

## Concurrent Session 5: Coronary Heart Disease

### Importance of soy protein and isoflavone intake for protection against heart disease

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**Background** – Current health claims indicate that 25 g daily of soy protein (SP) may reduce the risk of heart disease by lowering cholesterol, particularly low-density lipoprotein cholesterol (LDL-C). Whether the isoflavones (ISO) associated with the SP contribute to this benefit is still unclear. However, they may offer additional protection against heart disease by improving arterial dilatation and arterial compliance as a result of their ability to bind to endothelial oestrogen receptors and stimulate vasorelaxation.

**Objective** – To investigate differential effects of SP and ISO on total cholesterol (TC), LDL-C and other risk factors for heart disease.

**Design** – 91 hypercholesterolaemic subjects (TC > 5.5 mM) underwent an 18 week dietary intervention using a randomised, controlled, three-way cross-over design. For three 6-week periods, and in random order, subjects consumed foods containing 24 g of SP with 80 mg of ISO per day (S), foods containing 12 g SP and 12 g dairy protein with 80 mg ISO (SD) or a control diet consisting of foods with 24 g dairy protein and no ISO (D). At the end of each six week diet phase blood lipids, flow-mediated dilatation (FMD) of the brachial artery and compliance of large and small arteries were assessed.

**Results** – Compared with the control diet (D) there was a small but significant reduction in TC on the S diet only ( $2.8 \pm 1.1\%$ ,  $P < 0.05$ ). FMD was improved to a similar extent with both S ( $7.05 \pm 0.47\%$ ,  $P < 0.05$ ) and SD ( $7.06 \pm 0.49\%$ ,  $P < 0.05$ ) compared with D ( $5.93 \pm 0.35\%$ ). LDL-C and arterial compliance did not differ between diets.

**Conclusions** – In contrast to the approved health claim, we found that 24 g/day of SP did not reduce LDL-C and resulted in only a small reduction in TC. Improvement in FMD was similar with both 24 g/day and 12 g/day of SP, suggesting that this effect may have been at least partly mediated by ISO.

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### A pilot Comprehensive Lifestyle Intervention Program (CLIP) compared with qualitative lifestyle advice and Simvastatin on cardiometabolic risk factors

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**Background** – With escalating costs of pharmaceuticals to manage cardiovascular risk factors, there is a need to develop more effective lifestyle intervention programs that can reduce the reliance on these agents.

**Objectives** – To evaluate the efficacy of a pilot Comprehensive Lifestyle Intervention Program (CLIP) compared with qualitative lifestyle advice (L) and Simvastatin plus qualitative lifestyle (S+L) on cardiovascular risk factors in overweight hypercholesterolaemic individuals at mild-moderate cardiovascular risk.

**Design** – Parallel randomised controlled trial of 6 weeks duration. Intervention groups were CLIP (n=22): structured meal plan comprising energy restriction (6MJ), fish 2meals/week, cereal high in soluble fibre, saturated fat < 8% energy, wholegrain bread, nuts, 25g plant sterol margarine per day plus exercise advice and self monitoring. The groups were matched for total cholesterol  $6.3 \pm 0.8$  mmol/L, age  $51 \pm 9$  y and BMI  $32 \pm 4$  kg/m<sup>2</sup>. L (n=22) were provided comprehensive qualitative diet and exercise advice and S + L (n=22) received 20mg/day simvastatin plus the same advice.

**Outcomes** – CLIP lowered LDL cholesterol by  $0.70 \pm 0.73$  mmol/L (18%), L by  $0.23 \pm 0.63$  mmol/L (6%) and L+S by  $1.5 \pm 0.6$  mmol/L (39%) all significantly different ( $P < 0.001$ ). The total cholesterol/HDL ratio was only lowered by CLIP and S+L. Weight and waist circumference was significantly lowered by CLIP ( $-4.4 \pm 2.1$  kg;  $-6.7 \pm 3.9$  cm) compared to L ( $-1.1 \pm 1.7$  kg;  $-2.6 \pm 3.5$  cm) and L+S ( $-1.0 \pm 1.3$  kg;  $-2.7 \pm 2.2$ )  $P < 0.001$ .  $\beta$  carotene levels increased on CLIP and L relative to S+L ( $P = 0.001$ ). Folate increased on CLIP only ( $P < 0.01$ ). CLIP was well accepted by participants.

**Conclusion** – CLIP is more effective than qualitative lifestyle advice in improving cardiometabolic risk factors. Although not as effective as simvastatin in lowering LDL cholesterol, this program, if sustainable, may assist in comprehensive risk factor management and delay the need for lipid lowering drugs in this group.