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Effect of vitamins C and E intake on plasma lipid concentrations in rats.

Khoja SM, Marzouki ZM.

Department of Biochemistry, Faculty of Science and Department of Clinical Biochemistry, Faculty of Medicine, King Abdulaziz University, Jeddah, Saudi Arabia.

Abstract

Changes in the plasma lipid levels were investigated among rats fed an atherosclerotic-promoting diet containing 0.5% cholesterol and rats fed the same diet with added vitamin C (ascorbic acid), vitamin E (a-tocopherol) and vitamins C + E from one to seven weeks. Total cholesterol (TC) and triglycerides (TG) were significantly increased in rats fed a hyperlipidemic diet from the third week to the seventh week, whereas high density lipoprotein cholesterol (HDL-C) was not affected. Rats supplemented with 5 mg vitamin C, 5 mg vitamin E or 5 mg vitamin C + 5 mg vitamin E per day for four to seven weeks showed significant decrease in the concentration of TC and TG. HDL-C was only affected at the seventh week with vitamin C alone, whereas it was significantly increased with vitamin E alone and vitamins C + E at five to seven weeks. However, supplementation of vitamins C, E or C + E for less than four weeks has no significant effect on plasma lipid concentrations. The antioxidant effect of vitamins C and E is probably a time-dependent process that significantly lowers plasma lipids between week four and week seven following administration of these vitamins. It is therefore suggested that the incidence of coronary heart disease (CHD) may be reduced in lowering plasma lipid levels by dietary supplementation of vitamins C or E.