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Development and Assessment of Novel in-Situ Ocular Gels of Ketorolac Tromethamine.

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Abstract: *The present study was aimed to prepare and characterise pH triggered in situ gel based ophthalmic drug delivery system of non steroidal anti-inflammatory drug (NSAID), ketorolac. Polyacrylic acid (carbopol 940) was used as a gelling agent in combination with hydroxy propyl methyl cellulose (HPMC- K15M, K4M) as a viscosity enhancer. Benzalkonium chlorides at suitable concentration were used as a preservative. The formulations were sterilized by moist heat sterilization as per I.P. The prepared formulations were evaluated for clarity, pH measurement, gelling capacity, drug content, and in vitro diffusion study. Under rheological investigation both solution and gel was found to be in pseudo plastic behaviour. The selected formulations showed sustained release over a period of 8hrs with increased resident time. Eye irritation test using the Draize test protocol with cross over studies were preformed on selected formulations. All studies shown favourable results thus in-situ gelling system is a valuable alternative to counter the precorneal loss a major drawback in the ophthalmic preparation. In situ gel are viscous polymer-based liquid that exhibit sol-to-gel phase transition on the ocular surface due to change in specific physicochemical parameter like ionic strength, ph, or temperature. A major problem in ocular therapeutics is the attainment of optimal drug concentration at the site of action, which is compromised mainly due to pre-corneal loss resulting in only a small fraction of the drug being ocularly absorbed. The effective dose administered can be altered by prolonging the retention time of medication in to the eye by using in situ gel, thereby preventing the tear drainage. The object of the present study is to formulation and evaluation of the in situ ocular gelling system of ketorolac tromethamine. These gelling systems involve the use of gelrite as a polymer..*

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