

DICLOFENAC SODIUM- CURCUMIN NANOGEL: AN EFFICIENT TOPICAL AGENT AGAINST INFLAMMATION

Satyalakshmi Siragam^{a*}, Rama R. Bora^a, Vineela Nakka^a, Srinivasa Rao Yarraguntla^a and Kamala Kumari P. V.^a

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ABSTRACT

The present study focuses on formulation of a topical nanogel of diclofenac sodium and curcumin to enhance the anti-inflammatory activity. Emulsification solvent evaporation technique was employed to prepare nanoparticles of the drugs. Various gel formulations containing optimized nanoparticles and pure drug were prepared and characterized. Formulated nanogels were tested for anti-inflammatory activity against matrix metalloproteinase by gelatin zymography technique. More than 55% of diclofenac sodium (DFS) and curcumin were released from nanoparticles (NPs) within 30 min., which confirms the improved solubility. F1, F2, F3, F4 and F5, representing nano and conventional gel formulations, showed an acceptable range of physical characteristics for topical delivery. A significant drug release was observed in nanogels F1-F3, after 18 h, compared inhibition to conventional gels. The pattern of drug release fitted Higuchi kinetics and was diffusion controlled. 98% inhibition of matrix metalloproteinase-2 and 85% inhibition of matrix metalloproteinase-9 proved the enhanced anti-inflammatory activity of the combined formulation.