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Formulation and Evaluation of Cubosomal Gel of an Anti-inflammatory Agent

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Abstract

The present research has been undertaken with the aim to develop a transdermal cubosomal gel formulation of Ketoprofen, which would attenuate the gastrointestinal toxicities associated with oral administration. This research also aimed to encapsulate high drug pay load in cubosomes for improved therapeutic efficiency. Cubosomes were prepared by Top-down technique. Different formulations (F1 – F9) were prepared and optimized for better performance in terms of drug content, SEM analysis, Zeta potential, entrapment efficiency and drug release. From F1 – F9 formulations, studies showed that F7 is better. Then it is formulated into gel using carbopol as gel base. The physical parameters like appearance, pH, viscosity, spredability, extrudability, ex- vivo drug release and in vitro skin irritation test using HET- CAM, were also evaluated. The cubosomal gel formulation (F7) was found to be clear without any aggregate indicating excellent homogeneity. The pH of the formulation was found close to neutral, indicating the absence of skin irritation. In vitro skin irritation study also reveals there is no skin irritation. The ex-vivo drug release study shows that the formulation (F7) has a good release rate when compared to other topical gels (87.2%). The kinetic study of the optimized formulation (F7) was also carried out and found that the formulation undergoes zero order kinetics. The mechanism of drug release was found to be Higuchi model.

Keywords: Cubosome; Cubosomal gel; Ketoprofen; Top-down technique

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