**ABSTRACT**

Purpose: The aim of this study was to develop, formulate and evaluate floating microspheres of

diclofenac sodium, using ethyl cellulose and eudragit L 100 in different ratios as release retardant material by using Box-Wilson design.

**Method:** Microspheres were prepared by solvent evaporation method using methanol / liquid paraffin system. The prepared microspheres were characterized for their particle size, drug loading, % buoyancy, as well as by Fourier Transform Infrared spectroscopy, Differential Scanning Calorimetry, X-ray powder diffractometry and Scanning Electron Microscopy. The in vitro release studies were performed in pH 1.2 (0.1 N HCl) and in 6.8 pH, phosphate buffer.

**Result:** The prepared microspheres were white, free flowing and spherical in shape. The drugloaded

microspheres showed 80.37- 101.23% of entrapment and release was extended up to 12 h. The IR spectra and DSC thermographs showed stable character of diclofenac sodium in the mixture of polymers and revealed the absence of drug-polymer interactions. X-ray diffraction patterns showed that there was decrease in crystallinity of the drug in prepared microspheres. Scanning electron microscopy study revealed that the microspheres have smooth surface and spherical in shape.

**Conclusion:** The best-fit release kinetics was achieved with zero order. The release of diclofenac

sodium was influenced by the drug to polymer ratio, amount of ethyl cellulose and stirring speed.

The release was found to be diffusion controlled.

**KEYWORDS**: Diclofenac sodium; Eudragit L-100; Ethyl cellulose; Floating microspheres;

Controlled release.