

11th International Conference on

PHARMACOEPIDEMOLOGY AND CLINICAL RESEARCH

October 02-03, 2017 Kuala Lumpur, Malaysia

Design and evaluation of multiple unit gastro retentive beads of anti ulcer drug**Ritesh Kumar**

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The present study was focused on the development of a multiple unit gastroretentive beads of Lafutidine using low grades of polymer such as HPMC K4M and gas-forming agents employing ionotropic gelation method for prolongation of the gastric retention time and increase in absolute bioavailability with enhanced patient compliance. Lafutidine is a H₂ receptor antagonist and widely used in the treatment of peptic ulcer, duodenal ulcer, gastric ulcer and Zollinger-Ellison syndrome. Drug and excipients were subjected for compatibility studies using FTIR and DSC and showed no significant interaction between drug and excipients. 23 full factorial designs was applied to optimize the developed formulation. Calcium chloride, HPMC K4M and Calcium carbonate were selected as independent variables at two different levels. t_{50%} and t_{80%} were selected as response variables to determine the drug release rate from the floating beads and the retaining efficiency of drug and polymers.

Developed formulations were pH independent and evaluated for the parameters i.e. bulk density, compressibility, drug entrapment efficiency, drug loading, floating time, swelling index, *in vitro* dissolution study, kinetic modeling and SEM. The optimized formulation remains buoyant for more than 12 hrs. The *in-vitro* drug release results indicated that increasing the concentration of HPMC K4M resulted in sustained effect with long floating duration. *In vitro* release profile of optimized formulations followed Higuchi model with non-Fickian (anomalous) diffusion. SEM studies showed their spherical shape with perforated smooth surface and cavity inside beads. F7 was selected as the optimized formulation on the basis of response surface plot and contour plot.

The optimized formulations were subjected to stability studies and shown there were no significant changes in drug release pattern, buoyancy, t_{50%} and t_{80%}.

Biography

Ritesh Kumar has his expertise in formulation, evaluation and optimization of Gastroretentive, Fast release, Nanotechnology based drug delivery systems. He has more than 11 yrs teaching and 6 yrs experience in research. Presently he is pursuing Ph.D. in Pharmacy from IFTM University, Moradabad, India. He has written more than 20 articles in various reputed International and National journal

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