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Design and Characterization of Nanoparticulate Drug Delivery System Containing the Antiviral Drug Stavudine

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***SUMMARY*. Human immunodeficiency virus (HIV) is a lentivirus (a member of the retrovirus family) that causes acquired immunodeficiency syndrome (AIDS). Stavudine nanoparticles for oral delivery were prepared by emulsion droplet coalescence method, emulsion cross linking method, and double emulsion method. The prepared nanoparticles were characterized for particle size and the surface morphology, results revealed that nanoparticles were found to be discrete and spherical with the mean size range of 119.9- 69.9 nm. Encapsulation efficiency was in the range of 28.9 to 60.9 %. The drug content was uniform and reproducible in each batch of nanoparticles. FTIR and DSC studies revealed no interactions between drug and excipients. In-vitro release profiles indicated that, irrespective of the polymer used, increase in concentration has drastically retarded the release of stavudine. The mechanism of drug release was Non-Fickian diffusion controlled first order kinetics for optimized formulation. Stability studies indicated that, the prepared nanoparticle remained more stable at room temperature after one month.**

KEY WORDS: In-vitro release, Nanoparticles, Stability study, Stavudine.

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