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Editorial

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A Brief Note on Pharmaceutical Formulation

Thabit M[1*], Al-Rabeei N[2]

[1]*Department of Pharmacy, Al-Razi University, Sana'a, Yemen*

[2]*Department of Applied Medical Sciences, Al-Razi University, Sana'a, Yemen*

DESCRIPTION

Formulation studies entail creating a medication formulation that is both stable and agreeable to the patient. This generally entails putting the medication into a tablet or capsule for orally given drugs. It's crucial to note that, aside from the medication itself, a tablet contains a range of other potentially inactive chemicals, and tests must be conducted to guarantee that the encapsulated drug is compatible with these other compounds in a way that does not cause harm, either directly or indirectly.

Pre-formulation is the process of determining what extra components (excipients) should be included in the production of a medication depending on the physical, chemical, and mechanical characteristics. Understanding the solution behaviour of a specific protein under a range of stress circumstances such as freeze/thaw, temperature, and shear stress, among others, is critical in dealing with protein pre-formulation in order to identify mechanisms of degradation and therefore mitigation.

Particle size, polymorphism, pH, and solubility are all variables that can impact bioavailability and thereby the activity of a medication in formulation studies. The drug must be blended with inactive components in a way that ensures that the amount of drug present in each dosage unit, such as each tablet, is uniform. The drug must be uniform in appearance, taste, tablet hardness, and capsule disintegration ought to be acceptable.

FORMULATION TYPES

The drug form varies by the route of administration. Like capsules, tablets, and pills etc.

External formulation

Oral (external) medications are usually administered in the form of pills or capsules.

The medication (active ingredient) must be soluble in the aqueous solution at a consistent rate. Particle size and crystal form, for example, can have a huge effect on dissolution. Fast dissolution might not be the best option. Slow dissolving rates, for example, might extend the duration of action or prevent high plasma levels initially. Special methods for handling active ingredients, such as spherical crystallization, can have some benefits for pharmaceutical formulation.

Parenteral formulations

These are also known as injectable formulations, and they can be administered intravenously, subcutaneously, intramuscularly, or intra-articularly. The medication is preserved in liquid or lyophilized form if it is unstable.

Parental formulations include Liquid drugs and Lyophilized drugs.

Since many parenteral formulations are unstable at higher temperatures, products must be preserved in refrigerator or freezer. The cold chain is the logistics method of providing these medications to the patient. The cold chain can obstruct the delivery of medications, particularly vaccines, to places where supply is irregular or non-existent.

NGOs such as the Bill and Melinda Gates Foundation are working hard to develop answers.

Lyophilized formulations, for example, are simpler to stable at ambient temperature.

Because of the fragile nature of the molecule, gastrointestinal administration would destroy them, most protein formulations are parenteral. At room temperature, proteins' tertiary and quaternary structures might be disrupted or induce aggregation. This may have an implications on the medicine's safety and efficacy.

Topical formulations

Topical formulations mainly include cutaneous i.e through skin.

Topical formulation options include-

Cream: An emulsion of oil and water in approximately similar quantities. The stratum corneum outer layers of the skin are thoroughly penetrated.

Ointment: A mixture of oil (80%) and water (20%) acts as an barrier for the moisture loss.

Gel: Liquefies when it encounter with the skin.

Paste: An ointment in which a powder is suspended that combines three agents like oil, water, and powder.

Powder: A solid substance which is being coarsely pulverized.