World Academy of Science, Engineering and Technology
International Journal of Pharmacological and Pharmaceutical Sciences
Vol:8, No:12, 2014

Preparation and Evaluation of Zidovudine Nanoparticles

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Abstract : Nanoparticles represent a promising drug delivery system of controlled and targeted drug release. They are specially designed to release the drug in the vicinity of target tissue. The aim of this study was to prepare and evaluate polymethacrylic acid nanoparticles containing Zidovudine in different drug to polymer ratio by nanoprecipitation method. SEM indicated that nanoparticles have a discrete spherical structure without aggregation. The average particle size was found to be 120 ± 0.02 - 420 ± 0.05 nm. The particle size of the nanoparticles was gradually increased with increase in the proportion of polymethacrylic acid polymer. The drug content of the nanoparticles was increasing on increasing polymer concentration up to a particular concentration. No appreciable difference was observed in the extent of degradation of product during 60 days in which, nanoparticles were stored at various temperatures. FT-IR studies indicated that there was no chemical interaction between drug and polymer and stability of drug. The in-vitro release behavior from all the drug loaded batches was found to be zero order and provided sustained release over a period of 24 h. The developed formulation overcome and alleviates the drawbacks and limitations of Zidovudine sustained release formulations and could possibility be advantageous in terms of increased bio availability of Zidovudine.

Keywords : nanoparticles, zidovudine, biodegradable, polymethacrylic acid
Conference Title : ICRR 2014 : International Conference on Radiopharmacy and Radiopharmaceuticals
Conference Location : Paris, France
Conference Dates : December 30-31, 2014