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Transdermal patches of Tenoxicam for treatment of rheumatoid arthritis

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Tenoxicam (TX) is NSAID indicated to treat rheumatoid arthritis (RA). It has drawbacks of poor solubility, GI irritation and first pass effect. Hence transdermal patches of tenoxicam were prepared and evaluated for treatment of rheumatoid arthritis. Initially to enhance solubility solid dispersions were prepared with polymers PEG 25000, sodium starch glycolate, PVPPK-30 by solvent evaporation method. Three compositions were made with each polymer. Tenoxicam and PEG 25000 of 1:9 ratio exhibited highest percent drug release of $99.02 \pm 0.3\%$ in 60 min. This dispersion equivalent to contain 20 mg of Tenoxicam was prepared as transdermal patches by solvent casting method. Various formulations were tried using different ratios of polymers such as Eudragit and HPMC K 400M. Dichloromethane:Methanol (1:1) was used as solvent. Dibutyl phthalate and dimethyl sulfoxide were added as plasticizer and permeation enhancer respectively. Three formulations were obtained with optimum properties in terms of percentage drug content (97.04-98.15%), thickness (1.147 ± 0.021 mm to 1.333 ± 0.021 mm surface pH (6.1 to 6.8), folding endurance (187 to 200). Ex vivo permeation studies of a patch (TT3) containing HPMC K400M 100 mg and Eudragit 50 mg exhibited optimum drug release of 98.35% in 60 minutes. Pharmacodynamic activity was assessed for this patch using male Wistar albino rats. RA was induced by injecting bovine type II collagen emulsified with incomplete Freund's adjuvant. Lesions were observed on both hind paws for every two days after induction. After 14th day RA induced rats were applied with the patch at knee joint for Group-IV. At the end of the experiment, radiographic analysis of normal and arthritic hind paws was performed by using X-ray machine. It was observed that both hind paws were swollen from 10th day of induction and after treatment the swelling in the hind paws of rats treated with Tenoxicam patch was reduced compared to rats which were untreated

Biography

Jeevana Jyothi has completed her B Pharmacy and M Pharmacy from Andhra University and PhD from Sri Padmavati Mahila Viswavidyalayam, India. She has teaching experience of 25 years and expertise in development of nanotechnology based drug delivery systems and novel formulations of anticancer drugs. Her contribution towards the development of formulation of targeted drug delivery systems of Curcumin and Tenoxicam helps the present miserable and prevalent problem of rheumatoid arthritis. She has published 19 research articles in Scopus indexed journals and one book entitled "Manual of Pharmaceutical Engineering". She has also served as the Head of the Department of Pharmacy, Sri Padmavati Mahila Viswavidyalayam from 2009-2012 and as BOS Chairperson during 2010 and 2013

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