Oral delivery of solid dosage forms in pharmaceuticals.

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Abstract

Oral sensation of pharmaceutical products is an important quality attribute that influences adherence to treatment. The oral route of administration is the most preferred route of administration due to patient compliance and ease of administration. Although this route has great advantages, it often suffers from poor bioavailability due to poor water solubility, permeability, or drug dissolution rate. Improving oral bioavailability is a major challenge facing formulators when developing successful products. From the point of view of manufacturers, physicians and patients, layered tablets are still preferred. Therefore, we can further explore this dosage form with a greater focus on such technologies in the future.

Keywords: Solid dosage forms, Sustained release, Oral drug delivery, Conventional dosage form.

Introduction

Solid dosage forms, e.g. B. Tablets, dragees, capsules, powders, etc. make up the bulk of the pharmaceutical products on the market worldwide. It is the result of production. The dosage form is the means by which the drug is delivered to the body. To achieve the desired effect, a drug should be delivered to its site of action at a rate and concentration that achieves maximum therapeutic effect and minimum side effects. However, as oral administration remains widely accepted, tablets and capsules have the common drawback of being difficult to swallow. Different steps of process validation for oral solid dosage forms in the pharmaceutical industry [1].

Oral solid dosage forms such as tablets and capsules are widely used due to their ease of administration, are affordable and readily available in the market. This is an important part of current Good Manufacturing Practices. Process validation is an integral part of GMP as it provides evidence of pharmaceutical quality. Performing process validation in the pharmaceutical industry helps design, control and maintains their respective processes. Critical process steps such as sieving, mixing and compaction and critical process parameters such as sieve integrity before and after the passage of raw materials, sieve size, mixing time, mixing speed and compaction force are clearly specified. Process validation provides a high level of assurance that a particular process will consistently produce product that meets predefined specifications [2].

The majority of drugs in solid pharmaceuticals are in crystalline form. Several articles address the effects of formulation and manufacturing processes and storage conditions on the stability and dissolution of crystalline solids. Understanding these effects is critical to ensuring drug quality. To determine the effect of process conditions on polymorphic transformation of indomethacin during hot-melt extrusion granulation [3]. We studied the effects of formulation and lyophilisation conditions on the disproportionation of indomethacin sodium and found that pH shifts induced by changes in buffer components can lead to disproportionation and prolonged reconstitution times. Establishment of a kinetic model to quantify the effects of temperature, humidity, and excipients on the physical and chemical transitions of gabapentin in binary excipient mixtures after milling stress. Such models help to better understand the relationship between formulation and storage conditions and the stability of stressed drug solids. In addition, there are review articles describing the impact of crystal anisotropy in pharmaceutical process development such as milling, granulation, and tableting. This review article describes the basic concepts of intermolecular and interfacial phenomena and their relevance to pharmaceuticals, and sheds light on the rational design of crystalline solid formulations [4].

Tablets are the most commonly it is a prescription dosage form. Technological advances and modifications to standard compressed tablets are aimed at achieving better acceptance and bioavailability. Various types of new, more efficient tablets are being developed to create delivery systems that are relatively easy to administer. In a sense, osmotic pump systems are a different type of membrane-controlled drug delivery system and work as follows. The drug is incorporated into a water-soluble tablet core that solubilizes or suspends the drug in the presence of water. Multi-layer tablet dosage forms are also more useful than conventional single-layer tablets. FDDS gastroretentive dosage forms have improved bioavailability [5].

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Conclusion

Among various dosage forms, oral medications offer a wide range of advantages over injections, suppositories, eye drops, and nose drops, including ease of administration and patient compliance. Swallowing solid dosage forms requires overriding the natural instinct to chew solids. Older people often have difficulty swallowing due to age-related physiological changes, complications, and polypharmacy. A common strategy used by healthcare professionals and patients to make medications easier to swallow is to change the dosage form. When it comes to improving oral tablets, layered tablets are an add-on. By weighing several parameters, layered tablets may be an important approach to solid oral dosage forms. Layered tablets are attracting attention. The development of multi-layer oral tablets has made administering multiple tablets more convenient. Improve compliance while offering low capital investment and low cost production.

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