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Impact of Curcumin Co-Delivery to Prevent the Imiquimod Induced Skin Reactions

Javed Ahmad, Mohammed S. Algahtani and Mohammad Zaki Ahmad

Department of Pharmaceutics, College of Pharmacy, Najran University, Najran 11001, Saudi Arabia.

ABSTRACT

Background: Imiquimod (IMQ) is a commonly used topical immunomodulator for the treatment of superficial basal cell carcinoma, genital warts, and actinic keratosis. Despite the efficacy of IMQ, unpleasant adverse effect (such as severe erythema result in red and scaly skin at the site of treatment) is also commonly associated with the topical use of this drug. The aim of the current investigation involved the impact of curcumin co-delivery to improve the topical efficacy of IMQ through a combinatorial approach.

Methods: The IMQ and curcumin were separately encapsulated in the oil phase as nanodroplet and uniformly dispersed in carbopol 934 hydrogel to develop into a nanoemulgel for a topical delivery.

Results: The size of the oil droplet encapsulating the IMQ and curcumin were found to be <100 nm with a low polydispersity index (<0.2) and an optimum negative surface charge. The co-delivery of curcumin with IMQ through nanoemulgel system prevented the appearance of psoriasis-like skin reaction compared to the IMQ nanoemulgel and IMQ conventional gel formulation after the topical application in BALB/c mice.

Conclusions: The combinatorial approach with curcumin was found to be effective in preventing the adverse skin reactions commonly associated with IMQ topical application (Figure 1). Further, IMQ applied as nanoemulgel delayed and reduced the psoriasis-like skin reaction compared to its conventional gel formulation.

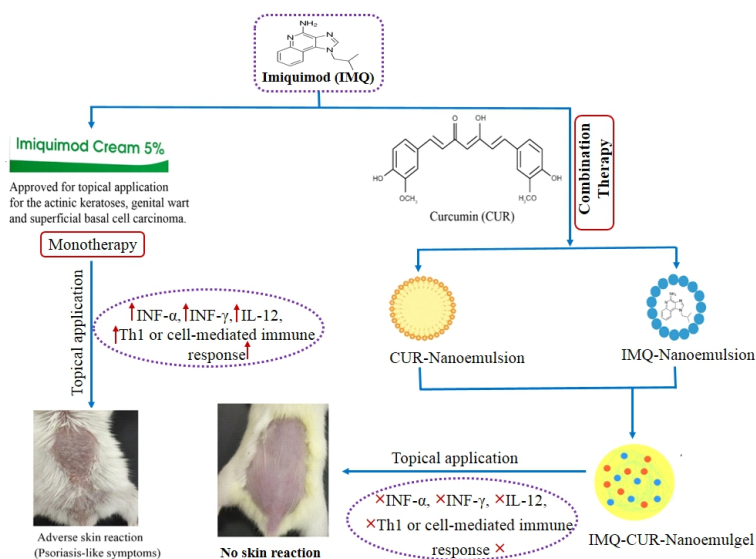


Fig. 1: Schematic presentation illustrating the impact of curcumin co-delivery to prevent the imiquimod induced skin reactions



Aims & Scope

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