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Investigation of various parameters influencing the duration of mucoadhesion of some polymer containing discs

Mortazavi SAR

Abstract:

The aim of this study was to evaluate the effect of some important parameters on duration of adhesion of discs containing mucoadhesive polymers. For this purpose discs containing carbopol 934P (C934), polycarbophil (PC), sodium carboxymethyl cellulose (CMC) and hydroxypropylmethyl cellulose (HPMC) were prepared and the duration of their in vitro mucoadhesion were evaluated. Also the effect of the addition of various amounts of HPMC to other polymers, the effect of the test medium and prehydration of the test discs for 2 and 5 min prior to their placement in contact with the mucosal surface, on the duration of mucoadhesion of test discs were investigated. Results show that the addition of 25% HPMC increases the duration of mucoadhesion of all the tested polymers. The greatest duration of mucoadhesion with the anionic polymers CMC, C934 and PC was found to be at pH values above 4.0. The duration of mucoadhesion of HPMC containing discs were not greatly affected by the pH values above 2.2. However, at a pH value of 2.2 all of the investigated polymers showed the lowest duration of mucoadhesion. Finally, prehydration of discs containing HPMC, CMC or their combination before their placement on the mucosal surface resulted in a significant reduction in their duration of mucoadhesion. Discs containing only C934 or PC were far less affected by prehydration, especially after 2 min. Addition of HPMC to these discs greatly reduced their duration of mucoadhesion.

Keywords:

Carbopols ، HPMC ، Prehydration

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