



RESEARCH ARTICLE

FORMULATION AND *IN VITRO* EVALUATION OF EUDRAGIT® RS 100 MICROSPHERES CONTAINING LORNOXICAM PREPARED BY EMULSION-SOLVENT EVAPORATION METHOD

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The aim of present study was to prepare sustained release Eudragit® RS 100 microspheres containing lornoxicam using emulsion-solvent evaporation technique. The influence of drug concentration, polymer concentration, emulsifier concentration and stirring speed on particle size, shape, % yield, entrapment efficiency and *in vitro* release characteristics of microspheres were investigated. SEM studies confirmed that microspheres were spherical and uniform in shape. The results showed that % yield, particle size and entrapment efficiency of prepared microspheres was found to be in the range of 68.75 ± 0.82 to $84.83 \pm 0.88\%$, 132.52 ± 5.24 to $214.92 \pm 4.24 \mu\text{m}$ and 65.18 ± 1.66 to $85.28 \pm 1.60\%$ respectively. It was found that particle size and entrapment efficiency of microspheres were enhanced with increasing polymer ratio but reduced with increasing stirring speed and surfactant concentration. The *in vitro* release studies showed that Eudragit® RS 100 microspheres showed sustained effect up to 12 h.

Key words: Eudragit RS 100, Lornoxicam, Microspheres, Polymethacrylate, Sustained release.

INTRODUCTION

Over the past few decades, microspheres have been one of the particulate delivery systems that is widely accepted to achieve oral (Sahoo *et al* 2007) and parenteral (Chowdary *et al* 2004) sustained or controlled drug delivery system, improved bioavailability, stability and target the drug to specific sites. Microspheres also offer advantages such as limiting fluctuation within a therapeutic range, reduction in side effects, decreased dose frequency and hence improved patient compliance (Ritschel, 1989). One of the popular methods for the encapsulation of drugs within water insoluble polymers is the emulsion solvent evaporation method. This technique

offers several advantages and is preferable to other preparation methods such as spray drying, sonication and homogenization because it requires only mild conditions such as ambient temperature and constant stirring. Thus, a stable emulsion can be formed without compromising the activity of the drugs. Literature describes various methods as well as types of polymers showing potential for sustained and controlled drug delivery (Choi *et al* 2002; Kim *et al* 2002; Atyabi *et al* 2005; Dahiya and Gupta, 2011; Kumar and Dureja, 2011; Basarkar *et al* 2013). There are several formulation and process parameters that, when modified during the manufacture of microspheres by emulsion-