ABSTRACT

The objective of this research work is to develop an oral enteric controlled dexlansoprazole (proton pump inhibitor) loaded sodium alginate beads for intestinal delivery. The influence of type and concentration of polymers on retarding the drug release in the stomach was tested for pH dependent polymers such as Eudragit L100 or cellulose acetate phthalate and time dependent polymers such as Eudragit RL100 and Eudragit RS100 by homogenizing with sodium alginate solution. The effects of factors like curing time, polymer and concentration of calcium chloride on drug entrapment efficiency and drug release were studied. Mucoadhesive studies, swelling index and scanning electron microscopy to understand surface morphology of the beads was also performed. The increase in concentration of calcium chloride results in smaller size of beads. The beads with longer curing time results with more rigid and stiff beads. The increase in polymer concentration results in increase in bead size. The efficiency of the polymer in retarding the drug release in gastric media is in the order of Cellulose acetate phthalate (2%w/v) > Eudragit RS100 (0.5%w/v)> Eudragit L100 (1.2%w/v)> Eudragit RL100 (0.5%w/v). The mucoadhesiveness observed for formulations made with pH dependent polymers is found to be 100% than made with time dependent polymers. CAP coated formulation showed diffusion patterned release kinetics and found to be stable at 30±2°C/65±5%RH for two months. Based on the above results Dexlansoprazole loaded sodium alginate beads coated with CAP is suitable to deliver the drug to small intestine more efficiently.

Keywords: Dexlansoprazole, Controlled release drug delivery system, Eudragit L100.