The Effect of Polymer Type, Ratio and Viscosity Grade on the in Vitro Release of Quetiapine Fumarate Matrix Tablets

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Abstract

The objective of this study was to develop a daily dose of Quetiapine Fumarate (QF) controlled-release matrix tablets, containing 300 mg equivalent weight of QF. Three different polymers, the low viscosity grade hydroxypropyl methylcellulose (HPMC K100LV), high viscosity grade HPMC K4M, and amphiphilic substance Compritol® HD5 ATO, and binary combinations of these polymers were used to prepare matrix tablets. *In vitro* drug release from the matrix tablets was determined and the results were correlated with tablet swelling and erosion studies, and with the rheological properties of the polymers. Drug release from the formulations containing HPMC K100LV showed little effect on controlling the release of QF. A significant delay in drug release was observed when the amount of HPMC K4M in the tablets increased. The addition of Compritol® HD5 ATO to HPMC K100LVM in matrix tablets did not exert a significant effect on controlling QF release. Matrix tablets containing HPMC K4M and Compritol® HD5 exhibited a controlled release pattern. The kinetic release of QF from the matrix tablets were fitted by zero-order, Higuchi, and Korsmeyer-Peppas model, which involves diffusion and/or erosion of the matrix tablet. The rheological properties of the polymers used in matrix tablets were found consistent with the dissolution profiles.