

UNIVERSITI TEKNOLOGI MARA

**INFLUENCE OF AQUILARIA SUBINTEGRA LEAF
PARTICLE SIZE ON REACTION OF PANCREATIC
LIPASE AND COOKING OIL**

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ABSTRACT

Cooking oil extensively used & consumed in Malaysian cuisines, leads to high obesity rates in Malaysia. This cooking oil is hydrolysed inside the human digestive system by the enzyme pancreatic lipase. It is known from various researches & experiments over the years that the inhibition of this pancreatic lipase's enzyme activity slows down the hydrolysis of cooking oil, thereby reducing intake of cooking oils and fats into the human body and slowing down the accumulation of fats. It is known that a few plants contain chemical extracts that in turn contains inhibitors of pancreatic lipase activity, and the leaf extracts of the agarwood plant species *Aquilaria Subintegra* are suspected to hold such inhibitory activity. The experiment is then done to investigate the influence of the particle size of *A. Subintegra* leaf extracts on the hydrolytic reaction of pancreatic lipase on cooking oil. From the experiments, it is shown that there is a slight downward trend of pancreatic lipase activity with increased *A. Subintegra* leaf extract concentration as a surrogate for decreased leaf particle size, however more rigorous testing is required to obtain definitive results.

Keywords: Aquilaria Subintegra, pancreatic lipase, cooking oil

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CHAPTER 1: INTRODUCTION

In the human digestive system, cooking oils in foods is broken down by the enzyme pancreatic lipase into a form that can be digested by the human body and ultimately be converted into body fat. Cooking oils, particularly those extracted from oil palms, are extensively used in the various cuisines of Malaysia. This extensive usage and consumption of cooking oil among the population of Malaysia has unfortunately led to Malaysia having one of the highest rates of obesity in Asia. Given the role that pancreatic lipase plays in the intake of oils and fats in the human body, and hence the accumulation of body fats, research work has therefore been done on ways to inhibit the enzymatic activity of pancreatic activity, so as to slow down the breaking down of cooking oil and hence slow down the accumulation of body fats from the hydrolysis of cooking oils. Research in the fields of botanology and biochemistry has yielded a growing literature of plants that contain chemical compounds that can act as inhibitors to the enzymatic activity of pancreatic lipase. From the research done on these plants, some of the extracts from these plants have been made into either pharmaceutical products or teas that are advertised as weight loss solutions, a claim that may prove to be dubious.

One of the plants that may be suspected to have such an inhibitory effect on the enzymatic activity of pancreatic lipase is the main subject of this research project, namely the agarwood plant species *Aquilaria subintegra*. In particular, its leaves may contain the inhibitors for pancreatic lipase, and if this is indeed the case, there may be some potential for *aquilaria subintegra* leaves to be made into a herbal tea product. In this research project, it is intended to specifically determine the effect of the particle size of the extracts from *A. subintegra*.