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Development of Proniosomal Drug Delivery with Different Type of Penetration Enhancers

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Abstract : Proniosomes offer a vesicle delivery concept with the potential for drug delivery via the transdermal route.The aim of this work is to search best penetration enhancers in proniosomes as a transdermal delivery system for Piroxicam.Piroxicam is a widely used potent non-steroidal anti-inflammatory drug, with due potential for dermal delivery. This was done with the goal of optimizing the composition of proniosomes as transdermal drug delivery systems. Plain proniosomes, proniosomes containing lecithin or skin penetration enhancers were prepared by coacervation phase separation method and effect of penetration enhancers were evaluated for transdermal delivery of piroxicam. P-OA formulation which was developed with Oleic acid (OA) proved to be with high permeation and entrapment efficiency as compared to other formulations. The optimized proniosomal gel (P-OA) formulation were characterized by Scanning electron microscopy and Transmission electron microscopy, zeta potential, vesicle size determination etc. *Ex vivo* permeation studies, irritancy test, *in vivo*are also carried out for this formulation results suggest that prepared proniosomal gel of Piroxicam is a promising approach for transdermal delivery. *Ex vivo* permeation study was done by using wister rat's skin and it gives flux 8.136 μg/cm^2.h for optimized batch (P-OA) while marketed formulation showed flux 5.062 μg/cm^2.h. The investigated piroxicam loaded proniosomal formula proved to be non-irritant, with significantly higher anti-inflammatory effects compared to that of the marketed pirox gel.

Key words:Niosomes, proniosomes, piroxicam, transdermal delivery, permeation, penetration enhancer.

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