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Development and Evaluation of Olmesartan Medoxomil Controlled Release Floating Microspheres using Natural Gums

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ABSTRACT

The present research was aimed to prepare Olmesartan medoxomil floating microspheres for controlled release using polymers such as sodium alginate, sodium bicarbonate, calcium chloride, Hydroxy propyl methyl cellulose (HPMC K4M, K15M), Olibanum gum and Xanthan gum by ionotropic gelation method. The prepared microspheres were evaluated for the percent drug content, entrapment efficiency, percentage buoyancy and *in vitro* dissolution studies. Among all the formulations F14 was selected as optimized formulation based on the micromeretic and physico-chemical parameters including drug release studies. Percentage buoyancy of optimized formulation was found to be 96.45%. *In vitro* release study of formulation F14 showed 98.11% drug release after 12 h in a controlled manner, which is desired for disease like Hypertension. The reference standard shows the drug release of 94.12% within 12 h. Drug and excipient compatibility studies were carried out by FT-IR and no interactions were observed. The SEM of microspheres show a hollow spherical structure with a rough surface morphology. Some of microspheres showed dented surface structure but they showed good floating ability on medium indicated intact surface. The shell of microspheres also showed some porous structure which might be due to release of carbon dioxide. F14 followed zero order, Higuchi and Korsmeyer Peppas kinetics indicating diffusion controlled with non-fickian (anomalous) transport, projecting that its active ingredient are delivered by coupled diffusion and erosion. From these results, it can be concluded that the polymer proportion controlled the drug release from the olmesartan floating microspheres.

KEYWORDS: Olmesartan, Buoyancy, HPMC, Floating microspheres, Hypertension.