ABSTRACT

DEVELOPMENT AND EVALUATION OF MICROEMULSION BASED IN-SITU GEL SYSTEM CONTAINING FLOUROQUINOLONE FOR OCULAR DRUG DELIVERY

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Background: Endophthalmitis is an infection of intraocular fluids like vitreous humor and ocular tissues. To combat the disease, the formulation which provides sufficient concentration in posterior segment is required. Moxifloxacin is well reported for the treatment of endophthalmitis, it has better penetration into ocular tissues and high potency compared to many of the same class drugs. Unlike halogenated fluoroquinolones it is safe to use in higher dose and is devoid of phototoxicity. So, Moxifloxacin was used as a model drug. Aim: The purpose of this research was to develop the microemulsion based in situ gelling system containing Moxifloxacin for prophylaxis and treatment of the posterior segment diseases like endophthalmitis. Materials and Methods: Moxifloxacin was encapsulated in small droplets owing to form microemulsion, and then the formed droplets were dispersed in a polymer solution that converted into gel upon triggered by the electrolyte present in the tear fluid. Results and Discussion: Formulation approach provides better absorption, penetration, retention and improves bioavailability of the drug. The average concentration reached into vitreous humor from topical microemulsion in situ gelling formulation was ~0.4 µg/ml, which is far more than concentration required for therapeutic effect (i.e. > 0.047 µg/ml or >>MIC$_{90}$ for $S. Epidermidis$, a pathogen commonly responsible.
to cause endophthalmitis). **Conclusion:** Thus, novel microemulsion based in situ gelling formulation could be potential drug delivery system for treatment of posterior segment diseases like endophthalmitis.