UNIVERSITI TEKNOLOGI MARA

POLYMERIC DRUG DELIVERY

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ABSTRACT

The purpose of incorporation PLGA polymer is to prolong the action of salicylic acid preparations in order to diminish the number of consumption for its analgesic effects and thus facilitate their use. This purpose of this study was to investigate the rate of salicylic acid release from the polymer with various ratio of the polymer to the drug and how temperature of release medium could affect the release rate. Concentration of salicylic acid release from the polymer was determined by using UV spectrophotometer and the surface morphology of the sample was determined by scanning electron microscope (SEM). Thermal analysis of the PLGA, salicylic acid and the mixture were determined by using differential scanning calorimety (DSC). In vitro results show that high ratio of PLGA to salicylic acid will cause more salicylic acid being coated by the PLGA thus preventing initial burst release of salicylic acid. Glass transition temperature (Tg) of PLGA is around 38.23 °C while salicylic acid does not show its glass transition temperature. Morphology of the two compound with ratio PLGA to salicylic acid 1:0.33 shows having a more spherical shape compared to ratio 1:1 and 1:0.5. PLGA coating of salicylic acid will enhance the stability of the drug by shifting the endothermic curve to the higher temperature which indicates it is more stable in terms of thermal stability.

CHAPTER 1

Introduction

1.1 Background of the study

In the recent years of development in pharmaceutics, increasing attention is being given for administering drugs in a more challenging and controlled manner for better therapeutic end point. To achieve this, various controlled release dosage forms have been developed or are still under development in treating diseases because of their advantages over other conventional dosage forms (Khairuzzaman *et al.*, 2006). In standard dosage forms, the drug level in the blood rises, peaks and then declines eventually to almost zero. However, each drug has a therapeutic range above which it is toxic and below which it is ineffective. A controlled release preparation maintains the drug in the desired therapeutic range with a single dose; other advantages include localized delivery of the drug to a particular region in the body, which lowers the systemic drug level, a reduced need for follow-up care, increased patient comfort and improved patient compliance (Vasudev *et al.*, 1997).

Recently, there is a vast demand in synthesizing polymeric drug delivery systems. During the last decade, polymer chemistry was dedicated to synthesis, derivatization, degradation, characterization, application, and evaluation, for newer biocompatible