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Nanotechnology in advanced drug delivery

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Abstract

Nanotechnology is the matter at dimensions of roughly 1 to 100 nanometers, where unique phenomena enable novel applications. At the nanorange, the physical, chemical, and biological properties of materials differ in fundamental and valuable ways from the properties of individual atoms or bulk matter. The method by which a drug is delivered can have a significant effect on its efficacy. On the other hand, the very slow progress in the efficacy of the treatment of severe diseases, has suggested a growing need for a multidisciplinary approach to the delivery of therapeutics to targets in tissues and controlling the pharmacokinetics, pharmacodynamics, non-specific toxicity, immunogenicity, biorecognition, and efficacy of drugs were generated. These new strategies, often called novel drug delivery systems (NDDS), are based on interdisciplinary approaches that combine polymer science, pharmaceutics, bioconjugate chemistry, and molecular biology. This type of delivery systems will minimize drug degradation and loss, to prevent harmful side-effects and to increase drug bioavailability and the fraction of the drug accumulated in the required zone, various drug delivery and drug targeting systems are currently under development. Drug carriers like soluble polymers, microparticles made of insoluble or biodegradable natural and synthetic polymers, microcapsules, cells, cell ghosts, lipoproteins, liposomes, and nanoparticles. For over 20 years, researchers have appreciated the great benefits of nanotechnology in providing vast improvements in drug delivery and drug targeting. Nano delivery techniques that gives less toxicity and high efficacy that offers great potential benefits to patients, and opens up new markets for pharmaceutical and drug delivery companies. Focus on the development of innovative drug delivery systems for the treatment of severe chronic diseases such as cancer, leishmaniasis, ophthalmic and immunological disorders. Most lipophilic drugs should benefit from the Nanotechnology platform.

Biograpgy

Prabhakar Reddy Veerareddy is an accomplished researcher, eminent teacher in Pharmaceutical Sciences. Currently he is serving as Principal at Chaitanya College of Pharmacy Education and Research, Hanamkonda, Andhra Pradesh. He has spent one year at Butler University, Indiana Polis, USA for Post Doctoral Research and pursued his doctoral thesis (Pharmaceutics) at Novel Drug Delivery Laboratories in Kakatiya University, India during 2005. He has attended many symposiums and workshops at the national and international level. He has more than 50 research publications in several international journals, and he guided 35 M. Pharm students and 4 PhD students.