Posters

Comparison of the effects of a high-fat diet enriched with peanuts and a low-fat (NCEP) diet on blood lipid profiles

D Colquhoun1,2,5,6, B Hicks6, S Somerset3, D Richards3, C Hamill1, J Westhuyzen3, D Saltissi3, M Kostner6, K Kostner5,6

1 Wesley Private Hospital, 2 Greenslopes Private Hospital, 3 Griffith University, 4 Royal Brisbane Hospital, 5 University of Queensland, 6 Core Research Group, Brisbane, Queensland, Australia

Background - Diets rich in monounsaturated fatty acids (MUFA) favourably affect serum lipids. The peanut (Arachis hypogaea) is a seed from the legume family Fabaceae which is a high fat food that has a fatty acid profile dominated by MUFA (P:M:S ratio 1:2.2:0.7). The peanut is popularly considered to be a nut and accounts for about two-thirds of all nuts consumed in the USA.

Aim - A comparison of the effects of two isocaloric diets: a high MUFA diet enriched with 50g of peanuts per day (PE diet, 35-40% dietary energy [E] as fat) and the National Cholesterol Education Program diet (NCEP diet, fat <30%E, SFA 8-10%E, cholesterol <300mg/day) on blood lipid profiles and low density lipoprotein (LDL) oxidation rates.

Design - Sixteen subjects (12 female, four male) followed the NCEP diet for 4 weeks, then the PE diet for 4 weeks. LDL susceptibility to copper induced oxidation was characterised by the lag time (min), the level of conjugated dienes (CD; μmol/g protein) after oxidation and the maximal rate during the propagation phase (μmol/min/g protein).

Outcomes - Both diets significantly reduced total cholesterol (TC) and LDL cholesterol (LDL-C, P<0.01). High density lipoprotein cholesterol (HDL-C) levels fell on the NCEP diet (P<0.01), but were preserved on the PE diet. Triglycerides (TG) fell on the PE diet only (P<0.01). Both the MUFA diet and the Low-Fat diet decreased oxidation of LDL (P<0.01), another potential anti-atherogenic effect. The MUFA diet enriched with peanuts was at least as effective as the NCEP low-fat diet in decreasing TC and LDL-C, with a smaller impact on HDL-C concentrations and a more favourable effect on TG levels.

Conclusion - Peanuts can be included in a cholesterol lowering diet to add taste texture and thereby improve long term adherence.

Effects of simvastatin on blood lipids, vitamin E, coenzyme Q levels and left ventricular function in humans

D Colquhoun1,4, R Jackson1, M Walters3, B Hicks1,4, J Goldsmith1, P Young2, C Strakosch1, Kostner3,4

1 Greenslopes Private Hospital and The Wesley Hospital, 2 Wesley Research Institute, 3 Department of Medicine, University of Queensland, 4 Core Research Group, Brisbane, Queensland, Australia

Background - Statin therapy has been reported to reduce antioxidants such as vitamin E and coenzyme Q(10) and there are indications that this reduction may cause impairment of left ventricular function (LVF).

Objectives - To determine the influence of simvastatin on LVF and serum vitamin E and coenzyme Q(10) levels in humans.

Design - The effect of simvastatin on left ventricular function and coenzyme Q(10) levels in 21 (11 male, 10 female) hypercholesterolaemic subjects (mean age = 56 years) with normal LVF was assessed over a period of six months. Subjects were re-tested after a one month wash-out period (seven months). Echocardiography was performed on all subjects before commencement of simvastatin (20 mg /day), and at one, three, six and seven months after initiation of treatment. Fasting blood samples were also collected at these intervals to assess lipids, apoproteins, vitamin E and coenzyme Q(10).

Outcomes - Serum lipids showed the expected reductions. Plasma vitamin E and coenzyme Q(10) levels were reduced by 17 +/- 4% (P<0.01) and 12 +/- 4% (P<0.03) at six months. However, the coenzyme Q(10)/LDL-cholesterol ratio and vitamin E/LDL-cholesterol ratio increased significantly. Left ventricular ejection fraction (EF) decreased transiently after 1 month, while no significant change was observed at 3 and six months. Other markers of left ventricular function did not change significantly at any time point.

Conclusion - Despite reduced plasma vitamin E and coenzyme Q(10), 20 mg of simvastatin therapy is associated with a significantly increased coenzyme Q(10)/LDL-cholesterol ratio and vitamin E/LDL-cholesterol ratio. Simvastatin treatment is not associated with impairment in left ventricular systolic or diastolic function in hypercholesterolaemic subjects after six months of treatment.