

Formulation Development of Diclofenac Sodium Emulgel Using *Aloe vera* Gel for Transdermal Drug Delivery System

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ABSTRACT

Diclofenac sodium has many side effects like nausea, vomiting, GIT disorders. These side effects can be reduced by converting into emulgel formulations. The emulgel formulation of Diclofenac Sodium was prepared by incorporation method, using span 20 and tween 20 as non-ionic surfactants, clove oil and cinnamon oil as penetration enhancers, *Aloe vera* as a gel base and sesame oil as a solvent. The prepared emulgel formulations were evaluated for compatibility study, physical examination, viscosity, spreadability, *in vitro* diffusion studies, various release kinetic studies and stability studies. *In vitro* diffusion

studies were carried out using cellophane membrane, results showed that emulgel formulations (F2-F7) showed higher cumulative percent drug release (49-65%) compared to normal gel (48%) and marketed gel (35%). Results of *in vitro* diffusion studies showed that formulation F3 and F6 exhibited 64% and 65% drug release respectively over a period of 6 hrs. In conclusion, a physiochemical stable diclofenac emulgel was formulated, which could deliver significant amount of drug across the skin in steady-state manner for the prolong period of time in the treatment of osteoarthritis.

KEYWORDS: Diclofenac Sodium; Emulgel; *Aloe vera*; Osteoarthritis.