



Etodolac loaded solid lipid nanoparticle based topical gel for enhanced skin delivery

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Abstract

The main purpose of this study was to manufacture & evaluate a topical formulation of etodolac, based on solid lipid nanoparticles (SLNs), to improve its percutaneous permeation rate. Topical Nanolipidic gel of etodolac was manufactured and its various evaluation parameter were checked. The objective of research also included that how much amount of drug retained in skin and skin retention study was performed in Wister rat. Central composite design (CCD) has been utilized to optimize the current work. Factors studied are stearic acid concentration & lecithin effect, and the responses studied included mean particle size, trap efficiency. Etodolac encapsulated stable lipid nanoparticles are prepared by slight modification of the technique of microemulsion (method of melt emulsification at low temperature). Size distribution d90, drug entrapping capacity, in-vitro study and kinetics, differential calorimetry scanning (DSC), analyzes of permeation parameters, stability tests, studies of skin conservation by tape stripping process are conducted to evaluate the SLN. For in vivo anti-inflammatory tests of etodolac based SLN hydrogel, the tailored batches were evaluated. The solid lipid nanoparticles were prepared from 402 to 684 nm in different size ranges. The efficacy of drug trapping and the zeta potential of prepared SLN were found to be 74.18 to 80.30 percent and -19.0 to -24.0 mV

respectively. Etodolac encapsulated nano gel showed more skin permeation of the drug over normal etodolac gel, and also lecithin concentration plays a major role in increasing permeation rates. In-vivo analysis of etodolac nano gel with excellent compared to normal, which is capable of decreasing the edema starting from 3rd hour and throughout the period and suggesting the preservation of etodolac SLN gel anti-inflammatory function.

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Keywords

Etodolac; Solid lipid nanoparticle; SLN; Topical gel; Nanogel

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