UNIVERSITI TEKNOLOGI MARA

PREPARATION AND EVALUATION OF THE SURFACE PROPERTIES OF GRISEOFULVIN SOLID DISPERSIONS WITH THREE DIFFERENT SACCHARIDES

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ABSTRACT

The present study proposed griseofulvin as drug candidate because of its aqueous in solubility, where it foresees to study contact angle extensively as a parameter and to establish how different saccharides such as lactose, corn starch and potato starch incorporate hydrophilicity to a hydrophobic drug so to enhance its solubility. The effects of contact angle on the mixture of griseofulvin with saccharides were investigated by using sessile drop method. The pellets containing the mixture of griseofulvin and saccharides were measured at ratio (1:1, 1:2, 1:3, 1:4, 1:5, 1:6, 1:7, 1:8) by weight. For griseofulvin alone, the contact angle was observed to be very high, 65.58°, supporting the fact that the drug is very hydrophobic. Upon incorporation of lactose, corn starch and potato starch, the contact angle was decreased with different extent of intensity corresponding to the different saccharides respectively. Upon comparison, presence of corn starch significantly improved the wettability of griseofulvin as it reduces the contact angle to the highest extent among the three, suggesting it can better incorporate hydrophilic property than that of the other two saccharides. On the basis of this study, an extensive data on contact angle have been gathered, however, these findings have to be further validated with other related experimental findings.

CHAPTER ONE

INTRODUCTION

1.1 Background

Therapeutic effectiveness of a drug depends upon the bioavailability and ultimately the solubility of drug molecules. Solubility is one of the important parameter to achieve desired concentration of drug in systemic circulation for pharmacological response to be shown. Currently only 8 per cent of new drug candidates have both high solubility and permeability (Conference, 2005)

The solubility of a solute is the maximum quantity of solute that can be dissolve in a certain quantity of solvent of a solution at a specified temperature and pressure. In other words, the solubility can also be defined as the ability of one substance to form a solution with another substance (Persky and Hughes, 1999). The substance to be dissolved is called as solute and the dissolving fluid in which the solute dissolve is called solvent, which together form a solution. The process of dissolving solute into solvent is called as solution or hydration if the solvent is water.

Poorly water-soluble drugs often show low bioavailability when administered orally, because the absorption of the drugs in the gastrointestinal tract can usually be a rate-limiting step. Therefore, it is important for such kind of drugs to enhance their dissolution rate. To enhance the dissolution rate, increasing the drug solubility is necessary according to the Noyes–Whitney equation (Abdou, 1989). Various studies