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Nanotechnology: A Curative Approach to Combat HIV-AIDS

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ABSTRACT

HIV-AIDS is one of the biggest challenges of the 21st century to cure. However, in the current scenario, various antiretroviral drugs are available which makes the condition chronic rather than worse which manages to increase the survival rate. Antiretroviral drugs are manageable but the bioavailability, lower permeability; poor half-life of the drug limits the potent activity. High dose drug administration leads to higher toxicity which arrays adverse effects and develops resistance against HIV strain. Potent targeting of drugs is lacking due to its instability, chemical degradation, and tissue barrier restriction. The application of nanotechnology to anti-retroviral drug delivery holds the capacity to cure AIDS. The nanotechnology-based efficient delivery system of Nanocarrier (liposomes, dendrimers, nanoparticles, polymeric micelles, nano-emulsion, nanovesicles) plays a major role in drug delivery. Nanocarrier has revolutionized the field of pharmaceuticals in the world of drug delivery. This review depicts the nano-based system which is incorporated or encased with ARV drug to increase its efficiency or effectiveness with low adverse effect to abort HIV.

Key Words: Antiretroviral drug, Nanocarrier, HIV, AIDS, Nanotechnology, Drug delivery