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Ion Activated *In Situ* Gel System for Ophthalmic Delivery of Moxifloxacin Hydrochloride

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SUMMARY. Rapid precorneal elimination of drug is a major limitation of conventional ophthalmic formulations. An ion activated *in situ* gel forming systems of an antibacterial agent moxifloxacin hydrochloride for instillation as drops into eye undergoing a sol to gel transition in the *cul-de-sac* was formulated. Sodium alginate was used as the gelling agent in combination with hydroxypropylmethyl cellulose. Formulations were evaluated for gelling capacity, pH, *in vitro* release, rheological study, Draize eye irritation test and storage stability. Systems exhibited pseudoplastic rheology, evidenced by shear thinning with increase in shear stress and increased angular velocity. The *in vitro* release rate of moxifloxacin hydrochloride from gel decreased as an inverse function of polymer concentration. The optimized products were stable and non irritant. Equal amounts of sodium alginate and hydroxypropylmethyl cellulose exhibit encouraging rheological properties with therapeutically effective and non-irritant product. This *in situ* gel system can be a viable alternative to conventional eye drops.

KEY WORDS: Draize eye irritation, *In situ* gel, Moxifloxacin hydrochloride.

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