Concurrent Session 16

Three weight loss diets of markedly different total and saturated fat composition decrease plasma saturated fatty acids; implications for the cholesterolaemic effects of weight loss diets

CM Skeaff¹, KA McCauley¹, RW Taylor¹, JI Mann¹, K Smith¹, C Hopkins¹, S Williams²

University of Otago, ¹Department of Human Nutrition, ²Department of Preventive and Social Medicine, Dunedin, New Zealand

Background - Low-carbohydrate, high-fat weight loss diets do not increase plasma cholesterol concentrations despite being high in saturated fat and cholesterol.

Objective - To determine if the dissociation that occurs between dietary fat and plasma cholesterol during high saturated fat weight loss diets is related to the lack of effect of these diets on plasma fatty acid composition.

Design - Ninety six women were randomised to follow one of three weight loss diets for two months; a high-carbohydrate, low-fat diet (HC), a high-protein diet (HP), or a low-carbohydrate, high-fat diet (HF).

Results - Mean energy intake in all three groups was 1.5 to 2.0 MJ/d lower during the weight loss period than before. During the weight loss period fat made up 57, 35 and 25 percent of energy (%kJ) in the HF, HP and HC groups, respectively, of which 22, 11, and 8 %kJ was saturated fat. Mean weight loss in the HF (6.4 kg) and HP group (5.5 kg) was significantly greater ($P<0.05$) than in the HC group (4.3 kg). Fasting plasma total cholesterol concentration decreased in the HC and HP but remained unchanged in the HF group. The changes in fatty acid composition of plasma triacylglycerol did not differ between the three diet groups. Myristic acid (C14:0) and palmitic acid (C16:0) composition decreased whereas oleic acid (C18:1n-9) and linoleic acid (C18:2n-6) increased.

Conclusion - During weight loss the fatty acid composition of plasma does not reflect dietary fat intake. We speculate that most dietary fat is oxidised during weight loss and that plasma fatty composition quickly reflects endogenous stores or synthesis. This might explain why high-fat high-saturated fat weight loss diets do not increase plasma cholesterol.