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Development of Transdermal Gel for Mefenamic Acid Based On Vesicular Drug Delivery Approaches

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Abstract

Aim: the aim of present study is formulation of mefenamic acid transdermal gel based on vesicular drug delivery approaches.

Materials and methods: For the preparation of mefenamic acid transdermal gel ethosomes and transferosomes were selected as colloidal carriers. Ethosomes were prepared by cold and hot methods. Transferosomes were prepared by hand shaking and thin film hydration techniques. The obtained ethosomes and transferosomes were characterized for vesicular diameter, zeta potential, drug content, entrapment efficiency and in-vitro diffusion studies.

Results and discussion: The five formulations of ethosomes prepared by cold and hot methods were compared among the 10 formulations of ethosomes E5 was considered as best formulation because of its mean vesicular diameter of 854nm, zeta potential of -20mV, drug content of 96.3%, entrapment efficiency of 94.4%, sustained drug release for 12 hours i.e.94.4.

In transferosomes five formulations were prepared by hand shaking method and another five formulations were prepared by thin film hydration technique. All 10 formulations were compared. Among 10 formulations T10 was considered as the best formulation because of its mean vesicular diameter of 369nm, zeta potential of -14mV, drug content of 99.6%, entrapment efficiency of 84.4%, sustained drug release for 12hr i.e. 93.3%.

Then E5 and T10 formulations were incorporated into gel comparative study was made among plain gel, ethosomes gel and transferosomes gel. Among all gels transferosomes gel considered as best because of its highest drug content of 91%, spread ability of 43.5g.cm/sec, pH of 6.9, sustained drug release for 12hr i.e.79.1%.

Conclusion: On comparison of cold and hot methods hot shows better results. When comparative study was made between hand shaking method and thin film hydration technique. Thin film hydration technique shows the better results. Transferosomes have lesser particle size and good stability compare to ethosomes.

Key words: Mefenamic acid, ethosomes, transferosomes, stability, vesicular diameter, entrapment efficiency.

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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.