

Review on Spanule A New Method Drug Delivery System

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Abstract: *Spansules are considered to be advanced drug delivery systems because they allow for long-term controlled and continuous release of drugs. Such transportation systems can provide a constant plasma concentration over a long period of time, improve treatment results and reduce the risk of side effects. In addition to maintaining release, spansules can also be used to supply multiple drugs in a single form of dosage. Spansule's multi-pharmaceutical capability is also beneficial, allowing multiple drugs to be administered in a single form. This can improve patient compliance with the drug plan, simplify the dose and reduce the risk of drug interaction. This is particularly useful for patients who need several drugs to manage complex diseases. Spansules can be used as a biphasic release system to provide immediate and long-term release of medicines. These systems are helpful for patients who need rapid treatment and long-term maintenance to manage their symptoms. Overall, Spansules is a multi-faceted and effective drug delivery system, providing patients and health professionals with many advantages.*

Keywords: Spansules, Biphasic, Controlled release, Sustained release, Drug

I. INTRODUCTION

Spansules are advanced drug delivery systems that pack active ingredients into various size granules and microparticles in capsules. This capsule protects particles and active substances in the environment and releases medications at the required time. The design and manufacture of dosage forms requires various skills, experience, advanced technology and special equipment, and new challenges. Spansules was first introduced in Smithkline and French. 1952, as a release time formulation, research was carried out into other applications in the design of dosage forms. Spansules refers to a drug supply system that facilitates the gradual release of drugs over a long period of time. The spans are made up of small beads and pellets, surrounded by a special polymer coating. This coating is gradually dissolved and the drug is gradually released into the body. Spansule is often used to treat chronic diseases such as high blood pressure, diabetes, and mental illness. Spansule is designed to release drugs gradually, resulting in consistent therapeutic concentrations of drugs in the body. This control release mechanism can improve treatment effectiveness and reduce the likelihood of side effects. Spansule is available in a variety of forms, such as capsules, tablets, and pellets. Prescription drugs are usually prescribed by medical professionals, and should be used as prescribed to achieve the best results of treatment. The capsule contains hundreds of colored particles or particles, divided into 3 to 4 groups, and the thickness of the delay coating is different. These pellets and granules provide loading doses and release drugs for 2 to 3 hours, 4 to 6 hours and 6 to 9 hours. The drug release depends on the moisture penetration of the coated particles (cores), which causes swelling, broken coatings, and drug release.

Definition

The capsule is defined as a capsule (in the form of granules) that contains a drug coated with a slow dissolution material, and is delivered at different specific times. In other words, the term span is a combination of two words - capsules and capsules, so the capsule releases the drug slowly over a different period of time.



Advantages of Spansules

- Spansules are a type of dosage that allows a controlled and lasting release of one or more drugs.
- Reduced dosing.
- Modification of delivery profiles
- Improve drug degradation in GITs Taste masking is another useful aspect

Disadvantages of Spansules:

- In-vivo correlations are lacking.
- Sometimes a dose withdrawal can occur.
- The system is less available than conventional capsules without immediate release.
- In vitro-in vivo correlation is lower than conventional correlation.
- Fluctuations in plasma drug concentrations can lead to side effects, especially in low-dose therapeutic index drugs (TIs).

Classification of spansules:

1. Continuous release system:

- a. Dissolving control release system;
- b. Dissolving control release system;
- c. Ion exchange resin compound;
- d. PH formula;
- e. Osmotic pressure control system;
- f. Hydrodynamic pressure control system;
- g. Slow dissolving salts and complexes;

2. Reverse Transit and Continuous Release System

- a. Adjustable Density System
- b. Decorative Adhesive System
- c. Size

3. System The delayed release system

- a. The intestinal release system
- b. The colony release system

Principles of Spansule coating technology

Spansule is one of the most advanced, evolving, and modified forms of drug delivery systems. Each granule with different coating thickness releases the drug in different ways and the granule with a thin layer provides the initial dose.

Spansule are one of the best ways to provide multiple drugs simultaneously. This is the main principle of the Spansule capsule.

It can also improve the efficiency of doses and their forms and reduce side effects by maximizing patient compliance.

Type of drug release

1. Continued publication
2. Controlled release form
3. Extended Release
4. The publication has been delayed until
5. Repeated Action Drug Delivery System
6. The prolongation of the release system
7. Time-release drug delivery system
8. Release of specific locations and receptors.

Methods of Preparation of Granules for Spansule:

1. Coacervation phase separation
2. Drying spraying
3. Congealing of Spray
4. Pan coating
5. Evaporation of solvent
6. Fluid bed technology

Spray drying

Spray drying is a common method for coating drugs and powders. This method first dissolves or suspends drugs in a coating material, then sprays them as thin flakes into a heated room. When mud droplets enter the room, solvent evaporates and leaves dry coated particles and granules. When the drug is contacted by heat, the coating forms a thin film around the drug, settling when it is contacted by hot air.

Pan coating

Pan coating is a common method of coating small particles and pellets. Solid particles over 600 microns are considered necessary for an effective coating. This method crushes particles in a coating bowl and gradually applies the coating material. The active ingredients are usually covered with various sphere particles. The coating solution is applied to the solid core material by atomization spraying. To remove the coating solvent, hot air is injected into the coating material. This process is repeated several times until you reach the desired coating thickness. Pan coating is a relatively simple and inexpensive coating method widely used in the pharmaceutical industry.

Solvent evaporation

Solvent evaporation is a common method for the production of microcapsules. This process dissolves the coating material into volatile solvents that cannot be dissolved during the liquid vehicle phase. Then the core material is distributed in the coating solution and agitated to get a uniform particle size. The size of the granules can be controlled by changing the flow rate, the concentration of the coating material, and the type of solvent. Various film polymers can be used as coating materials for solvent evaporation.

MOA of Spansule

When these coated tablets are pressed in the form of tablets, the Spansule works with every drug particle or granule contained in the Spansule, and the material containing the Spansule is slow dissolving. In spanules, drug dissolving can be controlled by microencapsulation, and when the drug granule coating is dissolved, the drug is released and ready for dissolving. Change the thickness of the coating and the composition can predetermine the release of drugs. The spanule can be broken and cracked because it can damage the coating material.

Limitation of Spansule

Because of the limited available data, the correlation between Spansule in vitro release characteristics and in vitro performance is not clear.

The drug system is a waste of money. Complex formulation requires professional work. Complex formulation: The formulation of Spansules may be complex and requires skilled workers, which increases the cost.

II. CONCLUSION

Spacule means that active substances are packed into the capsule shell in the form of a microparticle of one micron to several millimeters in size. This type of capsule protects the particles and active substances from the environment and releases the medicine as needed. The formulation brings new challenges to new applications.

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