ABSTRACT

Introduction: Virgin coconut oil is regarded to be a popular functional food because of the many testimonials on its effect in lowering/maintaining serum cholesterol level and in preventing risk for other lifestyle diseases. This is due to the fact that VCO contains 65-70% medium chain triglycerides which is directly absorbed in the portal circulation to produce energy, hence does not form cholesterol. However, there is no scientific studies on the optimum dose and safety levels of VCO intake to validate such health claim. Objectives: To determine the serum glucose and lipid profile of normal rats fed with varying amount of virgin coconut oil. Methods: Adult male and female Sprague Dawley rats (60 days old) were used. The rats were randomized into four groups with 10 rats per group. After the adaptation period, the 4 groups of rats were given isocaloric diet as follows, Group I (Control Group) was fed with basal diet (BD); Group II - basal diet + 0.14ml (=1tbsp) VCO; Group III - basal diet + 0.28ml (=2tbsp) VCO; Group IV- basal diet + 0.42ml (=3tbsp) VCO. The dosing of VCO was given thru gavage based on extrapolation of rat’s weight compared to human weights. The lipid profile (total cholesterol, and triglycerides), blood sugar, food intake and weight of rats were monitored every 25 days. Blood was collected thru the saphenous veins of the rats. At the end of the 100 days feeding period, rats were sacrificed under light anesthesia. The study was approved by the Institutional Animal Care and Ethics Committee of the Food and Nutrition Research Institute. Results: This study showed that the total cholesterol levels of rats for all groups range from 4.2 – 4.6 mmol/L, showing no significant changes when fed with different dosages of VCO. The same trend of results was also observed on the triglyceride level (3.1 – 4.3mmol/L) and on the serum glucose which range from 5.0 – 5.6mmol/L. The body weight of rats also showed no significant increase during the 100 days feeding of VCO. Conclusion: The serum glucose and lipid profile of normal rats did not differ at different levels of VCO in the duration of the study. In addition, VCO may have a thermogenic effect on the rats since no significant increase in their body weight was observed.
INTRODUCTION

Coconut products such as the virgin coconut oil (VCO) may play an important role in the etiology of cardiovascular and other lifestyle diseases. These may be due to the fact that VCO’s main fat component, the medium chain triglycerides, is directly absorbed in the portal circulation to produce energy. The body may use VCO to produce energy, rather than be stored as body fat and produce cholesterol. Numerous studies suggest that substituting MCT oil for other fats in a healthy diet may help to support healthy weight and body composition. Although VCO is a saturated fat, studies have shown that it has a neutral effect on cholesterol and triglyceride levels. However, no studies has been done as to how much VCO is needed to attained its optimum effect on the serum glucose and lipid profile.

The objective of the study is to determine the serum glucose and lipid profile in normal rats fed with varying amounts of VCO.

METHODS

Sprague Dawley Rats (adult)

House in individual cage and acclimatized to their environment and diet for 2 weeks
The rats were randomized into 4 groups with 10 rats per group.

- Basal Diet (BD) – Control
- BD + 0.14ml VCO (=1tbsp)
- BD + 0.28ml VCO (=2tbsp)
- BD + 0.42ml VCO (=3tbsp)

Blood collection thru saphenous veins of the rats. The lipid profile (total cholesterol and triglycerides), blood glucose, food intake and weights of rats were monitored every 25th days. At the end of 100 days feeding period, rats were sacrificed under light anesthesia.

Dosing of VCO was given thru gavage base on extrapolation of rat’s weight compared to human weight. Fresh diet was provided everyday. Access to diet and water is ad libitum for 100 days.

The study was approved by the Institutional Animal Care and Ethics Committee of the Food and Nutrition Research Institute.
RESULTS

Total cholesterol did not show significant differences at different levels of VCO in the duration of the study.

Triglycerides levels did not show significant differences at different levels of VCO in the duration of the study.

Blood Glucose did not show significant differences at different levels of VCO in the duration of the study.
VCO maintained body weights in both male and female rats in the duration of the study.

**CONCLUSION**

The serum glucose and lipid profile of normal rats did not differ at different levels of VCO in the duration of the study. In addition, VCO may have a thermogenic effect on the rats since no significant increase in their body weight was observed. Further studies may be done to validate the results of this study.