# EFFECT OF COCONUT FAT ON GUINEA PIG SERUM LIPID COMPOSITION

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Epidemiological studies have shown that there is a highly significant correlation between the daily intake of saturated fat, serum cholesterol, and mortality from coronary heart disease. It has been demonstrated that of the fatty acids investigated, the most hypercholesterolemic was myristic (14:0), followed by palmitic (16:0), lauric (12:0) and stearic acids (18:0), respectively. Hence, nutritionists recommend the limiting of the proportion of energy derived from saturated fat, as a means of reducing the incidence of coronary atherosclerosis. The aim of this study was to find the effect of coconut fat ingestion on serum fatty acid composition, and it's relationship to serum cholesterol level, in an animal model.

Three groups of male Hartley guinea pigs were fed *ad lib.* With isocaloric diets containing coconut oil, corn oil, or coconut/ corn oil (1:1) mixture added to the diet at 5 %( w/w). Test diets were prepared according to specific guinea pig requirements by *Dyets Inc.* Company, Pennsylvania USA. Test diets were fed for a period of 3 months and blood was collected by cardiac puncture after a 14-h fast. Serum cholesterol was analysed using enzymatic colorimetric method. Total fats in the serum were extracted, saponified, acidified and the fatty acids composition was analysed using gas chromatography method. Results were analysed using one-way ANOVA.

Among the fatty acids analysed, myristic and palmitic acids levels in the fasting blood sera were significantly different ($p<0.05$) in the coconut oil consuming group compared to the other two groups. The highest levels of myristic and palmitic acids, 41.2 ± 9.8 and 22.4 ± 9.1 mg/dl, respectively, were recorded in the coconut oil group. In the corn oil group, the values were 22.0 ± 7.5 and 11.1± 3.7 mg/dl respectively. In the group consuming coconut/corn oil (1:1) mixture, the values were 21.4 ± 11.2 and 11.9 ± 4.4 mg/dl respectively. However, there was no significant difference between the corn oil and the coconut/corn oil (1:1) mixture group. This shows that the cholesterolgenic fatty acid levels in fasting blood sera were significantly higher in the coconut oil consuming group.

Serum cholesterol levels were significantly different ($p<0.05$) among all three groups. The highest mean serum cholesterol level (58.03 ± 3.64 mg/dl) was observed with the diet containing 5 % (w/w) coconut oil, whilst the lowest mean serum cholesterol level (30.4 ± 3.5 mg/dl) was observed with the diet containing 5 % (w/w) coconut oil: corn oil (1:1) mixture. These results reiterate the cholesterolgenic property of coconut oil. It is also interesting to note that the lowest mean cholesterol level was obtained with the saturated and unsaturated fatty acid present in coconut oil / corn oil (1:1) mixture.

These results demonstrate that even in the fasting state the cholesterolgenic fatty acids in the blood serum are higher in animals with high serum cholesterol levels.