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Formulation characterization & evaluation of nanocarriers for topical delivery of colchicine

Arvind Sharma

Chitkara College of Pharmacy, India

Abstract

Colchicine, an alkaloid found in extracts of the plants *Colchicum autumnale* and*Gloriosa superb*, is effective in the treatment of acute gout and dermatological conditions. Conventional formulation of colchicine is associated with gastrointestinal side effects and bone marrow suppression. Therefore present study is aimed at development and *in vitro* , *in vivo* evaluation of novel formulation as an alternate for topical delivery of colchicine. Proposed formulation was characterized for particle size, entrapment efficiency, zeta potential, surface morphology and in-vitro skin permeation study The biological evaluation of various vesicular formulations and drug solution was carried out using monosodium urate-induced air pouch model. The results of anti-gout activity in rats showed better and sustained biological effects in 24 h measured in terms of exudate volume (67.1 ± 4.7% and 8.6 ± 0.5% reduction with elastic liposomes and drug solution, respectively), reduction in leukocyte count (78.2 ± 7.0% and 3.9 ± 0.3% reduction with elastic liposomes and drug solution, respectively), decrease in inflammatory cells accumulation, and collagen deposition with elastic liposomal formulation than drug solution. Hence, the present study reveals that novel formulation of colchicine possesses greater potential to enhance skin accumulation, prolong drug release, and improve the site-specificity of colchicine.