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Review on Nanoparticles: An Unseen Drug Delivery System

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Abstract : Particulate systems like nanoparticles are used as a physical approach to vary and enhance the pharmacokinetic and pharmacodynamic properties of varied sorts of drug molecules. The nanoparticles show improved properties like high reactivity, strength, surface area, sensitivity, stability, etc. because of their small size. For adequate drug activity, it is necessary to deliver the drug to the body and its site of action as efficiently as possible. Several polymers have been applied in the formulation of nanoparticles for drug delivery research to improve therapeutic benefit, while minimizing side effects. Delivery of drugs to the target site is accomplished by a colloidal drug delivery system mainly by using nanoparticles. Different fabricated nanoparticles and drugs possessing poor solubility and poor pharmacokinetic profiles are the two major substances extensively distributed to target sites. Among the colloidal carriers, nano lipid dispersions (liposomes, virosomes, and solid lipid nanoparticles) are supreme delivery systems with the advantages of biodegradation and nontoxicity. Targeting the drug to a specific site improves therapeutic efficiency and reduces toxicity. The present review concentrates on the advantages and disadvantages of nanoparticles, preparation of nanoparticles, carriers used, characterization, and applications of nanoparticles. In conclusion, nanoparticles are one of the convenient drug delivery systems, which can be of potential use in controlling and targeting drug delivery.

Keywords : Nanoparticles, Preparation methods, Polymers, Advantage, Disadvantage, Application, Drug release.

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