

Thermosensitive chitosan based hydrogel of loratadine

A. Niroumand^{1,*}, B. Sharif Makhmalzadeh¹, E. Salimi¹, H. Akbari²

¹Department of Pharmaceutics, School of Pharmacy, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

²Department of Clinical Pharmacy, Faculty of Pharmacy, Sari University of Medical Sciences, Sari, Iran

Background and aims:

the poor bioavailability and therapeutic response exhibited by conventional ophthalmic preparations due to rapid precorneal elimination, dilution and nasolacrimal drainage of the drug may be vanquished by the use of in situ gelling systems that are instilled as drop in to the eye and undergo a sol-gel transition in the cul-de-sac

Preparation of copolymer solutions

Aqueous solution of the Carbomer 940 copolymer (5, and 10%, w/w) was prepared by dispersing the copolymer in deionized water with gentle stirring at 25 °C for 4h and pluronic F127 solution (10, 20% w/w) was made by weighing into a cold deionized water and was kept in refrigerator for at least 24 h to ensure complete dissolution. These two solutions added to each other and also PEG, drug and ethanol were added to the combination that was stirred in 8°C for 24h. After this time, 1ml of solution of chitosan solution (.5% w/v) in acetate buffer (pH 4.6) was added to the combination

Results:

the effect of pluronic F127 concentration (10, 20% w/w) and carbomer 940 (2.5, 5, 10% w/w) concentration on the in vitro release of loratadine were showed that the release of drug to the polymers concentration was inversely. It was also found that, hydrogel swelling increased with high pluronic F127 concentration.

Conclusion

The developed carbopol/poloxamer/chitosan in situ gelling system could effectively control the release of relatively drugs like loratadine. A considerably low drainage of hydrogel into circulation as compared to eye drops is an added advantage in the treatment of eye itching and redness.

Keywords: Thermosensitive hydrogel, Loratadine, Chitosan