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Preparation, characterization and anti-inflammatory evaluation of indomethacin niosomes in carrageenan inflammation model

M. Noori1,*, A. Pardakhty2

Depatment of Pharmaceutics, Kerman University of Medical Sciences, Kerman, Iran

Background and Aims: Topical delivery of NSAIDs is one important goal of many research groups in the world for prevention of drugs systemic side effects. This study is the first report on the preparation and in vivo evaluation of niosomal indomethacin gel.
Methods: Sorbitan esters (Spans), polyxylated sorbitan esters (Tweens) and polyoxyethylene alkyl ethers (Brijs) were used for niosomes preparation. Encapsulation efficiency percent (EE%) of indomethacin was evaluated by dialysis method. Particle size analysis was carried out by laser light scattering technique. Inflammation was induced in rats' paws by carrageenan injection and the efficacy of niosomal and free drug gels was evaluated and compared.
Results: Selected formulations showed high encapsulation efficiencies, more than 80%. Release profiles of indomethacin depicted slow and continuous delivery of indomethacin. The mean volume diameter of the selected Brij niosomes was between 7 to 10 μm. Niosomal gel showed more efficacy of drug which was evaluated by plethysmometer.
Conclusions: This study showed niosomal formulations could be used for better penetration and efficacy of NSAIDs such as indomethacin as a new drug delivery system in animal inflammation models.

Keywords: Niosome; Indomethacin; Inflammation