UNIVERSITI TEKNOLOGI MARA

IN VITRO DRUG RELEASE OF IBUPROFEN - LOADED PLGA MICROPARTICLES

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ABSTRACT

The purpose of using PLGA polymer in this experiment is to prolong the action of ibuprofen. Thus the number of administration can be reduced and this may increase patient compliance due to decrease number of pills or capsules to be taken per day. This study is designed to investigate the rate of ibuprofen release from the drug, the mechanism associated with the drug release from the PLGA, the effect of pH and temperature to ibuprofen release from the microparticles and how different ratio of polymer to the drug can affect the morphology of the microparticles. Concentration of ibuprofen release from the polymer was measured by using UV-Vis spectrophotometer and the surface morphology was determined by using scanning electron microscope (SEM). In vitro release shows that, at physiological temperature, ibuprofen released at faster rate compared at 25° C . At higher pH, about 100% of drug being released while at gastric pH 90% of drug are being released. Different ratio of polymer to the drug concentration does not affect the surface morphology of the microparticles.

CHAPTER 1

Introduction

1.1 Background of the study

In past two decades increasing attention has been given to the controlled drug delivery systems, which offer a potential advantage over conventional drug therapy (Vasudev et al, 1997). Sustained-releasing systems with biodegradable polymeric microspheres have been investigated recently. One of the interests in the field of the sustained-releasing systems focused on the achieving of the constant release, because it is supposed to be able to provide a constant drug efficacy for a long period (Matsumoto et al., 2006).

For the past two decades, polymers are being extensively used in drug delivery systems. Polymers by virtue of their ability to sustain the drug release over long periods of time and provide steady plasma concentration may reduce the total dose and some adverse reactions (Mittal et al., 2007).

Biodegradable nano- and microparticles can be useful delivery devices for various active agents. Poly (d,l-lactide-*co*-glycolide) (PLGA) is one of the most common biodegradable and biocompatible polymer used for the controlled delivery of drugs. (Feczk´o et al., 2007)