133/B

The effect of virgin coconut oil and essential fatty acids enriched virgin coconut oil on serum cholesterol levels in Wistar rats

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Virgin coconut oil (VCO) is a colourless oil obtained either by wet process or dry process without being subjected to any chemical change. Results of a recent study revealed that a maximum of 4 % of sesame seed oil could be blended with VCO to formulate a consumer acceptable essential fatty acid enriched (EFA) virgin coconut oil. Sesame seeds (*Sesamum indicum*) are a cheap source of linolenic acid. Studies on nutritional aspects of virgin coconut oil are highly important for the purpose of popularization. Thus the objective of the present study was to compare total cholesterol levels in Wistar rats (n=24, 8 rats/group) fed with a control diet containing 2% soya oil and with isocaloric test diets made with VCO and EFA enriched VCO substituting soya oil in the control diet. The rats were maintained under standard conditions at the Animal House, Faculty of Medical Sciences, University of Sri Jayewardenepura, and had access to food (control and two test diets) and water ad libitum. The feeding was continued for 10 weeks. At the end of the 5^{th} and 10^{th} weeks, serum cholesterol of the control and test rats was determined using a commercially available kit.

At the end of the 5^{th} week, total cholesterol levels of rats fed with control diet and two test diets (VCO and EFA enriched VCO) were 52.8$\pm$ 2.5 mg/dL, 52.5$\pm$5.8 mg/dL and 51.5$\pm$7.6 mg/dL, respectively. These results revealed that there was no significant difference ($p > 0.05$) between the control and two test groups. It was observed that there was no significant difference between the weights of the rats of all groups at the end of the 5^{th} or 10^{th} week. However, it was statistically shown that the total cholesterol level and the weight of rats in all 3 groups increased with time ($p<0.05$). At the end of the 10^{th} week, total cholesterol levels of 61.8$\pm$ 8.4 mg/dL, 57.2$\pm$5.3 mg/dL and 55.9$\pm$8.4 mg/dL were observed for rats fed with control and the two test diets. A significant difference between the cholesterol levels or the weights of the control and test rats was not observed. Thus, it can be concluded that neither VCO nor EFA enriched VCO increases the total cholesterol levels in Wistar rats and could be used in food formulations or in food processing successfully.

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