ABSTRACT

Verapamil hydrochloride is a calcium channel blocker, widely used in management of hypertension. It has very short half life of 4 h and oral bioavailability of 35.1%. The present investigation is concerned with the development of the floating microspheres of verapamil HCl to target the drug to its absorption site by increasing the residence time of drug in stomach and to control drug release in therapeutic range for longer period of time.

Floating microspheres of verapamil HCl were prepared by non-aqueous solvent evaporation technique. In this dosage form, hydrophobic water impermeable polymer ethyl cellulose for controlling the release of drug and hydrophobic water permeable polymer hydroxypropyl methylcellulose were used for initial release of drug. The surface morphology of the microspheres were characterized by scanning electron microscopy. The formulated floating microspheres were evaluated for particle size, % yield, % buoyancy, % DEE and *in vitro* drug release study. The dissolution profile of various formulations were fitted to zero order, first order and higuchi model to ascertain the kinetic modeling of the drug release. Two months of stability study was carried out at room temperature for best F4 formulations and results showed no significant changes in percentage drug entrapment efficiency and *in vitro* drug release study after stability study. So, the F4 formulation containing 100 mg of verapamil HCl released drug for 12 h within desired therapeutic concentration and follow the higuchi (diffusion controlled) kinetics.

Key words: Verapamil HCl, Floating drug delivery system, Floating microspheres, non aqueous solvent evaporation method, Stability study.