Drug Intoxication & Detoxication: Novel Approaches

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Advancements in Drug Delivery: Exploring the Evolution of Modern Dosage Forms

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INTRODUCTION

Dosage forms are fundamental to drug therapy and play a pivotal role in determining how effectively a drug is absorbed, distributed, and utilized by the body. The selection of an appropriate dosage form is influenced by factors such as the drug's properties, the intended therapeutic outcome, and patient preferences. Understanding these forms allows healthcare providers to tailor treatments to individual needs, ensuring better outcomes and adherence to therapy. In pharmacology, a dosage form refers to the physical form in which a drug is produced and administered to patients. It determines how a drug is delivered, absorbed, and processed in the body, impacting its efficacy, safety, and convenience. Different dosage forms cater to various therapeutic needs and patient preferences, and choosing the appropriate form is a crucial aspect of effective treatment. Solid dosage forms are the most common and include tablets, capsules, and powders. These forms are convenient and stable, with well-established manufacturing processes. Tablets are solid doses of medication that are compressed into specific shapes. They can be immediate release, slow-release (extended release), or controlled release (sustained release), and depending on the formulation. Tablets often contain binders, fillers, and disintegrants to aid in proper drug release and absorption [1,2].

DESCRIPTION

Some tablets are designed for enteric coating to protect the drug from stomach acids or to ensure it is released in the intestines. Capsules are typically made of gelatin and can contain either a powdered or liquid form of the drug. They are easier to swallow than tablets and can be designed for delayed or sustained release. Some capsules are formulated with a coating that allows for the release of the drug in specific parts of the digestive tract. Powders are loose drug formulations that may be mixed with liquids before administration. They may be used for oral, topical, or parenteral administration. Powders allow for more flexible dosing but require reconstitution before use, which can be a disadvantage in some situations. Liquid dosage forms are ideal for patients who have difficulty swallowing solids, such as children or elderly individuals. They are also useful when rapid absorption is required. Syrups are viscous liquids containing dissolved drugs and high concentrations of sugar or other sweeteners to improve taste [3,4]. They are often used for treating conditions like cough and cold. Suspensions are liquids in which the drug is dispersed but not dissolved. They must be shaken before use to ensure uniform dosing. Suspensions are useful for drugs that are poorly soluble in water but can be mixed with a vehicle to facilitate absorption.

CONCLUSION

Solutions are drugs dissolved in a liquid, allowing for uniform distribution throughout the formulation. These are typically used for conditions requiring quick action or precise dosing. They can be used for oral, injectable, or topical administration. Semisolid dosage forms are typically used for topical or transdermal delivery of medications. These forms are useful for localized treatment or when a sustained release of a drug is needed. Creams are oil in water emulsions that are applied topically for various conditions such as skin rashes or infections. They are non-greasy and can be absorbed into the skin. Ointments are semisolid formulations that are greasy and more viscous than creams.

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CONFLICT OF INTEREST

The author declares there is no conflict of interest.

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