UNIVERSITI TEKNOLOGI MARA

THERAPEUTIC BIOACTIVES FROM PANDANUS AMARYLLIFOLIUS SP FOR FUNCTIONAL FOOD APPLICATION

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ABSTRACT

The benefits and the nutraceutical values contained in the bioactive compounds are proven can be used as the therapeutic agents that have the potentials for prevention and cure human diseases. In this research, the extraction of bioactive compounds by using *Pandanus Amaryllifolius sp* leaves has been carried out to study the effect of microwave power level on extraction of bioactive compounds and also to determine the flavonoid compound and the antimicrobial properties of *Pandanus Amaryllifolius sp*. Traditional method which is soaking extraction is also conducted as comparison to microwave extraction which is the modern method. The HPLC analysis has been conducted for 30 minutes to detect the present of Catechin compound which is in flavonoid group and antimicrobial analysis for *Pandanus Amaryllifolius sp* has been investigated by using *E.coli sp*. From this research, it showed that there is present of Catechin compounds in the extract which is affected by the percentage concentration of solvent used and also the microwave power level used. Increase in microwave power level will enhance the percentage yield of Catechin compound. However, higher microwave power level and longer time of exposure to microwave radiation caused decrease in percentage yield of Catechin compound. This study also showed that the microbial activity of E.coli sp is retarded by the highly concentrated extract of *Pandanus Amaryllifolius sp*. Thus, microwave-assisted extraction offered a reliable and efficient method for extraction of bioactive compounds from *Pandanus Amaryllifolius sp* and the benefits and the nutraceutical values contained in the *Pandanus Amaryllifolius sp* is proven due to the present of bioactives compounds which can be used as the therapeutic agents that have the potentials for prevention and cure human diseases..

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CHAPTER ONE

INTRODUCTION

1.2 Research Background

Nowadays, the extraction of bioactive compounds has been widely research around the globe. This is due to the fact that, most people are starting to live their life in a healthy way. Bioactive compounds can be extracted from various types of food including food residues such as leaves, peels, barriers, seeds, wood, culls, rinds, pits, pulp, press cakes, marc, malts, hops, hulls, husks, spent grain, carapace of crustaceans and shrimp, algae and other fish by products. Besides, bioactive compounds can be either extract from living organism or synthetically produced. Bioactive compounds are the compounds that have action towards the body of human and also promote good health. They are normally can be used as the natural therapeutic agents because of their properties that can interact well with proteins, DNA and other biological molecules. Bioactive compounds can be divided into three categories which are terpenes and terpenoids, alkaloids and phenolic compounds.

The extraction method of bioactives can be divided into traditional and and modern methods. The examples of traditional method are Soxhlet, solid–liquid extraction (SLE), or liquid liquid extraction (LLE) method. However, the traditional methods are time consuming and high volumes of solvents are needed (Castejón, Luna, & Señoráns, 2018). Besides, the other advantages of traditional methods are low selectivity and the extraction yields of bioactive components are also low as shown by these methods (Ares, Valverde, Bernal, Nozal, & Bernal, 2018).

In this modern era, improvements have been made where the limitation of these traditional methods can be solved. The examples of the modern techniques are enzyme-assisted extraction, ultrasound assisted extraction, microwave-assisted extraction, subcritical fluid extraction, supercritical fluid extraction, and high pressure-assisted extraction.