

UNIVERSITI TEKNOLOGI MARA

**EFFECT OF VIRGIN COCONUT OIL AND
TOCOTRIENOLS ON LIPID PROFILE AND
GLUCOSE LEVEL**

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ABSTRACT

Virgin coconut oil and tocotrienols were used as dietary supplement in CHD as cardio protective agent. This present study was done to determine the effect of virgin coconut oil (VCO) and tocotrienols and combined VCO and tocotrienols on various lipid parameters like HDL cholesterol, LDL cholesterol, triglycerides and total cholesterol and glucose level. The rats used are divided into four different group of treatments: (I) control (normal food), (II) control (high fat), (III) high fat + VCO and (IV) high fat + VCO + tocotrienols. the feeding of the rats are through force feeding. After feed for 45 days, the lipid parameter and glucose were determined by using serum from blood sample. The rats were fasted overnight prior to the blood sample. For HDL and LDL cholesterol level, significance different was showed between group given VCO and tocotrienols with both control group of normal and high fat ($p < 0.05$). LDL cholesterol also showed significance different between groups treated with VCO alone to control with high fat group. There were no significance different observed between four groups of total cholesterol level and triglycerides level. Glucose level only showed significance different between treatment group given VCO and tocotrienols compared with control group with fat diet. There were no synergistic effect detected for all lipid parameter and glucose level given VCO and tocotrienols compared to given VCO alone.

CHAPTER 1

INTRODUCTION

1.1 Virgin Coconut Oil and tocotrienols

Virgin coconut oil (VCO) is organic and produced through a traditional, low heat process from freshly harvested, hand-selected organically grown coconuts. The unique cold process extraction conserves all of the functional components of coconuts such as squalene, tocopherols and sterols. It contains 48-50% lauric acid, a saturated carbon-12 medium chain fatty acid (MCFA). Medium chain fatty acids in VCO have better solubility in biological fluids. They are metabolized quickly in our body thereby improving nutrient absorption (Santos *et al.*, 1999).

Vitamin E emerged as an essential, fat soluble nutrient that functions as an antioxidant in the human body. In nature, eight substances have been found to have vitamin E activity: α -, β -, γ - and δ -tocopherol; and α -, β -, γ - and δ -tocotrienols in the body. It is essential, because the body cannot manufacture its own vitamin E and foods and supplements must provide it (Chandan *et al.*, 2006). Crude palm oil extracted from the fruits of *Elaeis guineensis* particularly contains a high amount of tocotrienols (up to 800 mg/kg), mainly consisting of γ -tocotrienols and α -tocotrienols. Little is known about the distribution of