2006

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Publication Details

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Abstract
Abstract presented at The 2006 Annual Scientific Meeting of the Nutrition Society of Australia, 29 November - 2 December, Sydney, Australia

Keywords
Importance, soy, protein, isoflavone, intake, for, protection, against, heart, disease

Disciplines
Arts and Humanities | Life Sciences | Medicine and Health Sciences | Social and Behavioral Sciences

Publication Details

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This journal article is available at Research Online: http://ro.uow.edu.au/hbspapers/1578
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 +1.1%, P<0.05). FMD was improved to a similar extent with both S (7.05 +0.47%, P<0.05) and SD (7.06 +0.49%, P<0.05) compared with D (5.93 +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.