



Development and Characterization of Controlled Release Mucoadhesive Tablets of Captopril to Increase the Residence Time in the Gastrointestinal Tract

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SUMMARY. The present investigation concerns the development of mucoadhesive tablets of captopril which were designed to prolong the gastric residence time after oral administration. Matrix tablets of captopril were formulated using different mucoadhesive polymers such as guar gum, xanthan gum, hydroxyl propyl methyl cellulose (HPMC) K4M and K15M in various ratios. The tablets were evaluated for physical properties, content uniformity, swelling index, bioadhesive strength and *in vitro* drug release. Swelling was increased as the concentration and viscosity of HPMC increases. Tablets formulated using guar gum and xanthan gum alone were eroded faster and dissolved completely within 5-7 h, while tablet containing HPMC remain intact and provided slow release up to 11-12 h. It was evident from the study that the formulation F10 containing HPMC K15M and xanthan gum (1:1) exhibited maximum bioadhesive strength of 31.59 ± 0.05 gm and *in vitro* drug release was found to be 91.85 % at the end of 12 h with non-fickian diffusion mechanism. The stability studies of optimized batch showed that there was no change in bioadhesive strength and *in vitro* release when stored at different temperature condition for 90 days. It was concluded that formulation F10 shows the better bioadhesive strength and drug release.

KEY WORDS: Captopril, Gastro-retentive tablet, Mucoadhesive tablets, Swelling index.

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