## Der Pharmacia Lettre

**Abstract**

# Formulation and characterization of ocular in situ gel for the

# treatment of conjunctivitis

**Author(s):** Divya Kumar, Nidhi Jain and Upendra Nagaich

Amongst the various routes of drug delivery, the field of ocular drug delivery is one of the most interesting and challenging endeavours facing the pharmaceutical scientist. The usefulness of this route of drug administration can be easily appreciated because the drug enters the systemic circulation circumventing the hepatic first pass effect. Ophthalmic drug delivery is one of the most interesting and challenging endeavours facing the pharmaceutical scientist. The anatomy, physiology, and biochemistry of the eye make this organ exquisitely impervious to foreign substances. The challenge to the formulator is to circumvent the protective barriers of the eye without causing permanent tissue damage[1]. In situ gelling System are the delivery system which can be instilled as eye drops and undergo an immediate gelation when in contact with the eye. In situ-forming hydrogels are liquid upon instillation and undergo phase transition in the ocular cul-de-sac to form viscoelastic gel and this provides a response to environmental changes. The stimuli that induces various responses to form hydrogels includes: physical stimuli such as change in temperature, electric fields, light, pressure, sound and magnetic fields; chemical stimuli such as change in pH and ion activation from biological fluids; and biological or biochemical stimuli such as change in glucose level. Out of these different environmental conditions pH, ion activated and temperature stimuli are mainly used for ophthalmic drug delivery system[2].The most common infective disease associated with the eyes is conjunctivitis. Conjunctivitis is the infection of the membrane lining the eyelids (conjunctiva).It is characterized by cellular infiltration and exudation. Staphylococcus aureus is the most common cause of bacterial conjunctivitis and blepharo-conjunctivitis. Many other organisms like Haemophilusinfluenzae, Streptococcus pneumoniae also cause conjunctivitis. Lomefloxacin is a bactericidal fluoroquinolone agent with activity against a wide range of gramnegative and gram-positive organisms. The bactericidal action of lomefloxacin results from interference with the activity of the bacterial enzymes DNA gyrase and topoisomerase IV, which are needed for the transcription and replication of bacterial DNA. DNA gyrase appears to be the primary quinolone target for gram-negative bacteria. Topoisomerase IV appears to be the preferential target in gram-positive organisms. Interference with these two topoisomerasesresults in strand breakage of the bacterial chromosome, supercoiling, and resealing of the strand. As a result DNA replication and transcription is inhibited.

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