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Formulation and evaluation of *in situ*-ophthalmic gel of Ofloxacin and Diclofenac for reducing the inflammation as well as microbial contamination rate after cataract surgery

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Many conventional ophthalmic formulations like solution, ointment, suspension are available in market; yet ophthalmic drug delivery is most challenging and interesting to many researchers because of poor availability of the solution caused by drainage and dilution from the eye, to overcome this problem *in situ* gelling system has been prepared. The *in situ* gel forming systems that are installed as a drop into the eye undergo phase transition a sol to gel in the cul- de sac. The present study describes the formulation and evaluation of *in situ gel* of Ofloxacin and Diclofenac, based on the concept of gelling agent. Sol to gel system were prepared by utilizing the phase transition property of sodium alginate, a novel ophthalmic gel forming mucoadhesive polymer, which gets converted into gel in the presence of divalent-cations like calcium in lachrymal fluid and HPMC E50 and HPMC 4KM which acts as a copolymer and viscosity enhancer. Suitable buffering agents were used to adjust the pH 6.5. The formulations were sterilized in autoclave at 121°C for 15 min and various evaluation tests as well as stability testing of formulation were carried out to identify the ideal formulation. Further the formulation was evaluated for its anti microbial activity and tested *in-vivo* on rabbits.

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