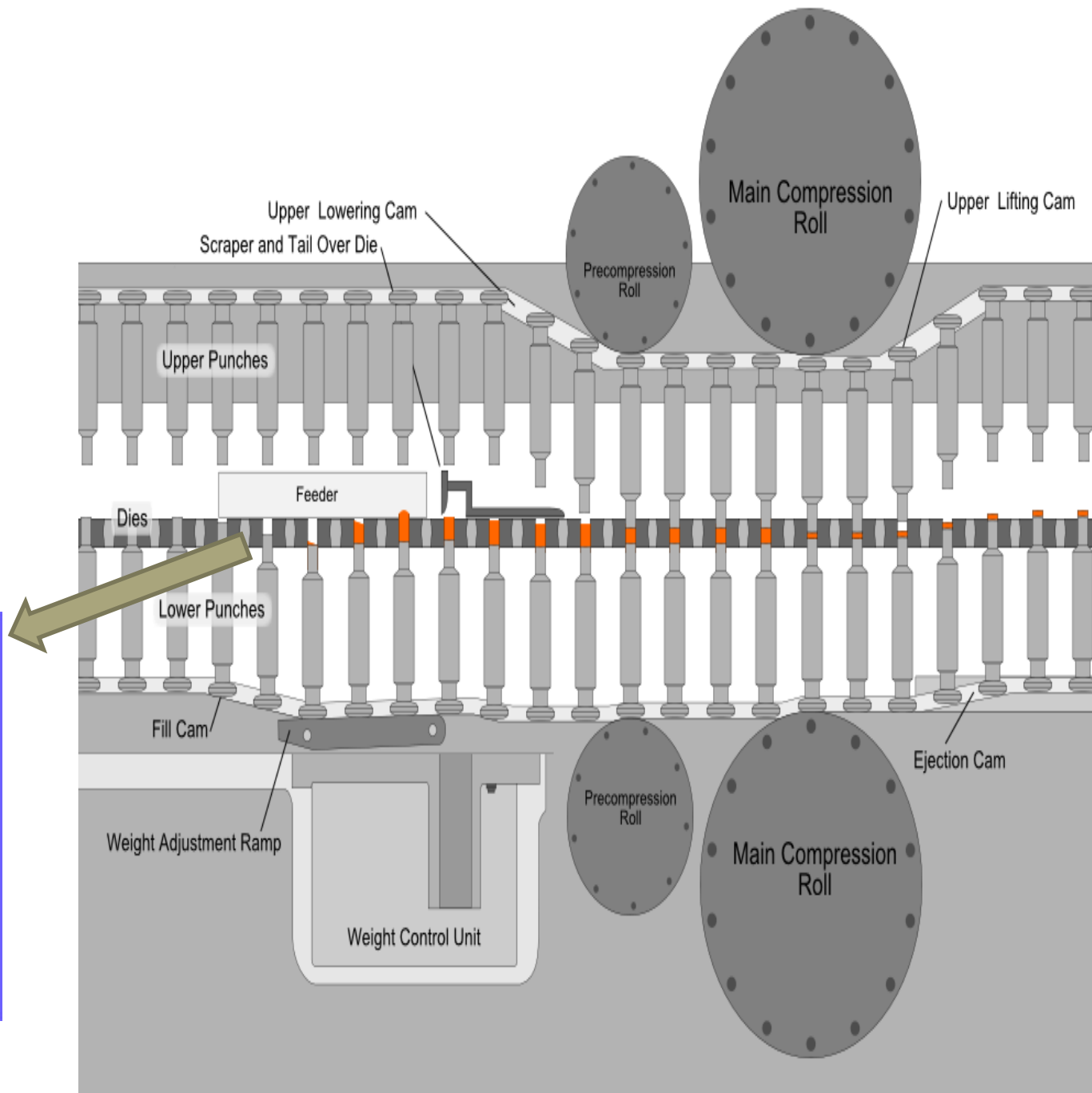
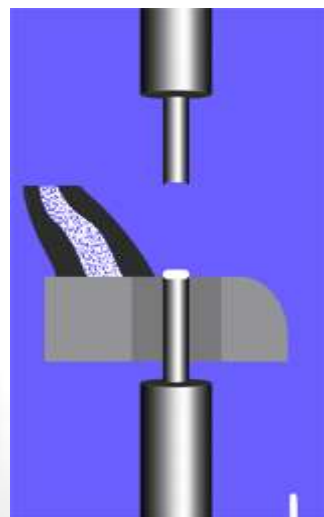
-  **Hopper** for holding and feeding granulation (or powder) to be compressed
-  **Feed frame** for distributing granulation from the hopper into the dies
-  **Dies** for controlling the size and shape of the tablet
-  **Cam** tracks for guiding the movement of the punches
-  **Punches** for compressing the granulation within the dies



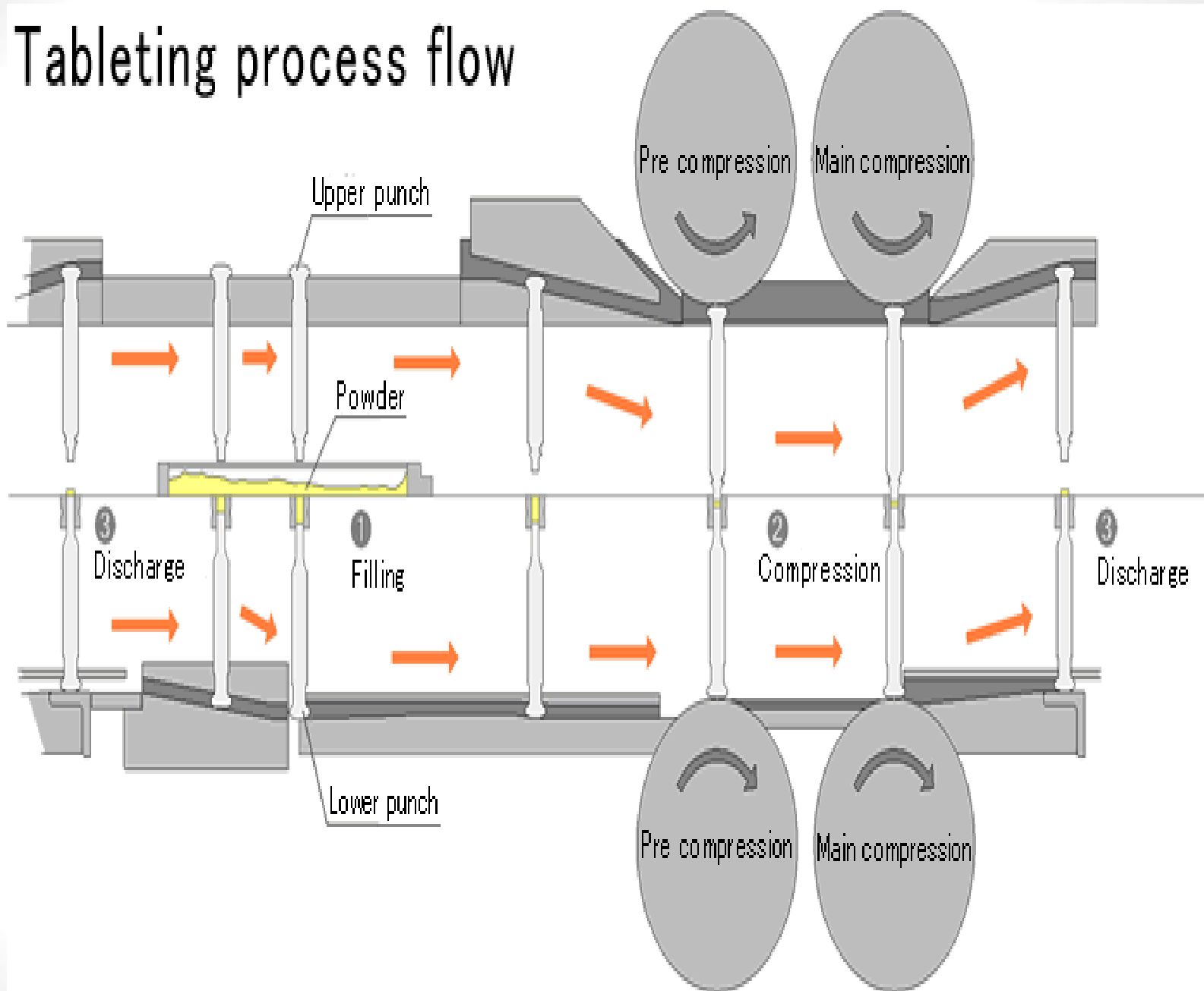
A single-punch tablet press.



The sequence of events involved in the formation of tablets.



Tableting process flow



Compression process

- **Filling**

- By gravitational flow of powder from hopper via the die table into die. The die is closed at its lower end by the lower punch.

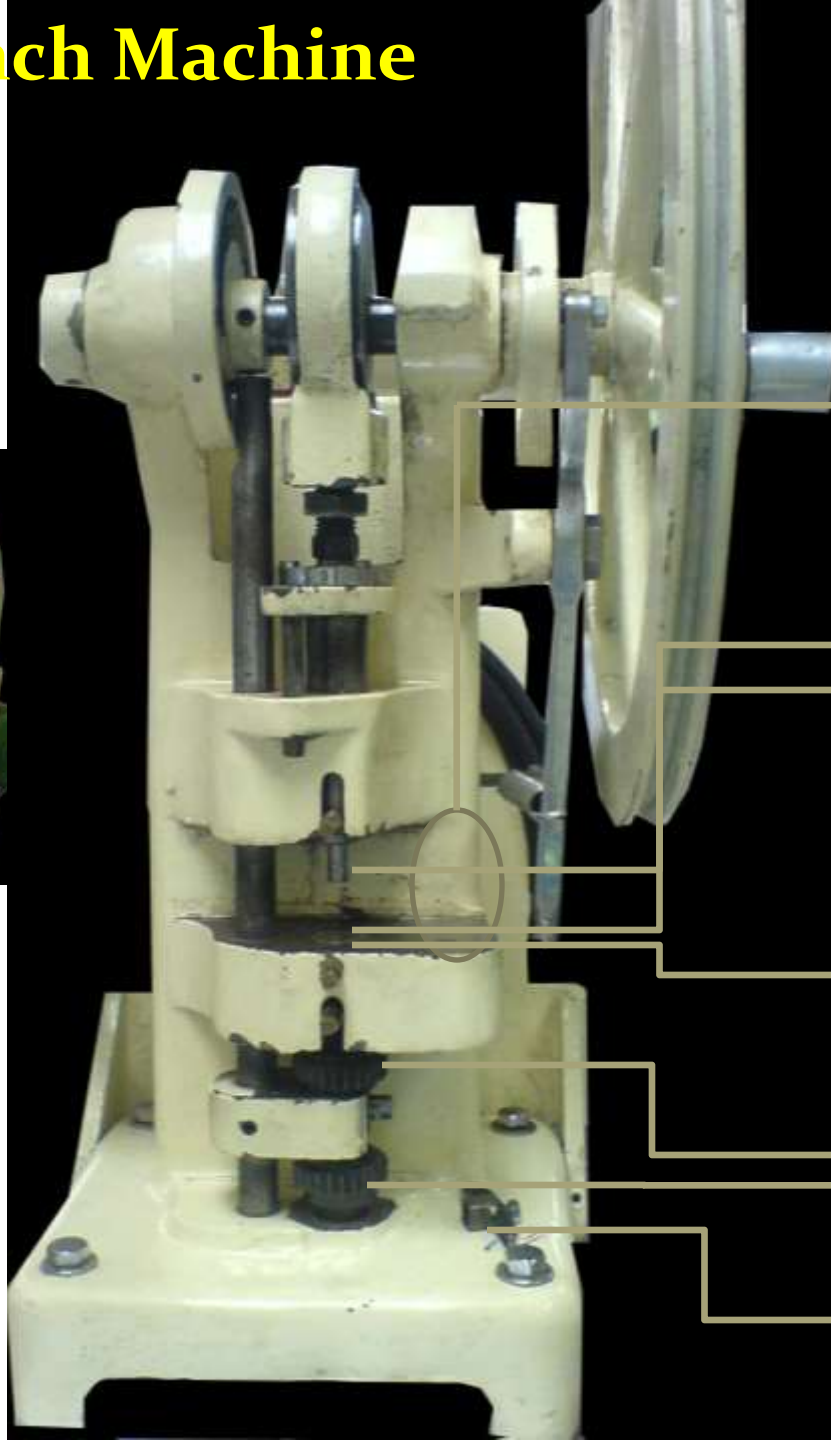
- **Compression**

- The upper punch descends and enters the die and the powder is compressed until a tablet is formed.
- During the compression phase, the lower punch can be stationary or can move upwards in the die.
- After maximum applied force is reached, the upper punch leaves the powder i.e. the decompressed phase.

- **Ejection**

- During this phase, the lower punch rises until its tip reaches the level of the top of the die. The tablet is subsequently removed from the die and die table by a pushing device.

Single Punch Machine (Tablets)



Upper and
Lower Collar

Collar locker

top punch



bottom punch



Tablet production methods

Dry methods

- Direct compression
- Dry granulation

Wet methods

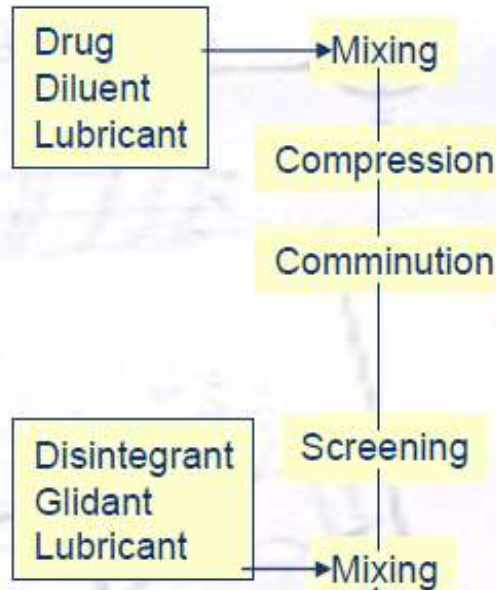
- Wet granulation

Process Route for Tablet Manufacture

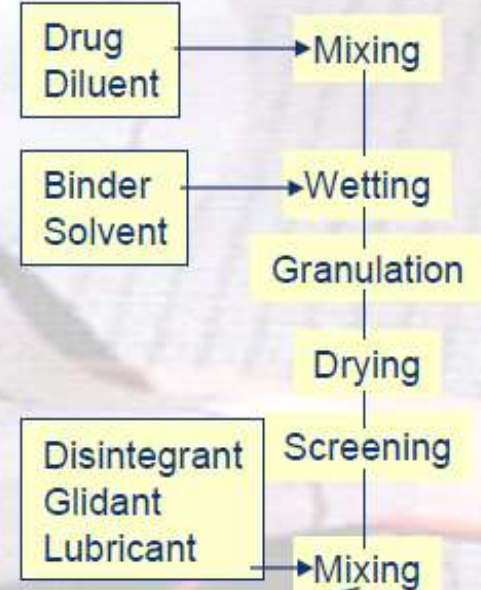
Direct Compression



Dry Granulation



Wet Granulation



Fill Die, Compress Tablet, Eject Tablet

Metal check, Dedusting, Coating, Packaging etc..

Thank You!

