Evaluation of the Efficacy of Topical Nanoparticulated Sparfloxacin and Plain Sparfloxacin in the Experimental Model of Corneal Ulcer

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Abstract- Efficacy of topical nanoparticulated sparfloxacin was evaluated comparing with plain sparfloxacin in the experimental model of corneal ulcer. Sterile saline (0.05 ml) containing *Staph. aureus* $5x10^6$ CFU per ml was injected in the cornea for the induction of corneal ulcer. Therapy was initiated after 18 hrs of the inoculation. Nanoparticulated sparfloxacin (0.1% sparfloxacin) showed 100% healing over the period of 4 weeks treatment. This study showed that nanoparticulated formulations may be having potential use in ocular drug therapy.

The purpose of the study was to evaluate and compare the efficacy of topical nanoparticulated sparfloxacin and plain sparfloxacin in the experimental model of corneal ulcer.Eight white albino rabbits weighing 1.5–2 kg body weight were procured from Institute's Animal House after the approval of the Institute's Animal Ethics Committee for the use of corneal ulcer efficacy study. Sterile saline (0.05 ml) containing *Staph. aureus* $5x10^6$ CFU per ml was injected in the cornea for the induction of corneal ulcer. Cornea was anaesthetized with 4% xylocaine before performing the intra-stromal delivery of the inoculum. Therapy was initiated after 18 hrs of the inoculation. The rabbits, which were having at least grade 1 ulcer, were included in the study. Each rabbit received 50 µl of either 0.1%w/v nanoparticulated sparfloxacin formulation or plain 0.3% sparfloxacin eye drop four times a day. Treatment was given for 4 weeks.
While comparing the percentage healing that occurred after two weeks of therapy, (using the ulcer size) nanoparticulated sparfloxacin (0.1% sparfloxacin) showed 100% healing over the period of 4 weeks treatment, which was found to be statistically significant ($p<0.01$). This study showed that nanoparticulated formulations may be having potential use in ocular drug therapy.