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Non-aqueous gel based carrier system for the ocular delivery of aceclofenac with enhanced efficacy, safety and stability

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Aim: The study was intended to develop a non-aqueous gel based carrier system of drug aceclofenac (ACE) for its effective ocular delivery at the inflammatory sites.

Summary of the Problem: In the treatment of inflammatory conditions prevailing in eye, multiple strategies have been employed like steroids and non-steroidal anti-inflammatory agents. But their use is restricted due to their drawbacks like low drug permeation and retention, low drug availability, local irritation and stinging effect at the affected site in the eye.

Methodology & Theoretical Orientation: The chosen drug (ACE) was entrapped in a proniosomal system, which consists of span 60, cholesterol, maltodextrin and non-aqueous gel as the secondary vehicle.

Observations: The particle size, polydispersity index (PDI) and zeta potential of the prepared system were obtained as 369.6 nm, 0.513 and -25.3 mV, respectively. FTIR studies proved the useful interaction of the drug with the bilayers of the proniosomal system. The prepared gel system was a shear-thinning in nature with the yield value of 12.31 and viscosity of 173.29. Anti-inflammatory and analgesic animal models revealed the supremacy of the prepared formulations over the marketed formulations with increased ocular bioavailability of the drug at the site of eye inflammation. Ocular irritancy studies performed on rabbit eye model proved the safety and non-irritancy of the prepared formulation. Moreover, the formulation was found stable for the period of six months.

Conclusion: The current findings provide the lead for the development of an effective ocular formulation of ACE with substantial stability in the proniosomal system.

Speaker Biography

Supriya Verma has been engaged in experimental laboratory work that includes formulation development, *in vitro* characterization and *in vivo* evaluation of the novel drug delivery based formulations *i.e.,* liposomes, niosomes, solid lipid nanoparticles, nanostructured lipid carriers, etc. Her area of research is based on systematic design and development of nanostructured delivery system of Aceclofenac and Risedronate. In the last four years of research experience, she has got wonderful exposure on topical and oral drug delivery systems in an industry (Panacea Biotech, Lalru) as well as in an academic institute (University Institute of Pharmaceutical Sciences, Panjab University, Chandigarh). She has not only involved in research but also undertaking teaching of Undergraduate and Postgraduate classes. Moreover, she is having collaboration with medical institutes *i.e.,* PGIMER, Chandigarh and AIIMS, New Delhi for the assistance of clinical studies over there. Also she is writing research articles and book chapters related to her professional domain. She has attended various National as well as International level conferences and been awarded with five best paper awards in the last four years.

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