The effect of palm oil, peanut oil and margarine on serum lipoproteins and atherosclerosis in rats

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Abstrak

Atherosclerosis is a degenerative disease of large and medium arteries which loss their elasticity and the arterial walls are thickened which may cause coronary heart disease. Atherosclerosis is related to hyperlipidemia and concentration of serum lipoprotein cholesterol which are influenced by the intake of certain dietary lipids.

The polyunsaturated fatty acid (PUFA), particularly linoleic acid is believed to have a lowering effect, saturated fatty acid (SAFA) increase, and mono-unsaturated fatty acid (MUFA) is neutral or has no effect on serum triglyceride that PUFA especially when given ia a large amount besides HDL-c. MUFA seems to have a similar effect as PUFA but without lowering effect on HDL-c. Low LDL-c and high HDL-c levels have positive effect on preventing and curing atherosclerosis and contrary of high LDL-c and low HDL-c.

In this study, 60 albino, 2 month old male rats were put in separate cages and divides randomly into 6 groups. Each group received proportionally the first phase diet rich in margarine (40% of total energy) and cholesterol (10% w/w) for 3 months with additional oralforced feeding of proplythiouracil treated with the second phase diet with additional different types of fat source. The control group receieved normal diet. Determination of serum TG, total cholesterol, LDL-c, HDL-c and microscopic pathological examination of the aorta were carried out after treatment with the first and second phase diets.

Analysis of variance showed that there were significant differences in serum TG, total cholesterol and LDL-c levels, the amount of diet consumed and the body weight changes between the treatment serum TG, total cholesterol and LDL-c as peanut oil. Serum HDL-c appeared not to be influenced by the different types of dietary fat. Pathological examination did not reveal any identifiable atherosclerosis signs in the aorta of the rats.