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Editorial

ADVANCEMENTS IN PELLET FORMULATION

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EDITORIAL

Pelletization is an agglomeration process in which fine powders or particles of a bulk medicine and excipients are converted into small, free-flowing, more or less spherical units known as pellets. The pellets are 0.5-2 mm in diameter. Pellets have a high free-flowing capacity and a low porosity of around 10%. Direct pelletizing, powder stacking, suspension or solution layering, extrusion and spheronization, spherical agglomeration, compression/balling, cryo-pelletization, melt spheronization, globulation or droplet creation, and fluid bed coating are some of the preparation processes (Singh et al., 2020).

Pellets have a number of advantages over traditional dosage forms, including the ability to provide accurate dosage to children, the elderly, and even bedridden patients, reduce peak plasma fluctuation, minimise potential side effects without lowering bioavailability, avoid high local concentrations, and reduce the risk of dose dumping. Pellets' popularity has risen in recent years, owing to their benefits and creative applications.

The recent novel trends of pellets includes:

1. They help in preparation of modified release multiple dosage form with different release patterns like immediate and sustained release pattern.
2. They help in taste masking of the drugs which are bitter in taste.
3. They are available as mouth melt pellets.
4. Polymer based pellets for control release pattern of drug.
5. As fast dissolving tablets containing micro pellets.
6. As a self-emulsifying pellets.
7. Gastro retentive floating pellets etc.

This trend of pellets has increased patient acceptance. This novel trends helps in giving the information about the releasing pattern of the drug and its bioavailability of the drug to the systemic circulation of the and how it as increased the patient acceptance of pH sensitive drugs releasing pattern pf drugs, taste mask of the drugs, self-emulsification of pellets, and polymer based control release of the drugs, mouth melt pellets etc (Patel & Gohel, 2019).

Advantages of pellets (Vanitha et al., 2018)

- Flexibility in dosage form design and development
- It permits the combination of different release rates of the same drug in a single dosage form
- Controlled release technology
- Disperse freely in the GI& invariably maximize drug absorption
- Reduce peak plasma fluctuation
- Minimize potential side effects without lowering bioavailability
- Avoiding high local concentration
- Less susceptible dose dumping
- Reduce gastric emptying rates so minimize inter and intra subject variability of plasma profile
- Pellets have a low surface area to volume ratio and provide an ideal shape for application of film coatings (Guo et al., 2019)
- Reproducible fill weights in capsules
- Can be used to mix incompatible drugs.

Disadvantages of pellets

- Dosing by volume rather than number and splitting into single dose units as required.
- Involves capsule filling which can increase the costs or tab letting which destroy film coatings on the pellets.
- The size of pellets varies from formulation to formulation but usually lies between 1to 2 mm.
- Preparation of pellets is quite expensive and required qualified persons and specialized equipment's (Pałkowski et al., 2018).

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