Abstract

The objective of present research study is to formulate and evaluate the multi-particulate floating drug delivery system for famotidine using natural polymer sodium alginate, pectin and HPMC. It exhibits suitable controlled release characteristic of the controlled drug delivery system. Drug is a competitive inhibitor of histamine H₂ receptors used in the treatment of duodenal and gastric ulcers. It was reported that this drug absorbed only in stomach and its biological half-life is 3.5 to 4.5 hours with a bio-availability of 40 to 45%. Hence, to increase the drug concentration at the gastric mucosa done for prolonged period of time, famotidine was formulated into a Floating drug delivery system. Floating dosage form helps in better absorption of drug by releasing the drug before it reaches the site of absorption and prevents the degradation of famotidine in colon.

To prepare oil entrapped floating beads of famotidine is an attempt made in present study. Preparation is prepared by inotropic gelation method using different amount and type of curing agent and various concentration of mineral oil as a floating agent. In the preliminary trials, beads were prepared without oil and various parameters were optimized such as concentration of polymer, height and size of needle, speed and time of curing agent etc.

Prepared floating beads were evaluated for micromeritic properties, floating time, % yield, % Drug loading, % entrapment efficiency, % swelling index, in vitro drug release and short-term stability studies.

Among the various formulations prepared, formulation F₁ showed the better in vitro release profile and drug entrapment efficiency. As far as mechanism of dissolution is concern the good fit of the Higuchi model to the dissolution profiles of optimized formulations suggested that diffusion is the predominant mechanism. Stability studies reveal that the storage conditions had not significantly influenced the characteristic of optimized formulation.

The techniques employed were practically simple economic and can commercially exploited. From the present study we can conclude that this H₂ antihistaminic drug Famotidine could be successfully formulated as floating beads.