UNIVERSITI TEKNOLOGI MARA

EFFECTS OF ACACIA *(ACACIA MANGIUM)* HONEY IN OBESE-INDUCED MALE *SPRAGUE DAWLEY* RATS

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ABSTRACT

A variety of carbohydrate-containing diets have been correlated to obesity and modified lipid metabolism; despite that, the effects of honey in controlling body weight have not been completely elucidated. This study was principally designed to determine the effect of subacute administration (2 months) of Acacia honey (AH) on physical and biochemical factors of male *Sprague Dawley* (SD) rats. Sixteen SD rats (180 ± 20 g) were divided equally into 4 groups (n=6) and were fed with standard chow and high fat diet (HFD) *ad libitum* for 2 months. Treatment group of AH was administered with a single dose of 2000 mg/kg of body weight and another group treated with orlistat was given 24 mg/0.5 ml of orlistat every day. Weight gain was assessed every day and total food intake was quantified after 2 months. Blood samples were obtained every month for analyses of serum concentrations of glucose, lipids and markers of liver and kidney function. Body weight gain was lower for rats fed honey, but higher in food consumption compared to HFD group. No significant change in energy efficiency ratio compared to HFD. Serum concentrations of triglyceride and cholesterol were lower ($P < 0.05$) by 6.3 mmol/L and 6.45 mmol/L respectively. Glucose level also reduced ($P < 0.05$) by 2.1 mmol/L and the level of ALT was reduced ($P < 0.05$) by 24 U/L. These results imply that in comparison with HFD group, honey may lower weight gain apparently due to high energy efficiency and encourage lower level of triglycerides.

Keywords: Acacia honey, *Sprague Dawley* rats, subacute study

CHAPTER 1: INTRODUCTION

1.1 Background

Since the past decade, there has been an increasing concern about the impact of chronic diseases such as heart disease, stroke, diabetes and cancer on the health of populations particularly in developing countries including Malaysia (Nugent, 2008). Obesity is known as the risk factor aforementioned chronic conditions, but the mechanisms involved in these pathological changes are not yet clearly explained (Chepulis and Starkey, 2008).

Some of methods currently used in controlling obesity are via reducing the nutrient absorption, and by using anorectic drugs, thermogenic drugs or drugs affecting lipid mobilization and consumption (Rani et al., 2012). Unfortunately, most of these drugs can cause dependency, induce severe adverse effects and only suggested for short period of time such as amphetamine-like drugs (Kang and Park, 2012). Worse, the drugs can also cause weight to regain rapidly after termination of the therapy (Lois et al., 2012). By looking at the numerous side effects associated with the use of drugs for example sibutramine, rimonabant and amphetamine, there is a need to find a new solution in treating this life-threatening disease in a healthier yet safer way. The best way would be through the utilization of natural compound such as honey as it does not produce fatal side effects to the body system.