ABSTRACT

The Effect of Various Consentration Hydroxypropyl Methylcellulose K100M towards Mucoadhesive Characteristics and Release of Ranitidine HCl
(From Sustained Release Mucoadhesive Ranitidine HCl Tablet)

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Ranitidine was H_2 receptor antagonist agent (H_2 blocker) that inhibit secretion of gastric acid. Half time of Ranitidine HCl was 2.5-3 hours. The usual dose of this drug was 150 mg, this dose can not inhibit the secretion of gastric acid more than 10 hours. Because of that, sustained release formulation of Ranitidine HCl was needed. Sustained release formulation will release drug in every gastrointestinal tract organs but Ranitidine absorbed only in upper of GIT, so *gastroretentive* method were needed to prolong the time of ranitidine in gastric. Gastroretentive method that used in this study was muchoadhesive.

Three different formulas of ranitidine HCl were prepared by wet granulation method using different concentrations of HPMC K100M. The concentration of HPMC K100M that used were 15%, 25%, and 35% with weight of every tablet 350 mg. The prepared tablets were evaluated on their mucoadhesive and drug release characteristics. The dissolution test was performed using 900 ml of 0,1 N hydrochloric acid, at 37 ± 0.5º C and 50 rpm.

The results of this study were the swelling index of formulation 1, 2, and 3 were 100.18% ± 4.18, 133.44% ± 3.70, and 153.03% ± 4.20, with mucoadhesion time of every tablet were more than 2 hours. Release rate of formulations were 5.841×10^{-3} min^{-1}, 4.826×10^{-3} min^{-1},dan 4.458×10^{-3} min^{-1}. The kinetic release of all formulas followed both first order and Higuchi's model and release mecanism dominated by non – fick diffusion.

From the results of the study concluded that elevated levels of HPMC K100M on sustained release mucoadhesive tablet formulations of ranitidine HCl tablets will increase the swelling index and decrease sustained release rate of ranitidine HCl sustained release mucoadhesive tablet of ranitidine HCl. In addition, all three formulas give attachment on mucoadhesion test time more than 2 hours . Analysis of the suitability of the release based on the requirements of the overall Welling obtained only formula 3 with levels of 35% HPMC K100M eligible Welling sustained release tablet.

Keyword : ranitidine HCl, mucoadhesive tablet, Hydroxypropyl methylcellulose K100M