

ABSTRACT

The aim of this study was to evaluate the physical characteristics and bioadhesive strength of glutathione-alginate microspheres dispersed in the base of carbomer 940 1%, carbomer 940 1.5%, HPMC 4000 1.5% and HPMC 4000 2%. The glutathione-alginate microspheres were made by ionotropic gelation with aerosolization technique using polymeric sodium alginate 2.5% medium viscosity and CaCl_2 1 M as crosslinkers. The microspheres formed were dispersed in lyoprotectant maltodextrin solution and dried using a freeze dryer. Dried microspheres are then dispersed in a gel base to be used topically. The results of the characterization of microspheres in the base of the gel include organoleptic examination, pH, particle size and size distribution of microspheres in the gel base, spreadability, viscosity and adhesive strength of the preparation. The results obtained showed that the viscosity of the dosage increased and spreadability decreased with increasing levels of carbomer 940 (1% to 1.5%) and HPMC 4000 (1.5% to 2%). Addition of glutathione-alginate microspheres on the base of carbomer 940 significantly reduced the pH of the preparation. While the addition of glutathione-alginate microspheres on the base of HPMC 4000 does not affect the pH of the preparation. The adhesive strength increased from carbomer 940 1% to carbomer 940 1.5% and HPMC 4000 1.5% to HPMC 4000 2%. The higher viscosity and bioadhesive strength were obtained in carbomer 940 compared to HPMC 4000 at the same concentration (1.5%).

Keywords : glutathione-alginate microsphere, carbomer 940, HPMC 4000, physical characteristics, adhesive