UNIVERSITI TEKNOLOGI MARA

CHITOSAN-PECTIN POLYMER FILM FOR TRANSDERMAL DRUG DELIVERY SYSTEM

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ABSTRACT

Chitosan and pectin are widely used in pharmaceutical products due to their excellent characteristics such as mucoadhesive, controlled release property, as well as skin permeation enhancing effect. In this study, three types of transdermal films namely chitosan, pectin and chitosan-pectin composite were prepared using acetaminophen as the model drug and their drug permeation profiles were investigated. It was found that both chitosan and pectin film showed higher average drug permeation of 6.0994±1.1063% and 5.7378±1.7608% respectively when compared to chitosan-pectin film where the average drug permeation was only 0.8535±0.4811% after 24 hours. In conclusion, both chitosan and pectin are potentially suitable for controlled transdermal delivery of acetaminophen while the chitosan-pectin composite might be useful for topical drug delivery.

CHAPTER ONE

INTRODUCTION

1.1 Overview of study

Greek physicians used formulation which contained salts, honey, resins and vinegar to treat lesion on the skin and ulcers over 2000 years ago [1]. This method has evolved into new way of treatment into patch. The transdermal patch is often used nowadays and also act as an alternative route of administration besides oral route. Transdermal drug delivery system (TDDS) is known as medicated adhesive patch which will give therapeutic effect by contacting the patch into skin [2]. There are two types of TDDS namely reservoir system and matrix polymer system. In reservoir system, the drug is stored in drug reservoir and being hold by semi-permeable membrane which will be rate limiting step. In matrix polymer system, the drug is incorporated in the adhesive polymer matrix thus resulting continuous release of drug into the skin [3]. This route of administration can improve the absorption of drug and even delivers the drug in a controlled rate over an extended period of time. The TDDS could prevent many problems such as gastroenteritis, low absorption due to the first past hepatic metabolism and short half-life drugs which need frequent administration. Furthermore,