Investigation of sorbitan niosomal gel for sustained release ocular delivery of piroxicam (1053.3)

Abstract

Objective: In this study, niosomal hydrogel formulation was investigated as a promising carrier for piroxicam sustained release ocular delivery. Methods: Piroxicam loaded niosomes were prepared by thin film hydration technique using various proportions of span and cholesterol. Optimized formulation was selected depending on the highest percent drug entrapment. Morphology, mean size, encapsulation efficiency (EE) and in vitro drug release from niosomes in phosphate buffer pH 7.4, were evaluated. Drug-cholesterol interaction was studied by FTIR spectroscopy. Drug retention in niosomes was performed at refrigerated temperature and room temperature for the period of two months. The optimized niosomal formulation was incorporated into 1% carbopol gel and evaluated for the ex vivo transocular drug permeation comparing to a plain drug gel through excised albino rabbit cornea using Franz diffusion cell. Results: Maximum drug EE was obtained with Span 80: cholesterol niosomes of μmolar ratio (300:200). Also they were stable during the storage time. No significant interaction between the drug and cholesterol was detected. The optimized niosomal gel formulation showed prolonged drug release and enhanced drug ocular bioavailability comparing to the plain gel. Conclusion: piroxicam niosomal formulation was prepared successfully and is useful as a sustained release preparation.