UNIVERSITI TEKNOLOGI MARA

DETERMINATION OF LIPASE INHIBITORY COMPOUND FROM A. MALACCENSIS MATURED LEAVES EXTRACT VIA PRETREATMENT USING BATH SONICATOR: EFFECT OF SONICATION TEMPERATURE

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July 2017

ABSTRACT

The total phenolic and flavonoid compound contained in a plant named *Aquilaria Malaccensis (A. malaccensis)* was used as anti- obesity agent. In this research, lipase inhibitory compound was extracted from the selected dried matured leaves of A. malaccensis by pre- treatment method using bath sonicator with the temperature and ground sample sizes were set as the manipulated variables. With different ranges 40oC to 80oC of temperature and three ground leaves size 250µm, 500µm and 1000µm used, the effect and optimum parameters on recovery process can be determined. Mastersizer was used to measure the particle size and determine the optimum temperature. The concentration of phenolic and total flavonoid content contained in the samples at optimum sonicationtemperature was analysed by HPLC where gallic acid and quarcetin were set as the indicator. In conclusion, the optimum parameters to yield high phenolic and flavonoid compounds was discovered at 500µm of ground size and 60^{o}C sonication temperature which have 1530µm of particle size.

ACKNOWLEDGMENT

In the name of Allah, the most Beneficient, the most Merciful. Peace and blessing be upon the Prophet Muhammad SAW.

My research project entitled Recovery of lipase inhibitory compound from *Aquilaria Malaccensis* matured leaves extract via pre-treatment using bath sonicator: study the effect of sonication temperature had finally come to an end. There were numerous of challenges, hardship, obstacles and the ups and down in completing this research but behind all of the struggles, I was blessed with beautiful souls that always pour their endless support to me.

First and foremost, I would like to express my special thanks of gratitude to my supervisor, Prof Dr Ku Halim Ku Hamid and co- supervisor Miss Miradatul Najwa Mohd Rodhi who had expertly guided me throughout my research project, shared the opinions, valuable knowledge and encouragement to complete this project. Their personal generosity helped make my time at UiTM enjoyable.

Next, my special appreciation also extends to my laboratory colleagues, Amanina and Nurul Farhana, for the moral support and also helped sustained a positive atmosphere in doing this research. I also acknowledge UiTM Shah Alam for the facilities offered, Madam Azizan (science officer of Intrumentation Laboratory of FKK), who helped me a lot in technical problems. Above ground, I am indebted to my beloved parents and family for always being my true supporters in finishing this project within the limited time frame.

CONTENT

CHAPTER 1

INTRODUCTION

1.1 RESEARCH BACKGROUND

The research project titled recovery of lipase inhibitory compound from *Aquilaria Malaccensis* matured leaves extract via pre-treatment using bath sonicator: Effect of temperature is carry out to study the recovery process of lipase inhibitory compound from the leaves of a plant type named *A. malaccensis* via pretreatment using bath sonicator and to investigate the effect of temperature on the recovery process of the lipase inhibitory compound from the selected leaves. The plant used in this research which scientifically named as *A. malaccensis* was normally known as agarwood or 'gaharu' and it can be found in the Asia tropical region because the weather is very suitable for the growth of this species. *Aquilaria* is a genus of about 20 species distributed mainly in the Indo- Malaysia region but the actual number of the recognized species in this genus is still a subject of debate (S.Y.Lee, 2016).

The *A. malaccensis* plant contains a lot of natural chemical (phytochemicals) that are very beneficial to our health. For instance, the phenolic compound and flavonoid compound contained in the *A. malaccensis* leaves extract can be used as lipase inhibitory compound which it is widely used as anti- obesity nowadays. Lipase is one of the crucial digestive enzymes made of protein that help to stimulate chemical reactions. Pancreas released the lipase enzyme into the small intestine to help the body process and also to absorb fats. Generally, lipase can be defined as the enzyme that work as the fat- splitting which found in the pancreatic secretions, blood, adipose tissues and gastric juices. Other two essential enzymes;