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Preparation and Evaluation of Ocular Inserts Containing Norfloxacin

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Abstract: Norfloxacin is a poorly water soluble drug, and to improve its solubility it was complexed with b-cyclodextrin (BCD). Several ocular patches/inserts of norfloxacin-b-cyclodextrin were prepared in hydroxypropyl methyl cellulose (HPMC) matrix. The influence of rate controlling membranes made of ethyl cellulose (EC) alone and in combination with polyvinyl pyrrolidone K30 (PVP K30) in different proportions on drug release kinetics was studied. The data were subjected to regression analysis. Various physical characteristics of the films were evaluated. In vitro release studies were carried out in a fabricated flow through cell. All the films prepared were found to be uniform in thickness, and the partition coefficient of norfloxacin and its betacyclodextrin complex was 0.048 and 0.853, respectively. I.R. spectra revealed complexation of norfloxacin with b-cyclodextrin. In vitro results revealed that 2 patch/insert formulations, V1 and V2, followed perfect zero order kinetics release (n = 1), and 3 formulations, V3, V4 and V5, released the drug by super case II kinetics (n > 1). The study confirmed the improved solubility of norfloxacin when complexed with b-cyclodextrin and that it can be delivered through films made of HPMC matrix cast with EC alone or with a combination of PVP K30. It was also observed that increasing the proportion of PVP K30 into EC increased the rate of release of norfloxacin.

Key Words: Ocular insert, norfloxacin, beta-cyclodextrins

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