Novel approaches for transdermal drug delivery of curcumin

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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 curcumin loaded ethosomal formulation by hot method was discussed in detail.

Materials and Methodology: For the preparation of curcumin, 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 solubilising 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 :soyalecithin concentration and ethanol concentration. Out of the nine formulations the E5 formulation of drug : soyalecithin 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. Ethosomal formulation was developed for curcumin