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Research Paper

Chemical Permeation Enhancers for Transdermal Delivery of Thiocolchicoside: Assessment of *Ex-vivo* Skin Flux and *In-vivo* Pharmacokinetics

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ABSTRACT

Present investigation comprises the study of *ex-vivo* skin flux and *in-vivo* pharmacokinetics of Thiocolchicoside (THC) from transdermal films. The films were fabricated by solvent casting technique employing combination of hydrophilic and hydrophobic polymers. A flux of 18.08 µg/cm^{2}h and 13.37µg/cm^{2}h was achieved for optimized formulations containing 1, 8-cineole and oleic acid respectively as permeation enhancers. The observed flux values were higher when compared to passive control (8.66 µg/cm^{2}h). Highest skin permeation was observed when 1,8-cineole was used as chemical permeation enhancer and it considerably (2-2.5 fold) improved the THC transport across the rat skin. *In vivo* studies were performed in rabbits and samples were analysed by LC-MS-MS. The mean area under the curve (AUC) values of transdermal film showed about 2.35 times statistically significant ($p<0.05$) improvement in bioavailability when compared with the oral administration of THC solution. The developed transdermal therapeutic systems using chemical permeation enhancers were suitable for drugs like THC in effective management of muscular pain.

KEYWORDS: Thiocolchicoside; 1,8-cineole; Oleic acid; Skin flux; Passive control; Bioavailability.