Preparation, Characterization and Anti-Inflammatory Activity of Celecoxib Chitosan Gel Formulations

M. El-Badry, G. Fetih

Abstract:

This study was designed to evaluate the suitability of chitosan polymer as a vehicle for topical delivery system. celecoxib, which is a nonsteroidal anti-inflammatory drug, was incorporated into the gel vehicles in a concentration of 0.5 % w/v. Gels were prepared using three different concentrations and different molecular weights of chitosan. Viscosity, drug release from gels, permeation of drug through rat skin and anti-inflammatory activity of the drug were studied. In vitro release characteristics of the drug from different gels were carried out using dialysis membrane in phosphate buffer using a pH of 6.8. The results showed that, the gel form containing 1.0 % w/v medium molecular weight chitosan has superior drug release than other forms, whilst the gel form containing 2.0 % w/v high molecular weight chitosan shows the lowest amount of drug release. The release data were treated with various kinetic principles to assess the relevant parameters. The results revealed an inverse correlation between the percent drug release and the polymer concentration used. The results also showed that the release of drug from the prepared gels obeyed the Higuchi's diffusion model. The permeation of drug through rat skin was carried out. The flux of drug is independent on the viscosity of the formulae. The anti-inflammatory activity of the drug in different gel formulations was studied using carrageenan-induced rat paw edema method. The results obtained show that there is excellent anti-inflammatory activity of the gel forms on rat paw edema.

Published In: