ABSTRACT

Rosiglitazone maleate is an oral antidiabetic agent, it is used for the management of type-2 diabetes. It is an absorption window limited drug, whose solubility decreases with increase in the pH and has a short half life of 3-4 h. Therefore the present investigation is concerned with the development of the mucoadhesive microspheres, which after oral administration were designed to prolong the gastric residence time and thus to increase the bioavailability of the drug and its half life. Rosiglitazone maleate showed maximum absorption at wavelength 225 nm in 0.1 HCl. Drug polymer compatibility studies by FTIR gave confirmation about their purity and showed no interaction between drug and polymer. Formulations like F_1 to F_6 were developed by using various ratios of Carbopol 934P and HPMC to control the release rate and mucoadhesion by simple emulsification method. All the formulations were subjected to physicochemical parameters like particle size, shape analysis, drug content, swelling index, *in-vitro* mucoadhesion evaluation and *in-vitro* drug release studies. The results obtained from the above tests to be found to be satisfactory for all formulations. The best batch exhibited a high drug entrapment efficiency of 77.5%. The drug release was also sustained for more than 12 h. The polymer-to-drug ratio had more significant effect on the dependent variables. *In-vivo* testing of the mucoadhesive microspheres to albino wister rats demonstrated significant hypoglycaemic effect of rosiglitazone maleate.

Keywords: Rosiglitazone maleate, Carbopol, HPMC, mucoadhesive microspheres, *in-vivo* study.