Formulation and Evaluation of Solid lipid Nanoparticles as Ocular Drug Delivery System

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Abstract

The aim of present work was to formulate and evaluate Moxifloxacin loaded solid lipid nanoparticles for better treatment of bacterial conjunctivitis. stearic acid as a lipophilic material, tween80 as surfactant were used. The SLNs were prepared by o/w microemulsion technique. Moxifloxacin.HCL loaded SLNs seem to have dimensional properties useful for ocular administration. The SLNs were characterized for Particle size analysis, Zeta potential, Percentage entrapment efficiency, In vitro drug release study, Eye irritation study, Microbiological study, Sterility study, Stability study and IR studies. Results indicated mixed lipid-matrix produced nanoparticles with smaller particle sizes, no drug-excipient incompatibility and higher drug entrapment.Particle size and %Entrapment efficiency of optimized batch were found to be 189.4nm and 89.9% respectively. In vitro drug release studies were carried out and % CDR for optimized batch was found to be 98.9. No irritation was found in the eye of rabbit. The studies revealed a stable formulation without precipitation of drug and a sustained drug release for 24 hrs from the lipid matrix. SLN composed of Moxifloxacin would prove to be a good ocular drug delivery in treating bacterial infections.

Key words: Moxifloxacin, Bacterial conjunctivitis, Solid lipid nanoparticles, Stearic acid, Tween 80.