Microemulsion for Ocular Delivery: Ocular Irritancy Test and In Vivo Studies of Anti-Inflammatory Action

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Abstract:

Microemulsions are promising drug delivery systems for ocular delivery of drugs, especially water insoluble drugs such as diclofenac in its acid undissociated form. Microemulsions are characterized with high surfactant content (> 10% w/w) in order to lower the interfacial tension which facilitates dispersion process during the preparation of microemulsion and provides a flexible film around the droplets. However, there are a few researches that have studied the possible irritation effect of microemulsion on the eye. Therefore, evaluation of the ocular irritancy is an important requirement in the development of ocular delivery vehicles such as microemulsions. Draize test using rabbits was used for evaluation of the ocular irritation potential of the prepared microemulsions. The efficacy of the anti-inflammatory action of the formulation showing the least Draize score was then evaluated using 3% croton oil in 2-ethoxyethanol to induce corneal inflammation in rabbits. Results showed that the tested formulations, M5 and M6, were non irritant (NI) where they showed a Draize score of 8 and 14 respectively. When M5 was studied for its anti-inflammatory action and compared with marketed eye drops, Epifenac, it showed a significantly shorter recovery time compared to Epifenac eye drops.

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