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Effects of a high saturated fat diet on endothelial function during weight loss
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Background – It is unclear if weight loss on a very low carbohydrate-high saturated fat diet has detrimental effects on endothelial function.

Objective – Our aim was to determine whether weight loss on a low carbohydrate-high saturated fat diet impaired endothelial function compared with a conventional high carbohydrate low fat diet.

Design – Randomised parallel design of two energy restricted diets in an outpatient setting. Flow mediated dilatation (FMD), fasting glucose, insulin, lipids, adiponectin and adhesion molecules were measured at baseline and after 8 weeks of weight loss.

Outcomes – 80 subjects (BMI >27, <40 kg/m2) were randomised to a low carbohydrate-high saturated fat (LC) or a high carbohydrate-low saturated fat diet (LF). FMD did not change on either diet, 5.3 ± 3.3 to 5.3 ± 3.3% (LC) and 6.2 ± 3.7 to 6.3 ± 4.3% (LF) despite weight loss of 8% and 7%, LC and LF respectively. Adiponectin did not change with weight loss 5.6 ± 2.2 to 6.0 ± 2.2 ug/ml. Adhesion molecules fell, ICAM1 15%, E-selectin 32% & P-selectin 6% (all P < 0.01). PAI-1 ng/ml also fell (43%, P<0.001). There were no effects of diet.

Conclusion – Short term weight loss on a very low carbohydrate-high saturated fat diet does not impair FMD. Most traditional and novel cardiovascular risk factors improved after weight loss.

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Synergistic effects of phytosterols and long chain omega-3 polyunsaturated fatty acids (LCn-3PUFA) on cardiovascular risk reduction in hyperlipidemic subjects
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Background – Hyperlipidemia is associated with an increase in inflammation and elevated risk of cardiovascular disease (CVD). Dietary supplementation with phytosterols or LCn-3PUFA has been shown to improve lipid profiles and systemic inflammation in hyperlipidemic subjects.

Objective – To investigate the combination of dietary supplementation with phytosterols and LCn-3PUFA on cardiovascular risk and biomarkers of systemic inflammation in subjects with established hyperlipidemia.

Method – Double-blind randomised controlled trial in four parallel groups. Thirty-one (male n=17; female n=14) participants with established hyperlipidemia [(mean ± SEM] TC 6.56 ± 0.15mmol/L; TG 1.69 ± 0.11mmol/L) were randomised to receive either LCn-3PUFA (1.5g/day EPA+DHA) or placebo (sunola oil) supplements alone, or in combination with a phytosterol-enriched spread (25g/day margarine) providing 2g/day of phytosterols, for three consecutive weeks. Projected risk analysis of CVD and immunoassay determination of inflammatory biomarkers and adipokines was undertaken.

Outcomes – The combined intake of phytosterols and LCn-3PUFA yielded the greatest risk reduction (14.01±5.24%), followed by phytosterol (11.67±7.26) and LCn-3PUFA (9.26±7.99) supplementation alone. The combination was also the most effective in reducing the acute-phase inflammatory marker C-reactive protein (CRP), followed by LCn-3PUFA and phytosterol supplementation alone (46.15±27.89%; 40.07±13.14%; 7.22±8.48%, respectively). No significant changes to BMI, blood pressure or body composition were noted.

Conclusion – Phytosterols and LCn-3PUFA may have synergistic effects in reducing CVD risk and inflammation in hyperlipidemic subjects.