Latha, S., Selvamani, P., Suganya, G. *et al.*

Preparation and In-vitro Evaluation of Pantoprazole Sodium Magnetic Microspheres by Emulsion Solvent Evaporation Method.

BioNanoSci. **11,** 643–647 (2021): https://doi.org/10.1007/s12668-021-00837-2

ABSTRACT:

Magnetic microspheres incorporated with pantoprazole sodium—a proton pump inhibitor—were formulated by using two different polymers such as ethyl cellulose and Eudragit RS-100. The magnetic microspheres were prepared by emulsion solvent evaporation technique with different drug carrier ratio of pantoprazole: magnetite: ethyl cellulose (EC-1 = 1:1:2 and EC-2 = 1:1:4) and pantoprazole: magnetite: eudragit-RS100 (EUD-1= 1:1:2 and EUD-2 = 1:1:4). Physicochemical properties of prepared magnetic microspheres such as density of the formulated magnetic microspheres were found to be 1.32, 1.27, 1.87, and 1.53 gcm^{-3} for EC-1, EC-2, EUD-1, and EUD-2 respectively. Magnetic susceptibility was found to be 750, 470, 215, and 240 × 10^{-5} for EC-1, EC-2, EUD-1, and EUD-2. SEM proved that the formulated magnetic microspheres were smooth and spherical with the size range of 1 to 700 µm and 5 to 500 µm for ethyl cellulose and Eudragit RS-100. X-ray diffraction patterns proved that their crystalline nature of the drug in formulation was not changed. Drug release from magnetic microspheres was found to be pH dependent. The drug release from EC-1, EC-2, EUD-1, and EUD-2 was found to be 20.90%, 18.32%, 20.1%, and 13.77% w/w in pH 2; 90.71%, 78.67%, 39.03%, and 30.12% w/w in pH 7.4, and 67.61%, 57.01%, 35.16%, and 31.95% w/w in pH 8.0, respectively. Eudragit RS-100 magnetic microspheres showed controlled release of pantoprazole, when compared with ethyl cellulose formulations.