Microemulsions for Ocular Delivery: Evaluation and Characterization

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Abstract:

Diclofenac is a synthetic, non-steroidal anti-inflammatory and analgesic compound. It is used topically to treat many inflammatory ocular conditions. However, the poor aqueous solubility of its acidic undissociated form, Diclofenac acid (DA), limits its use. As a result, it is used in the form of eye drops containing its salt form, diclofenac sodium (DNa), which has a short duration of action due to its solubility in tears which leads to its rapid drainage from the eye and the patient has to administer it frequently. In light of this, the objective of the present study was to design microemulsion systems for ophthalmic delivery of water insoluble drug, DA. DA-loaded microemulsion was prepared using isopropyl myristate (oil phase), Tween 80 (surfactant), glycerin (co-surfactant) and Sörensen isotonic phosphate buffer pH 7.4 (aqueous phase). Characterization of the prepared formulations including viscosity, pH, particle size analysis, and stability studies were also performed. The pH of the formulations varied within the range of 6.8 and 7.4. The mean droplet size for all formulations of microemulsion was found in the range of 220–480 nm. The formulations showed a sustained release of DA up to 24 h.

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