Studies on Preparation and Evaluation of Biodegradable Poly (Lactide-Co-Glycolide) Microsphere of Aceclofenac

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ABSTRACT

After successful development of drug entity, design of dosage form then plays a very important role. Aceclofenac, a novel NSAID is indicated for the symptomatic treatment of pain and inflammation. The mean plasma elimination half-life is 4 hours. The side effects are dyspepsia, abdominal pain, diarrhea, nausea, dizziness, flatulence, gastritis, constipation, etc. The main aim of this research work was to reduce the dosing frequency and adverse effects by formulating controlled-delivery system in the form of biodegradable microsphere. Poly (lactide-co-glycolide) was used as biodegradable microsphere. Solvent evaporation method was used for the preparation of microsphere. The SEM photograph showed that the microspheres were spherical in shape. Average particle size was 295 µm. The drug entrapment efficiency was 25%. Release study of drug from microsphere showed 90 % release in 10 hr. and about 40% drug was released in the first 30 min. Microsphere was stable at room temperature. The IR and DSC study showed no interaction of drug with polymer and no degradation during preparation of microsphere was observed.

Key words: Poly (Lactide-Co-Glycolide) (PLGA), Microsphere, Aceclofenac, Biodegradable, Solvent Evaporation Method

INTRODUCTION

After successful development of drug entity, design of dosage form then plays a very important role. The development of drug delivery systems involves an interdisciplinary approach, involving contributions from the fields of chemistry, material science, engineering, pharmacology and other biological sciences. A controlled-release drug delivery system should be able to achieve optimum therapeutic drug concentration in the blood with minimum fluctuation, to predict and reproduce release rates for extended duration, to enhance activity duration of short half-life drugs, to eliminate side effects, to reduce frequent dosing and wastage of drug and to optimize therapy and better patient compliance. Drug delivery systems