

Novel Approaches for Transdermal Drug Delivery of Curcumin

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Abstract

Aim: Transdermal drug delivery system has become a proven technology that offer significant clinical benefit over the dosage forms. Drugs with very short half-life, narrow therapeutic window, and poor bioavailability-transdermal drug system are convenient. Skin serves as site of drug application for local as well as systemic effects. This works provides the valuable information regarding the transdermal drug delivery system and highlights the detailed role of physical penetration and recent advance techniques such as iontophoresis, sonophoresis, microneedles, electroporation, ethosomes and transferosomes. Formulation of cur cumin loaded ethosomes formulation by hot method was discussed in detail.

Materials and Methodology: For the preparation of cur cumin loaded ethosomes hot method was adopted. Nine different formulations were prepared by varying the drug to lipid ratio (E1, E2, E3, E4, E5, E6), ethanol concentration (E7, E8, E9). DMSO was used as solubilizing agent and soya lecithin as lipid, ethanol, as solvent, propylene glycol as permeation enhancer. The prepared formulations are evaluated for their particle size, entrapment efficiency, drug content, product yield, zeta potential drug release studies, permeability studies, SEM and mean vesicle size.

Results and discussion: Nine formulations of ethosomes were prepared by varying the drug: soya lecithin concentration and ethanol concentration. Out of the nine formulations the E5 formulation of drug : soya lecithin 1:5 ratio was found to be the best formulation with drug content of 98.1%, entrapment efficiency of 87.6%, mean particle diameter of 189.6nm, zeta potential value of -26.8mV. In vitro drug release data showed 89.3% of drug release sustained up to 10hrs and followed zero order kinetics with non fickian diffusion mechanism. Invivo anti-inflammatory studies has shown percentage inhibition in paw volume of 47% with respect to control.

Conclusion: Ethosomes has lesser particle size and good stability. Ethosomes formulation was developed for cur cumin

Biography

Dr. A. Krishna Sailaja is currently working as Associate Professor and Head of the Department in RBVRR Women's college of pharmacy, Osmania University, Hyderabad. She has published 130 research papers in various National and International journals. She delivered more than 25 talks on novel drug delivery systems. Published 5 books and filed 4 patents.