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Design and *in vitro* evaluation of mucoadhesive gastro retentive drug delivery system of Verapamil hydrochloride

Saniya Jawed, Akhilesh Kaushik, Gyanendra Singh and A K Srivastava
Indian Institute of Technology (Banaras Hindu University), India

The purpose of study was to formulate mucoadhesive drug delivery system of verapamil hydrochloride to prolong the gastric residence time of dosage form and bioavailability enhancement using HPMC K 100M, carbopol 974 P and alginate as a hydrophilic matrix forming agent, gellan gum as thickening agent and MCC as filler. Drug-excipient compatibility was checked by FTIR study. The direct compression method had been employed to prepared tablets and subjected to various evaluation parameters (drug content, hardness, weight variation, friability, mucoadhesive strength and *in vitro* drug release study). Carbopol showed floating instead of muco adhesion so batch made up of carbopol was discarded and study was done using HPMC and alginate alone. Correlation coefficient (r^2) values are in the range of 0.96-1.00 indicating zero order release kinetic. The cumulative percentage release over 24 hrs period for marketed preparation, drug loaded in alginate matrix and drug loaded in HPMC K100M matrix was found to be 98.5%, 86.5% and 94.5% respectively. The stability study of optimized batch indicates that the formulation is stable over the time. The mucoadhesive strength for the batch prepared with HPMC K 100 M showed better performance than the batch having alginate as polymer. The experimental finding suggest that the prepared mucoadhesive tablets of verapamil hydrochloride could overcome the problem of variable and unpredictable lag time of floating drug delivery system, demonstrate effective control over *in vitro* release of highly water soluble drug and could be cost effective as compared to previously reported gastro retentive formulation of verapamil hydrochloride.

Biography

Saniya Jawed is a Post graduate fellow at Indian Institute of Technology (Banaras Hindu University) Varanasi. Her current area of research is "Formulation, *in vitro* evaluation and study of variables on tri-layered gastro-retentive delivery system of Verapamil Hydrochloride. She had completed Bachelor in Pharmacy from Department of Pharmaceutics Indian Institute of Technology (Banaras Hindu University) Varanasi India with First class. She has qualified GPAT-2013(conducted by AICTE New Delhi). She received financial assistance, from MHRD, Government of India for his Post-graduation research work.

saniya.jawed.phe13@itbhu.ac.in