

Biodegradable Nanoparticles: A Recent Approach and Applications

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Abstract: Biodegradable nanoparticles (NPs) are the novel carriers for the administration of drug molecules. Biodegradable nanoparticles have become popular recently because of their special features such as targeted delivery of drugs, improved bioavailability, and better therapeutic effectiveness to administer the drug at a constant rate. Polymeric NPs are very small-sized polymeric colloidal elements in which a drug of interest may be encapsulated or incorporated in their polymeric network or conjugated or adsorbed on the layer. Various polymers are employed in the manufacturing of nanoparticles, some of the frequently employed polymers are agents, chitosan, cellulose, gelatin, gliadin, polylactic acid, polylactic-co-glycolic acid, and pullulan. Nanoparticles have been progressively explored for the delivery of targeted ARVs to cells of HIV-infected and have performed the prolonged kinetic release. Drug embedded in this system can give better effectiveness, diminished resistance of drugs, reduction in systemic toxicity and symptoms, and also enhanced patient compliance. The present review highlights the frequently employed manufacturing methods for biodegradable nanoparticles, various polymers used, and its application in anti-retroviral therapy. Also, common evaluation parameters to check the purity of nanoparticles, ongoing and recently concluded clinical trials and patents filled by the various researchers, and the future implication of biodegradable NPs in an innovative drug delivery system are described. The biodegradable NPs are promising systems for the administration of a broad variety of drugs including anti-retroviral drugs, and hence biodegradable nanoparticles can be employed in the future for the treatment of several diseases and disorders.

KeyWords: Anti-Retroviral therapy, biodegradable nanoparticles, clinical study, future implication, manufacturing methods, patents, polymers employed.

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