

Potential of Nanocrystalline Drug Delivery Systems



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Abstract During the last decades, the field of drug delivery exploiting particle delivery techniques as conveyors for both large and small molecules has witnessed a substantial surge in scientific interest. Many atoms can be assembled into nanocrystals, which combine to form “clusters” that are crystalline forms of matter. They can be utilized to physically modify and choose the pharmacokinetic as well as pharmacodynamic characteristics of many groups of pharmaceutical drugs. They were utilized in vivo to protect the medication while it is moving through the blood. The preparation of nanocrystals covered spray drying, top down, bottom up, as well as other novel methods. These methods are opening the door to the fabrication of nano-sized particles that can carry out a wide range of scientific functions. The primary benefits of the formulation of nanocrystal are increased bioavailability by buccal route, enhanced dose proportionality, decreased food consequences, appropriateness designed for administration via all routes, and potential for aseptic filtering because of a reduced particle size range. The choice is made centered on the locations and the capacity to transport the API with controlled, steady rate to the spot of act. We have gone through a number of fundamentals of nanocrystal production, characterization, the impact of these characteristics, and their use in pharmaceutical administration of therapeutic and pharmacological molecules. In this book chapter, along with the introduction, procedures, evaluation parameters, and extensive applications, the significance of nanocrystal treatments is covered.

Keywords Nanocrystals • Milling • Particle shape and sizes • Solubility • Bioavailability

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