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Development of invasomal drug delivery system for Naproxen

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Naproxen sodium is a Non-steroidal anti-inflammatory agent used in treatment of rheumatoid arthritis, ankylosing spondylitis to relieve pain and inflammation. It is mainly act by inhibiting COX1 and COX2 receptors. By inhibiting COX1 receptor it causes severe gastric bleeding and peptic ulcer and by inhibiting COX2 receptor it causes cardiovascular side effects. In order to avoid the adverse effects of naproxen there is need to develop novel drug delivery system. So that invasomes because of its vesicular structure they are capable of penetrating more into the systemic circulation and they will be acting locally as well as systemically. In this study attempts have been made to prepare and characterize Naproxen sodium loaded invasomes. Naproxen sodium loaded invasomes were prepared by thin film hydration technique by using soya lecithin as lipid, span60 as surfactant, limonene as terpene and methanol, ethanol and chloroform as organic solvents. Total twelve formulations (INV1-INV12) of invasomes were prepared, in which four formulations were prepared by varying drug to surfactant ratio and eight formulations were prepared by varying drug to lipid ratio. All the formulations were evaluated for drug content, entrapment efficiency, particle size, zeta potential and invitro drug release. Among the twelve formulations of invasomes the INV2 formulation (1:1) ratio containing 40mg drug and 40mg surfactant (span60) was found to be the best formulation with drug content of 96.62%, entrapment efficiency of 90.9%, zeta potential of -68.5mV, mean particle diameter of 572.4 nm and invitro drug release of 91.6% in a time period of 12 hrs and followed the zero order kinetics with non fickian diffusion mechanism. In this present study naproxen sodium loaded invasomes were successfully prepared and evaluated.