UNIVERSITI TEKNOLOGI MARA

RECOVERY OF LIPASE INHIBITORY COMPOUND FROM *AQUILARIA MALACCENSIS AND SUBINTEGRA* MATURED LEAVES EXTRACT VIA PRETREATMENT USING BATH SONICATOR: EFFECT OF TIME

NURUL FARHANA BINTI MASHURI

B. Eng

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ABSTRACT

Obesity has been arising from a day to day and has become a very complicated health issue worldwide that must be seriously taken. Obesity can be prevented by inhibiting pancreatic lipase that will block adsorption of fat. Aquilaria spp. (gaharu) is one of Malaysian treasures, rich in phytochemicals content in its resin. It was attentive to discover the miracle of this species which having a lot of health benefits including as a natural anti-obesity potent. This research was conducted to identify the effect of particle size on the inhibition activity at different ultrasonic time reaction. It was also carried out to determine the inhibitory effects of phytochemical compounds on pancreatic lipase that lead to the obesity prevention. The presence of phytochemical contents of both *A.malaccensis* and *A.subintegra* were observed. While the inhibitory effects on pancreatic lipase was examined using spectrophotometer analysis. The presence of phenolic and flavonoid compound in *A. Malaccensis* and *A.Subintegra* leaves extract. The parameters involved in the process were compound particle size of (0.25mm, 0.5mm, 1.0mm) and reaction time (30, 60, 90, 120 and 150 minutes) during inhibition of pancreatic lipase process. From the result obtained from using Mastersizer 2000E, the effect of ultrasonic reaction time on particle sizes are obtained which indicates the reduction of particle sizes across time. Next, inhibitory activity is determined by studying the effect of ultrasonic reaction on pancreatic inhibition activity. By getting those result, a new findings are obtains, which is the effect of particle sizes on inhibitory activities. The percentage of inhibition was higher at 90 minutes at the optimum temperature of 60 ^{o}C.

Keywords: Phenolic compound, Aquilaria Malaccensis, Aquilaria Subintegra, Gallic acid, Quacertin

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CHAPTER 1

INTRODUCTION

1.1 RESEARCH BACKGROUND

Aquilaria is a genus of fifteen species of plant in the *Thymelaeaceae*, inhabitant to southeast Asia. They can be found especially in the rain forests of Indonesia, Thailand, Cambodia, Laos, Vietnam, Malaysia, Northern India, the Philippines, Borneo and New Guinea. The trees grow to 6-20 m tall. The leaves are alternate, 5-11 cm long and 2-4 cm broad, with a short edged top and a full margin. The flowers are yellowish-green, the fruit is a woody capsule 2.5-3 cm long. [1] This resin is produced as a result of pathological or wounding processes. Some researchers prove that production of resin is a response to fungal infection. However, not all Aquilaria trees produce resin and it is kind of hard (or might be impossible) to judge from the outside of a tree whether or not it is infected. The only way to know is by cutting the trees. [2]

This species is one of the valuable products due to its very high demand in industries such as perfumery and pharmaceuticals. Use of agarwood has been known in many previous millennium years. People of different countries normally had different belief and credence on the use of this tree species. For example, the Egyptians are believed to have used agarwood incense as part of their death rituals more than 3,000 years ago. In Japan, agarwood is said to have arrived with Buddhism. In Vietnam age-old people also assigned to the use of agarwood in relation to travelling Buddhist monks.[2]

Obesity is one of diseases that can be prevented by inhibiting the production pancreatic lipase as to block fat absorption in the small intestine after being hydrolysed by pancreatic lipase pancreatic lipase. Pancreatic lipase is secreted to hydrolyze fat in the body into fatty acids which causing to the digestion and storage of fat. In the case of obesity, this is a bad impact to those people suffering from this disease. [3] From previous research,