Microencapsulation

As topics:

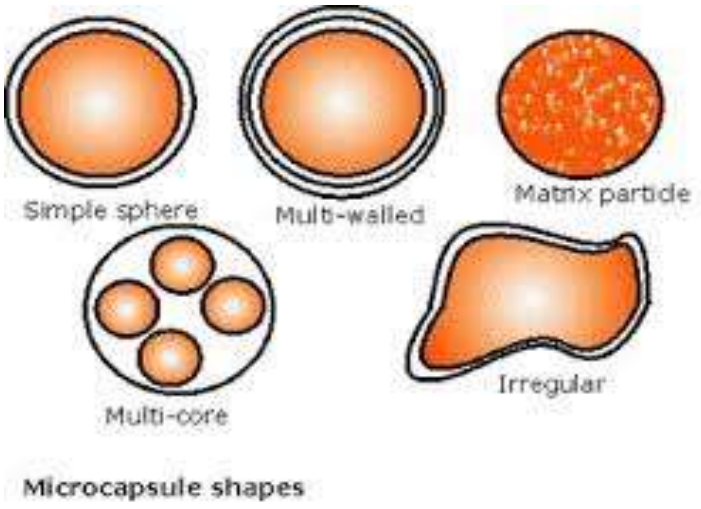
- **Definition**
- **Types of microcapsules**
- **Applications**
- **Advantages and disadvantages**
- **Manufacturing process (materials, methods and equipment)**
- **Mechanisms of release**
- **Evaluation**

Microencapsulation

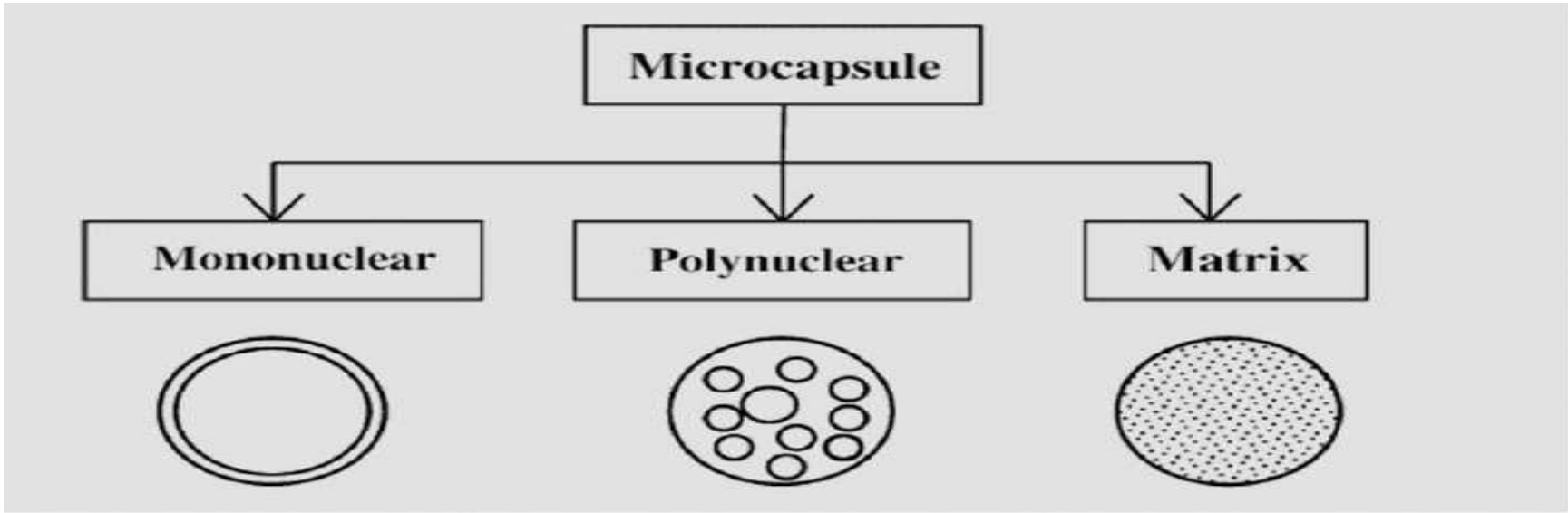
- Is a rapidly expanding technology, which is process of enclosing on encapsulation of drug (in solid, liquid or even gaseous state) as **core** materials by coating materials (**wall**) in microscopic level. Therefore, making them more desirable in terms of physical and chemical properties.
- The resulted particles are called microcapsules or microspheres or micro-particle depending on the shape (morphology) and distribution of core to wall materials.

- Microcapsules can be classified according to the their morphology, into:

1) Mononuclear microcapsules
2) Poly-nuclear microcapsules
3) Matrix type (microspheres)



Microcapsule shapes



- Mono- and poly-nuclear microcapsules are characterized by well defined (core and wall), or surrounded with continuous, porous or non porous, polymeric wall but contain one or many cores. This shape have a reservoir release system.
- Matrix type is characterized by uniform, homogeneous distribution of core material within the wall material (one or more miscible polymers). This shape have a monolithic release system.

Applications

- **Protection (from environmental or biological conditions)**
- **Masking of taste**
- **Modification or targeting of release**
- **Improve the bulk properties of powders**
- **Separation of incompatible drugs (ex. Acid and base)**
- **Decrease the gastric irritation side effects**

Advantages and disadvantages of microencapsulation:

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