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Lornoxicam loaded nanostructured lipid carriers for topical delivery: Optimization, skin uptake and *in vivo* studies.

S. Mohanalakshmi, C. K. Ashok Kumar, Narahari N. Palei and **R. Jayaraman**
Sree Vidyanikethan College of Pharmacy, India

Lornoxicam is a potent non-steroidal anti-inflammatory drugs (NSAIDs) commonly used for the treatment of inflammation associated with acute and chronic rheumatoid arthritis. Oral administration of lornoxicam aggravates potential gastrointestinal side effects like peptic ulcers and gastric irritation. Nanostructured liquid carriers (NLCs) meant for topical delivery, show superior skin targeting anti-inflammatory effect with reduced gastrointestinal side effects. The present study was aimed to prepare lornoxicam loaded NLCs (LNLCs) and to evaluate its various physico-chemical properties, compatibility studies, and skin targeting anti-inflammatory effect. LNLCs were prepared using emulsification solvent evaporation technique and optimized by 2(3) full factorial design. Optimized LNLCs exhibited spherical shape with a particle size 208.4±3.7 nm, polydispersity index 0.210±0.01, entrapment efficiency 93.5±2.6 % and zeta potential -36.3±2.4mV. Improved occlusivity and higher deposition of lornoxicam in the skin were observed with prepared LNLCs gel. The anti-inflammatory activity of LNLCs gel (% inhibition paw edema=70.79 ±3.5%) was stronger than lornoxicam gel (42.65 ±3.1%) and marketed diclofenac gel (57.34± 2.8%) in carrageenan induced rat paw edema. These results suggested the LNLCs gel as a promising carrier for topical delivery of lornoxicam with improved skin targeting anti-inflammatory activity.

mohana_cog@yahoo.co.in