

UNIVERSITI TEKNOLOGI MARA

**SOLID STATE CHARACTERIZATION OF PVP WRAPPED
INDOMETHACIN**

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Abstract

Indomethacin is a drug of poor solubility. We can enhance the solubility of the drug by adding a suitable excipient to improve the solubility. In this case, the excipient used is one of polymers which is polyvinylpyrrolidone (PVP) polymer. The technique used is polymer wrapping technique. Different weight of indomethacin is used to make four samples of PVP wrapped indomethacin. The sample is identified as sample a, sample b, sample c, and sample d. Then, the solid state characteristic of PVP wrapped indomethacin is characterized by using differential scanning calorimetry (DSC), fourier transform infrared spectroscopy (FTIR), X-ray diffractometry (XRD), thermogravimetric analysis (TGA) and scanning electron microscopy (SEM). The comparison of pure materials (indomethacin and PVP) is made with PVP wrapped indomethacin.

Chapter 1

1.0. Introduction

1.1. Background of study

As the number of new drugs discovered increased, poorly water soluble properties make the drugs become a poor candidate as new drug. Poor water soluble drugs have poor bioavailability and result in various different dissolution rates. The existence of drugs in different solid form such as crystal and amorphous can influence the pharmaceutical drugs products differently with respect to stability, bioavailability and dissolution (Stephenson et al., 2001). Poor water soluble drugs often show low absorption and weak bioavailability. Therefore, the improvement in dissolution rate and solubility are important for development of drug preparation in pharmaceutical formulation. Various methods have been used to enhance the solubility of drugs.

Using polymer to wrap the drug molecule can greatly increase the rate in which the poorly soluble drug dissolves. The polymer can effectively avoid the lattice energy of drug crystals. This technique is applicable to ionisable drug including cation, anion and amphoteric active. A well known example of this particular drug is indomethacin. Indomethacin is described as poorly soluble and highly