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(57) Abstract :
Dermatophytosis is the most common dermatological disorder around the world nowadays. Many drugs are available in the market for the treatment of dermatophytosis but they had limited success due to the stratum corneum barrier, antifungal resistance, drug permeation, and retention of drugs in skin layers, etc. Thus, there are constant needs for new topical compounds that are effective against dermatophytosis. Berberine-hydrochloride is an attractive candidate to become an antifungal drug and by using nanotechnology it achieves deeper penetration in skin layers with enhanced permeability through the stratum corneum. Berberine-hydrochloride loaded transethosomal gels were fabricated using the hot homogenization method, followed by incorporation of transethosomes into gel-based system using carbopol-934. Transethosomal gel was characterized by physicochemical properties, in vitro drug release, ex-vivo permeation studies, CLSM visualization, antifungal activity, histopathological evaluation and dermatokinetic study. Berberine-hydrochloride loaded transethosomes were seemed to spherical in shape and found in range between 200-300 nm. Berberine-hydrochloride loaded transethosomal gel formulation are also shows controlled ex-vivo permeation of berberine-hydrochloride over 24 hr through excised rat's skin and CLSM confirmed deeper penetration into skin layers. The in vivo study revealed that transethosomal gel had a healing effect on the skin of Wistar rats infected with Trichophyton rubrum and was better than luliconazole cream. The histopathological evaluation confirmed its safety and dermatokinetic study showed transethosomal gel superiority over marketed cream. Incorporation of berberine hydrochloride loaded transethosomal nanosystems into the gel has the potential to enhance antifungal activity and permeation through transdermal drug delivery.

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