UNIVERSITI TEKNOLOGI MARA

PREPARATION OF DRUG CARRIERS FROM GLYCOSIDES AND POLYMER: DETERMINE THE ENCAPSULATION EFFICIENCY

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ABSTRACT

Glycosides-polymer as drug carrier is used widely in pharmaceutical industry because of its pharmacological action and therapeutic effect. The drug carrier was formulated using thin film approach and the properties of the vesicle which the surface charge, size and encapsulation efficiency was studied using dynamic light scattering and fluorescence spectroscopy. Glucoside and Galactoside vesicles is formulated with the volume ratio of 1:0.4 to DCP with the effect of the presence of cholesterol to the vesicle stability and encapsulation efficiency of drug methylene blue (MB) was determined. The findings show the presence of cholesterol in the glucoside vesicle produce the highest encapsulation efficiency at 1.73% and the lowest at 1.14% for galactoside vesicle with the cholesterol absent. The loading efficiency is find to be low for all formulation at no more than 3.7%.

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CHAPTER 1

Introduction

1.1 Research Background

Health in general is not a consistent state for all of biological species, and in particular human being is susceptible to diseases and illness. According to WHO, from monogenic to hereditary diseases, human being is currently facing a wide range of diseases that is affecting the humankind. The drug will be administered to treat the illness, and to make sure that the drug is effective and will improve the health of the person, the pharmacokinetics of the drugs need to be at the optimum level for the specific diseases. This research focusses on one of the pharmacokinetics factor that is the **encapsulation efficiency of the glycosides-polymer drug carrier.**

Kiwada et al. (1984) was one of the pioneer in the development of the glycosides based drug carrier and there are many extensive studies that demonstrated the ability of glycosides as the drug carrier. Properties of the therapeutic genes to diseases sites will make a suitable systemic delivery. In accordance to the drug delivery to the disease sites, to give the sufficient therapeutic effect the vectors must be safe, well tolerated upon administration and non-immunogenic (Machlachlan, 1999)**.**

Park et al. (1998) suggests that there a few challenges in developing the encapsulated drug carrier are; the instability nature of encapsulated drug carriers, and the incomplete or initial burst. The chemical and mechanical external environment during the encapsulation process can exert the damaging effects on the biological integrity of the drug carrier. Yeo and Park (2004) did a study on the encapsulation and the study remarks that eventhough the encapsulation efficiency does not directly help to reduce the reduction of the burst release, the release profile can be controlled only by understanding on how to maximize encapsulation efficiency.