

ABSTRACT

The Effect of Concentration Hydroxypropyl Methylcellulose K100M towards Physical and Mucoadhesive Characteristics from Ranitidine HCl Tablets

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The rationale of this research was to prepare a gastro retentive drug delivery system of ranitidine HCl. Mucoadhesive drug delivery system used to target drug release in the stomach or to the upper part of the intestine. Currently, mucoadhesive tablets are one of the important categories of drug delivery systems with gastric retentive behavior. Ranitidine hydrochloride is a H₂ blocker and absorbed from the upper part of gastrointestinal track, and metabolized in the colon that can degrade the drug, leading to a low bioavailability. Hence there is need to develop a dosage form that release the drug in stomach so that it can be absorbed from upper part of gastrointestinal track leading to improved bioavailability.

Three different formulas of ranitidine HCl were prepared by wet granulation using different concentration of hydroxypropyl methylcellulose K100M, in formula 1 (15%), formula 2 (25%), and formula 3 (35%). The prepared tablets were evaluated on their physical (hardness and friability) and mucoadhesive characteristics.

The result showed that increasing the concentration of HPMC K100M increased the hardness of tablets but the friability of tablets did not have significant difference. Mucoadhesive characteristic was investigated by swelling index and mucoadhesion time test. Swelling index of tablets was increased as the increasing concentration of HPMC K100M. Mucoadhesion time measured using rabbit gastric mucosa. All of the mucoadhesive tablet (F1, F2, and F3) could completely adhere on gastric mucosa but couldn't be measured properly because of the mucin turnover. In the next research, measuring mucoadhesion time must use the other methods.

Keyword : ranitidine HCl, mucoadhesive tablet, Hydroxypropyl methylcellulose K100M, physical characteristics and mucoadhesive characteristics.