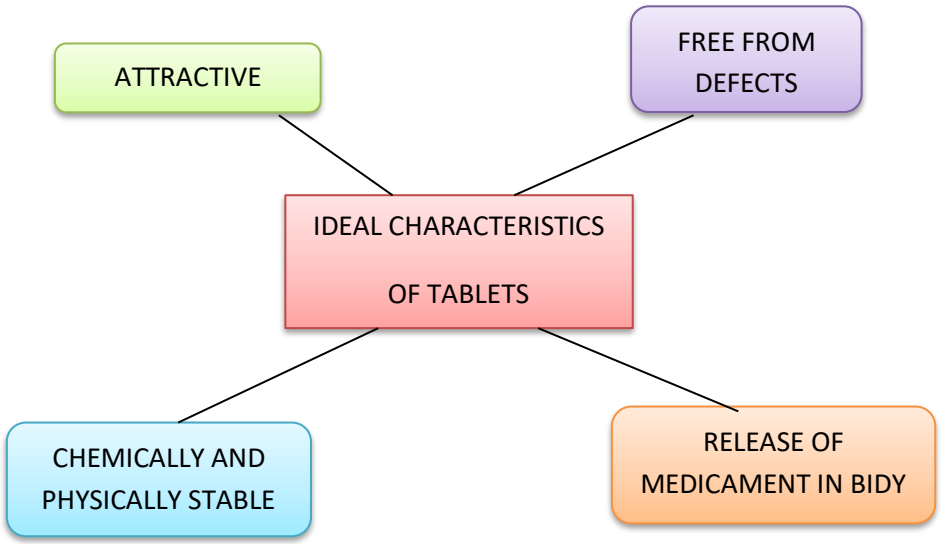
TABLETS

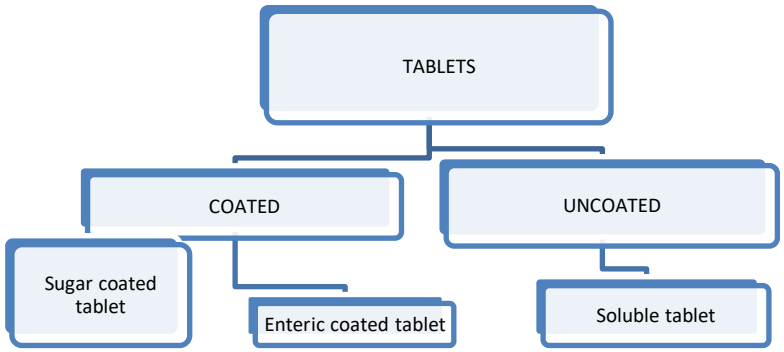
CONTENT:- Introduction, Ideal characteristics of tablets,Classification of tablets, Excipients, Formulation of tablets,Granulation methods, Compression and processing problems,Equipment and tablet tooling.

INTRODUCTION:- A solid dosage form containing medicinal substance with or without a suitable diluent Called also pill.

IDEAL CHARACTERISTICS:-



CLASSIFICATION:-



EXCIPIENTS:-

Excipients	Examples
Filters/Diluents	Lactose, Sucrose
Binders	Starch, Gelatin
Lubricants	Stearic acid, Sodium chloride
Glidants	Fine silica,Talc
Anti-adherants	Talc, Cornstarch
Disintegrants	Starch, Pyrrolidone
Colouring Agents	Iron oxide
Flavouring Agents	Mannitol
Sweetening Agents	Saccharine

FORMULATION:-It comprises a mixture of active substances and excipients, usually in powder form, pressed or compacted from a powder into a solid dose.

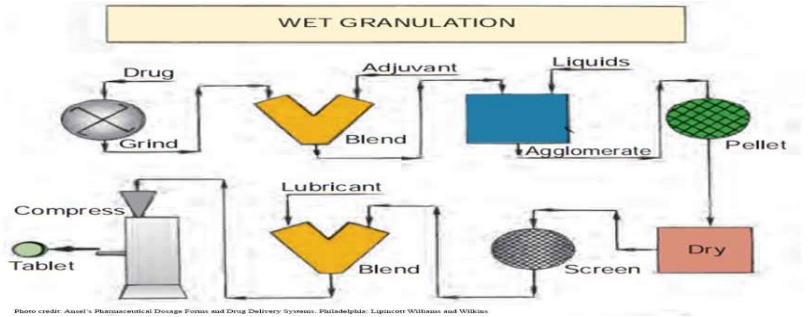
GRANULATION METHOD:-In pharmaceutical manufacturing, granulation process implies the techniques that are, used to combine powdered particles to form relatively bigger ones called granules. This process is used for commercial production of tablets.

TYPES:-

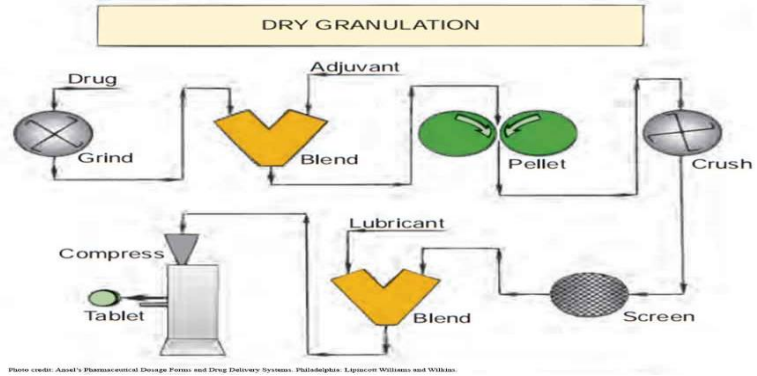
(1) Wet granulation

(2) Dry granulation

1. Wet granulation method:- Wet granulation is the process in which formation of granules is done by adding a granulating liquid. Here, a granulating fluid is used for the massing of powder particles.



2. Dry granulation method:-Dry granulation is a process whereby granules are formed without the aid of any liquid solution. The process is used if ingredients to be granulated are sensitive to moisture heat.



COMPRSSION AND PROCESSING PROBLEM:-

1. Picking and Sticking
2. Cracking
3. Capping and Lamination
4. Mottling

TABLET TOOLING:-Tooling on a tablet press usually refers to the sets of punches anddies that enable a tablet to be pressed.

Types:-

1."B-Type"

2."D-Type"

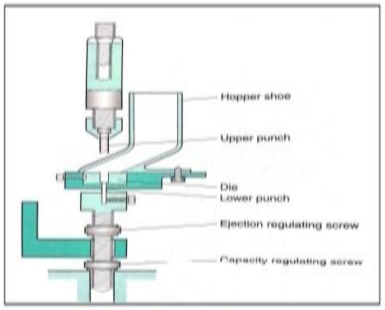
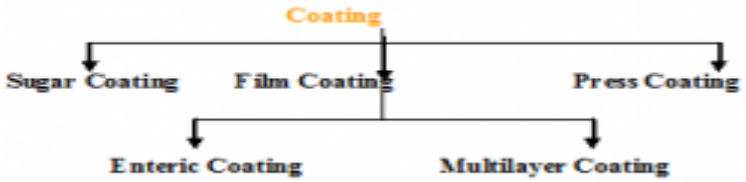


Fig.3. A single punch tablet press.

TABLET COATING

DEFINITION:-A tablet coating is a covering over a tablet, used to mask the taste, make it easier to swallow, or protect the active medication inside.

TYPES OF COATING:-



COATING MATERIALS AND FORMULATION OF COATING COMPOSITION:-

1.Film forming materials (Enteric and Non-enteric)

2.Solvents

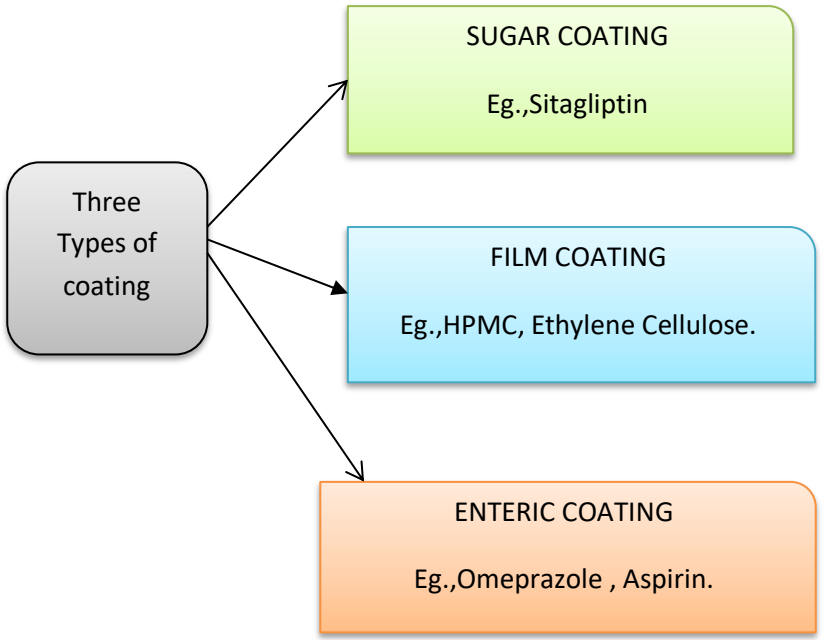
3. Plasticisers

4.Colourants

5.Opaquants

6.Missellaneous coating solution components

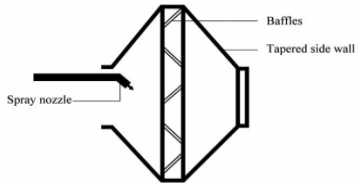
METHOD OF COATING:-



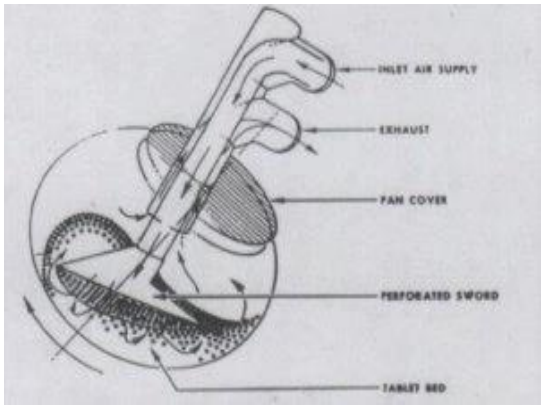
Equipment employed in coating:-

1] Standard coating pan:-

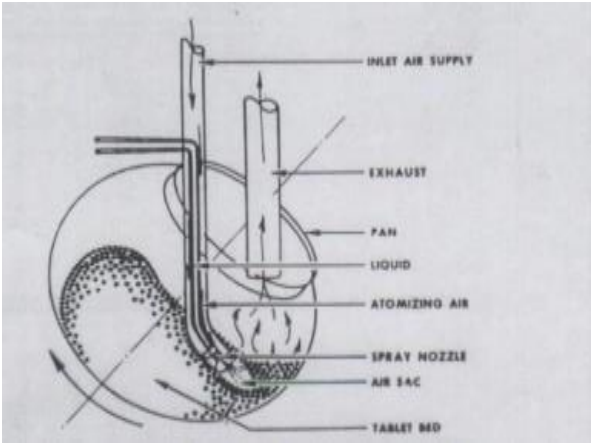
i.Pellegrini pan system- Baffled pan Diffuser(distributes the drying air uniformly over the tablet bed surface).



ii. Immersion sword system- This is basically a perforated metal sword that you can immerse in the tablet bed. The working principle is such that: During the drying process, you will introduce drying air which flows through perforated metal sword then upwards through the bed.

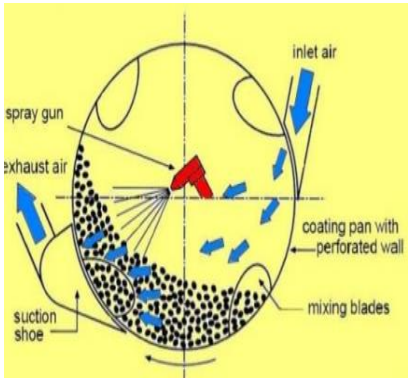


iii. Immersion tube system- An immersed tube (or immersed tunnel) is a kind of undersea tunnel composed of segments, constructed elsewhere and floated to the tunnel site to be sunk into place and then linked together.

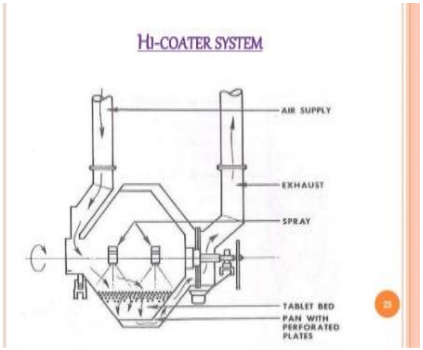


2. Perforated coating pan:-

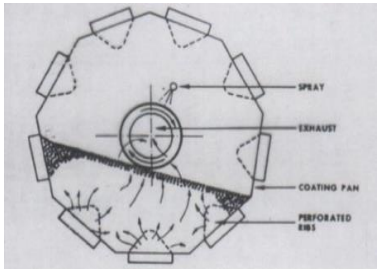
i. Accela cota system- The creation of the Accela-Cota coating system is a testament to the difference Thomas Processing has made in the pharmaceutical industry.



ii. Hi-coater system- The machine directs both the coating solution and drying air downwards**.** The drying air, then leaves the coating system through the perforations below the coating drum.



iii. Glatt coater system- **In** Glatt coater, drying air can be directed from inside the drum through the tablet bed and out an exhaust duct. Drying air can be directed in the reverse manner up through the drum perforations for partial fluidization of the tablet bed.



iv. Driacoated system- It introduces drying air through hollow perforated ribs located on the inside of the drum.

3. Fluidised bed coater:-In Fluid Bed Coater particles are entrained in high velocity gas, they pass through Wurster column where coating is applied via two-fluid atomizer, they then dry in the expansion chamber and fall back down to the bed to repeat the process.

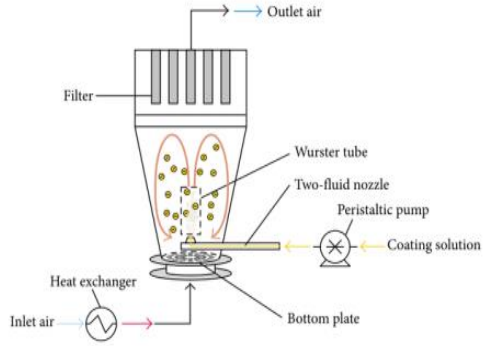
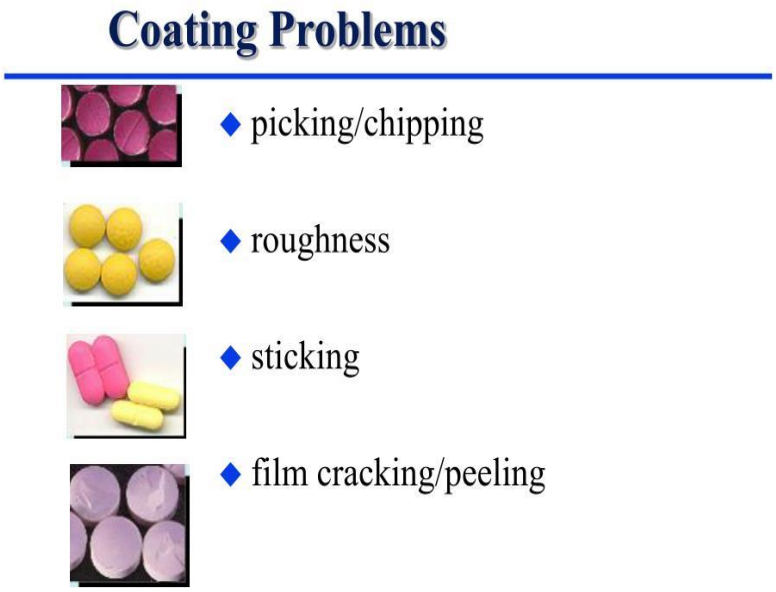


Figure 1: Schematic of the fluidized bed with a Wurster insert.

DEFECTS IN COATING:-



QUALITY CONTROL TESTS:-

(A) IN PROCESS TESTS-

1.Organoleptic properties (color, odour, and taste):

i. Color: Tablet color is crucial for identification and patient acceptance.

ii. Odour: Some types of tablets such as ODT tablets, chewable tablets have an odor to make a pleasant taste and improve patient acceptance. Besides in some tablets, flavoring agents are used within coating material to mask bad odour.

iii. **Taste:** Taste is important for patient acceptance especially for ODT tablets, chewable tablets, and dispersible tablets.

2.Water content determination:

The water content of tablets before and after stability study at specified temperature and humidity for a fixed time may determine to find out moisture impact on tablets. Generally, water content calculated by using the method is Karl Fischer titration.

3.Assay test: crucial quality control tests of tablets:

The assay is a specific and stability-indicating test to determine the potency (content) of the drug product. The assay of tablets expresses in the terms of grams, milligrams, or micrograms of drug per tablet. It is a crucial pharmacopoeial test for the evaluation of tablets or quality control tests of tablets.

4.Tablet Hardness:-The crushing strength of tablets is usually checked using Monsanto or Stokes hardness tester, Strong-Cobb hardness tester and the Pfizer crushing strength tester. All are manually used. So, strain rate depends on the operator.

5.Disintegration Time test

Disintegration is the process by which a solid oral dosages form such as tablet breaks down into smaller particles or granules. The tablets must disintegrate and all particles must pass through the 10-mesh screen in the time specified.

(B) FINISHED PRODUCT TESTS-

1. Thickness of tablets:

The thickness of the tablet is the only dimensional variable related to the tablet compression process. Generally, it is measure with a micrometer.

2. Diameter and Shape of Tablets:

The diameter and shape of the tablets should control by the diameter and shape of the die and punches during the compression process.

3. Friability test of uncoated tablets:

Friability testing is used to test the durability of tablets during transit (packing, transportation). Measurement of tablet friability supplements other physical strength measurements, such as tablet breaking force.

4.Dissolution test of Tablets:

Dissolution is the process in which a substance forms a solution. In vitro dissolution testing measures the extent and rate of solution formation from a dosage form (the amount of percentage of the drug substance in a dosage form such as tablets, capsules to go into solution) within a specific time under a specified set of conditions.

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REFERENCES:-

1. Pharmaceutical dosage forms:Tablets, Volume-1,3 by H.A.Liberman,Leon Lachman and J.B.Schwartz

2. Industrial Pharmacy-I by Dr. Rani Kankate, Dr.K.L.Senthilkumar, Thakur Publication.