

**UNIVERSITI TEKNOLOGI MARA**

**MICROWAVE ASSISTED EXTRACTION  
OF PHENOLIC COMPOUND FROM  
PINEAPPLE (Ananas Comosus) PEEL  
AND CORE**

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Thesis submitted in fulfillment  
of the requirement for the degree of  
**Chemical Engineering and Bioprocess**

**Faculty of Chemical Engineering**

July 2017

## **ACKNOWLEDGEMENT**

First and foremost, I would like to express my gratitude to Most Gracious and Most Merciful Allah SWT for giving me the strength to overcome my weakness and determination to complete the research for final year project. This success of this research required the help of various generous of individuals. Without them, I might not meet my objectives in doing this study so I would like to take these opportunities to show my appreciation for their efforts and kindness. Foremost, I would like to express my sincere gratitude to my supervisor Madam Nurul Asyikin Md Zaki for the continuous support of my study and research, for her patience, motivation, enthusiasm, and immense knowledge. Her guidance helps me in all the time of research and writing of this thesis.

Besides my supervisor, I would like to thank our lab assistants, Mr. Irwan and Mr. Ridhwan for giving me the permission to use their facilities and helping me in conduct the apparatus and materials. Your kindness means a lot to me. Thank you very much.

## ABSTRACT

Nowadays, microwave-assisted extraction has caught tremendous interest by researcher for extracting bioactive compound. The reason MAE being so popular are because extraction by using MAE can enhance extraction yield and it is also cost efficient because it can reduce extraction time and usage of extraction solvent compared to traditional extraction process. This experiment was used to study the effect of irradiation power on pineapple peel and core, and to obtain the best solvent for extract phenolic compound. Phenolic compound from a fruit has being proved for the effective management of such chronic disease because in phenolic compound it contain positive intervention in the pathological pathway. The parameters used are different type of solvents and different microwave power (100W, 300W and 600W). The method use for the extraction is by microwave assisted by using ethanol and distilled water as a solvent for 5 minutes exposure time. Then total phenolic compound analysis is being made by using Folin-Ciocalteu spectrophotometric method. After the reaction with saturated sodium carbonate, the extraction sample was measure 765nm by using UV-spectrophotometer for 30 minutes. The determination by the Folin-Ciocalteu reagent using gallic acid solution as a calibration curve. Furthermore, it can be conclude that distilled water is more efficient if used at higher temperature but the extraction yield is quite low and ethanol is more efficient if used at low microwave power because at low power it already enough to break the cell wall without having any bioactive compound degradation.

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## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 BACKGROUND STUDY**

The scientific of pineapple is *Ananas comosus* and in the food application industry, pineapple is one of the most appreciated tropical and subtropical fruit crop in the processing industry. In the industry, there are variety of application that can be obtained from a pineapple. Some example of application are eat fresh, juiced, jams, canned and minimally processed fruit. Peeled skin, core and crown of the pineapple is an industrial waste that made up from 75% of the whole processed fruit. Pineapple has been investigated from the previous researcher as an interesting source for phenolic compounds, bromelian enzyme extraction, antioxidants, fiber, vinegar, organic acids and biogas. All of this extraction from the pineapple can give a lot of benefit to it consumer. Another benefit of pineapple industrial waste is a, in the bioethanol production, the pineapple can give as a potential of raw material because in the pineapple content it contain a high quantity of potentially hydrolyzable cellulose and hemicellulose and it is also fermentable.

Phenolic compounds are a group of aromatic secondary plant kingdom with a lot of advantages in reducing the risk of onset of many chronic diseases like cancer, cardiovascular and neurodegenerative problem. Phenolic compound from a fruit has being proved for the effective management of such chronic disease because in phenolic compound it contain positive intervention in the pathological pathway.