"Formulation and evaluation of floating pulsatile drug delivery system for hypertension"

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Abstract

The objective of this study was to prepare and characterize floating pulsatile tablet of Captopril giving pulsatile release for hypertension. floating pulsatile drug delivery gives highest concentration at the early morning when it is needed the most. Hence, increase the patience compliance and decreases the side effects. Floating pulsatile tablet were prepared by direct compression method using HPMC K4M, avicel PH101, sodium starch glycolate and sodium bicarbonate polymers to achieve pulsatile drug release. Effects of all the polymers, with different concentrations, on physical properties of floating pulsatile tablet were investigated. To evaluate the effect of HPMC and sodium bicarbonate concentrations, 3^2 factorial design was employed and for avicel PH101 and sodium starch glycolate, 2^2 factorial design was employed. The optimization of core tablet was done on the basis of disintegration time. The optimization of floating pulsatile tablet was done based on the floating lag time & release rate. The core tablet formulation C3 and floating pulsatile tablet formulation F1 was selected as optimum production formulation. The Floating lag time , floating

time, drug content, disintegration time and *in-vitro* drug release were found to be 43.4 sec, >8hrs, 99.06%,45.6 sec, 95.3% respectively. From regression value it revealed that all formulations followed Hixon Crowell model, which indicates that the drug release follows swelling-erosion. Stability study at $40^0C \pm 2^0C$ / 75 ± 5 % RH revealed that there was no significant change in disintegration time, drug content and % CDR after 45 days. So, prepared formulation was stable during stability study. The developed floating pulsatile tablet can be effectively used for oral administration in case of hypertension as it releases the drug in a pulsatile manner up to 7 hours thus improving patient compliance.

Key words: Floating pulsatile tablet, Captopril, Chronotherapy, Hypertension,