Granulation pf powder - industrial pharmacy 1 lab - manual

Sunday, October 20, 2019 7:09 PM

Granulation pf powder...

EXPERIMENT 7
GRANULATION OF POWDERS

INTRODUCTION

Granulation, the process for producing large aggregates from smaller particles, is widely used in the pharmaceutical industry, especially in the manufacture of compressed tablets. Granulate materials have several advantages when compared with fine powders:

1. Controlled size and shape
2. Improved flow properties
3. Improved flow properties.

The flow properties of powders are of critical importance in the production of pharmaceutical dosage forms. Pharmaceutical powders should be uniform, free and easier flowable, i.e. free flowing, for the following reasons:

a. Uniform feed from storage containers or machine hoppers into the tablet dies and capsule dosators, allowing uniform particle filling which maintains weight uniformity.
b. Uneven Powder flow can result in excess entrapped air within powders, which may lead to air entrapment in tablets, causing capping or lamination of tablets.
c. Uneven powder flow can result from uneven fines which increase decrease dust contamination risks during powder handling and processing.

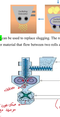
Granules are prepared by two methods:

1) Dry granulation (if compression granulation)
2) Wet granulation (if wet granulation screening).

Granulation is also defined as the process of collecting particles together by creating bonds between them. There are several different methods of granulation. The most popular, which is used by over 70% of formulations in tablet manufacture is wet granulation. Dry granulation is another method used in form granules.

Wet Granulation *(Compression Granulation)*:

- Dry granulation can be conducted on a press using slugging or on a roller compactor. Dry granulation equipment offers a wide range of pressure and roll types to meet diversification.
- **In tablet press**, the powder blend is forced into the dies by a feeding mechanism for granulation. Initial compacts are called **slugs** and **the process is known as slugging**.



- **Roller compactor**, on the other hand, no tablets slugging. The roller compactor exerts known pressure on powder material that flow between two rolls and a film ribbon is produced, resembling slugs.

Advantages of dry granulation

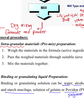
1. Good for moisture sensitive and heat sensitive drugs
2. Process times are often reduced and equipment requirements are streamlined, therefore, the cost is reduced
3. Less equipment space than wet granulation

Limitations:

1. Dry granulation often produces a higher percentage of fine or non-compressed products, which could compromise the quality or cause problems for the tablet.
2. It requires drugs or excipients with cohesive properties.
3. It involves the compaction of the components of a tablet formulation by means of a tablet press or specially design machinery followed by milling or sifting prior to the final compression.
4. The process may require expensive compaction steps to attain the proper granule and press.

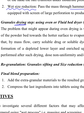
Wet Granulation process:

Wet granulation is a process of using a liquid binder or adhesive to the powder mixture. The amount of liquid can be properly managed, and wet granulating will cause the granules to be less harsh and wetting will cause them to be not and not harsh. **Wet granulation** is used for the advantage of being able to deal with than solvents. Over 2/3



The materials in granulation process are divided to:

1. Intra-granular materials: are powders
2. Extra-granular materials: are other ingredients, such as binders, disintegrants, lubricants, glidants, colors, flavors, etc.


Process
Associated Variables
Dry Mix
Water Type and Quantity
Wet Mass
Wet Granules
Dry Granules
Wet Granules
Wet Mass
Wet Granules
Dry Granules
Wet Granules
Wet Mass
Wet Granules
Dry Granules
Wet Granules