University of Tikrit
College of Pharmacy
Department of Pharmaceutics

Practical Industrial Pharmacy II

Lab 7

Dry Granulation Method For Preparation Of Tablets

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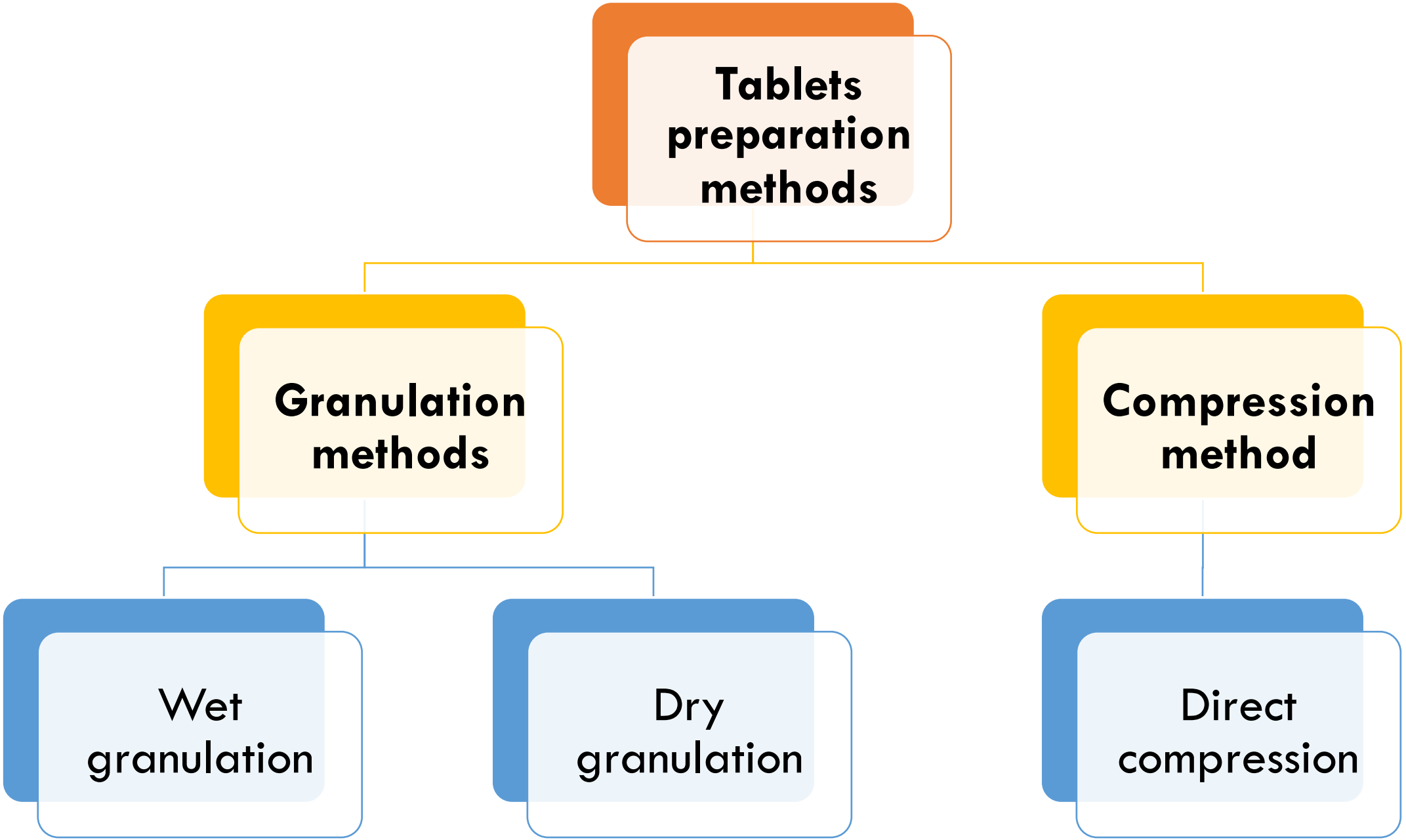

Tablets preparation methods
Granulation methods
Compression method
Wet granulation
Dry granulation
Direct compression

Granulation

- **Granulation** is the process in which primary powder particles are made to adhere to form larger, multiparticle entities called granules.
- Granulation normally commences after initial dry mixing of the necessary powdered ingredients **so that a uniform distribution of each ingredient through the mix is achieved.**
- After granulation the granules will either be packed (when used as a dosage form), or they may be mixed with other excipients prior to tablet compaction or capsule filling.

Dry Granulation

✓The process of forming granules with adding a dry binder.

Used when:

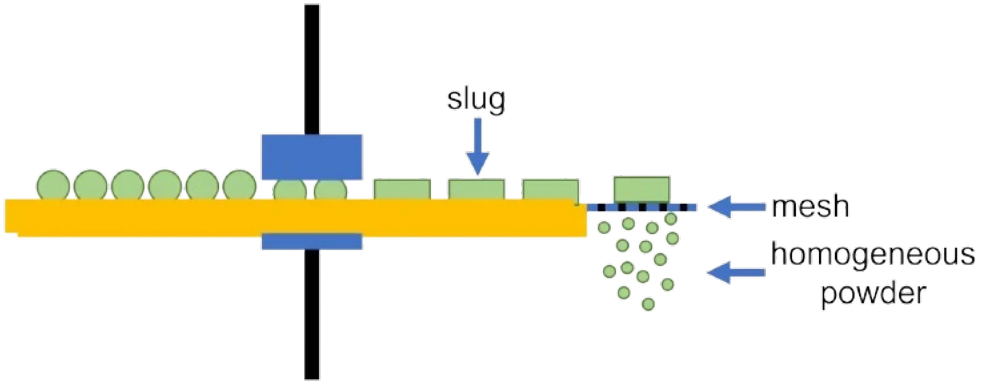
- The drug cannot be compressed directly due to poor flowability.
- Its heat and/or moisture sensitive.

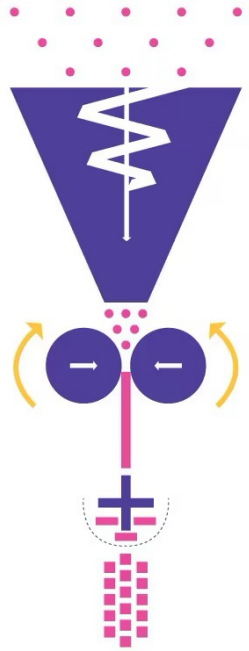
So, cannot be prepared by direct compression or wet granulation.

Methods of Dry Granulation

By **slugging** method (formation of big tablet-slugs)

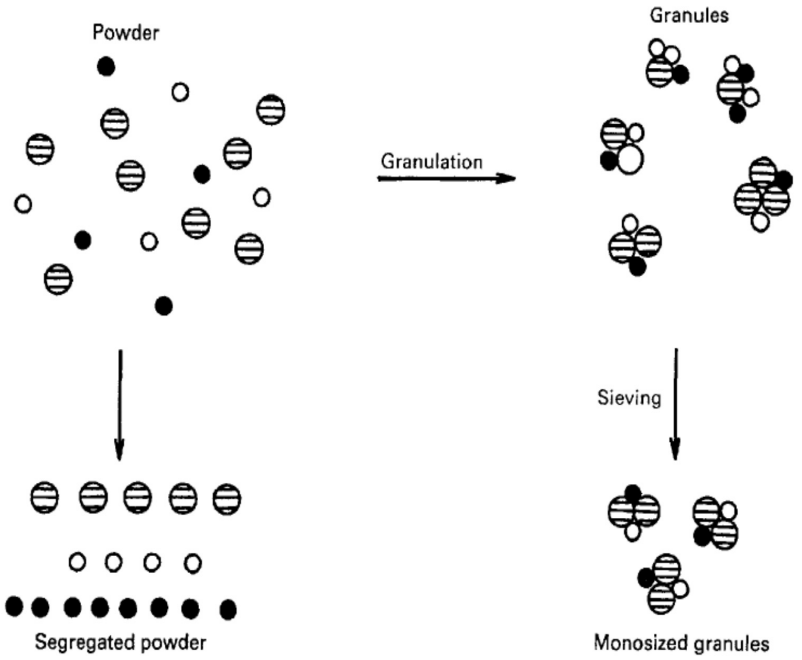
Or by using a special machine (**roller compactor**).





Advantages of Dry Granulation Method

- ✓ Improve flow properties
- ✓ Improve compressibility
- ✓ Prevent **segregation**
- ✓ No migration of colors (mottling) that may occur in wet granulation because of presence of moisture.
- ✓ Faster disintegration when compared to wet granulation method. Why?



Disadvantages of Dry Granulation Method

- Require special machines.
- Dry process of manufacturing result in weight loss.
- Produces more dust which may cause contamination of the product.

Principle of Dry Granulation by Slugging Method

- **Slug:** large flat tablet (large compact) or pellets contains half amount of lubricant, but its not actually tablet because it doesn't obey the method of evaluation or assay of the tab.

- Principle of dry granulation is summarized by forming a slug by compression of the formula followed by milling of the slug to obtain dry granules that are ready for second compression (double compression technique).

Experimental Part

Formula of one tablet Aspirin

• Acetylslicylic Acid	75 mg
• Lactose	40 mg
• Starch	20 mg
• Acacia	10 mg
• Mg Stearat	5 mg

• Acetylslicylic Acid	75 mg
• Lactose	200 mg
• Starch	35 mg
• Acacia	10 mg
• Mg Stearat	5 mg

Procedure

1. Weigh all the substances and ½ amount of lubricant. (Because it is needed during slugging by tablet machine to eject the slug from die).
2. Mix well for 3 minutes
3. Compress the mixture into large tab using tablet machine (slug).
4. Grinding slug to convert it into granules
5. **Calculate the Weight of the lubricant required for 2nd compression and mix it with dry granules**
6. Compress the resultant into tablet using the tablet machine

Calculation

1. **Weight of each tablet** = weight of API + ½ amount of the lubricant + weight of all remaining excipients

2. **Real No. of tablet** = weight of granules / weight of each tablet

3. **Weight of the lubricant required for 2nd compression** = real No. of tables * ½ amount of the lubricant required for single tablet in the formula