UNIVERSITI TEKNOLOGI MARA

PHYTOCHEMICAL STUDY OF METHANOLIC EXTRACT OF *ARECA CATECHU* SEED

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In the name of Allah, the Most Gracious, the Most Merciful...

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ABSTRACT

Areca catechu or commonly known as betel nut is widely distributed in topical Asia and parts of Africa. This plant is used as a masticatory since centuries in various regions of the world including Malaysia. The chewing of betel seed with other ingredients in the form of 'betel quid' in older generations especially is due to the belief that it increases stamina and general well- being. Apart from that, betel nut seed is also used as traditional medicine since centuries. It is believed to possess many therapeutic activities such as antihelmintic, antibacterial, antioxidant and antiinflammatory actions. Thus, this plant was selected for this study because of its widespread use as traditional folk remedy. This thesis focuses on the investigation of chemical constituents of methanolic extract of *Areca catechu*seed. In order to achieve the objectives of this study, several steps were carried out. Firstly, an appropriate solvent system was developed and selected for thin layer chromatography (TLC) technique. TLC of methanolic extract of *Areca catechu* seed was performed on reverse phase silica gel plate. Detection of compounds on TLC plate was carried out by UV light at 254 nm as well as by spraying agent anisaldehyde. Next, further fractionation of fraction (36-39) was conducted by medium pressure liquid chromatography (MPLC) in order to get pure compound(s). Then the fractions produced by MPLC had undergone TLC process to identify the pure compound(s). Two fractions of interest showed one spot on TLC plate. Lastly, one fraction of interest (fraction B) had undergone NMR spectroscopic analysis to determine the structure of the compound(s) present. The ^{1}H-NMR analysis of fraction B showed the presence of sugar molecule(s). However there were impurities present in the NMR spectrum of fraction B, thus it is deduced that fraction B was not pure. NMR analysis was not performed on fraction R as it did not soluble in deutrated water or deutrated methanol. Due to time constraint, further NMR analysis could not be done. Hence the structure of the compound in the fractions of interest could not elucidate. Thus, further studies should be done to elucidate the chemical structures of the compounds from this plant.

CHAPTER 1

INTRODUCTION

1.1 Introduction

Plants serve as a major source of drugs for centuries, as many of other pharmaceuticals used today are derived from plants. The use of natural substances, particularly plants in managing diseases is a centuries-old practice that has led to the discovery of more than half of modern drugs (Ebadi, 2006).

Plants contain a range of chemical compounds including phenolics, alkaloids, carbohydrates, and tannins as well as flavonoids. Medicinal plants have been used in virtually all cultures as a source of medicine. Medicinal plants produce diverse chemical compounds with different biological activities (Hoareau&DaSilva, 1999). Basically the contents in the plants have small or significant effects which influence the biological activities of the plants that could produce good or adverse effect which could be fatal to human body. Hence the information on the compounds contained in plants must be investigated and analyzed so that people could have better understanding on using such plants in food as well as for additional health benefit.