

## **Japanese Women Who Consume the Most Soy Less Likely to Have Heart Attack and Stroke**

In a large study from Japan involving more than 40,000 middle-aged subjects, over a 12-year period, women who consumed the most soy were dramatically less likely to have a heart attack and stroke and to develop cardiovascular disease.

More specifically, women who consumed about 1½ servings of soyfoods daily were only about one-third as likely to develop these diseases in comparison to women who consumed less than one-half serving per day. One serving of a traditional soyfood is one for example, one cup soymilk or ½ cup tofu.

Soy protein, as acknowledged by the U.S. FDA in 1999, is known to lower blood cholesterol levels but it doesn't appear that cholesterol reduction is the reason why soyfoods were so protective in this study. Even after taking into consideration differences in blood pressure, weight, dietary intake, and use of cholesterol-lowering medications, soyfood consumption was still very beneficial.

Furthermore, the findings from this study are supported by a recently published Chinese study. In this case, the researchers focused on the extent to which soy intake was related to carotid intima-media thickness (IMT).

The measurement of IMT – which is done using ultrasound – is a convenient means of determining early atherosclerotic changes. Among the high soy consumers, IMT was markedly reduced, indicating a lower risk of developing heart disease.

Interestingly, soy was more protective in men than women and it appeared that the cholesterol-lowering effects of soy significantly contributed to the benefit. Surprisingly though, high-soy consumers only ate about 8 grams of soy protein per day. That amount – which is found in about one serving of a traditional soyfood – is far less than the 25 grams soy protein established by the FDA as the threshold intake required for cholesterol reduction.

The researchers from both studies emphasized that soyfoods contain many components that potentially help to promote heart health.

Zhang B, Chen YM, Huang LL, et al. Greater habitual soyfood consumption is associated with decreased carotid intima-media thickness and better plasma lipids in Chinese middle-aged adults. *Atherosclerosis* 2007.

Many clinical studies have shown high-dose supplemental soy protein has beneficial effects on cardiovascular risk factors. We examined the association between habitual soyfood intake and carotid intima-media thickness (IMT) and plasma lipids in a cross-sectional study including 406 (M 134, F 272) middle-aged Chinese adults (40-65 years) without confirmed relevant diseases. We found significantly dose-responsive decreases in bifurcation IMT, total and LDL cholesterol associated with increased usual soyfood intake after adjusting for potential confounders ( $p$  for trend, all  $p < 0.05$ ). Covariate-adjusted mean bifurcation IMT, total and LDL cholesterol decreased by 9.4%, 6.2% and 10.4% in women ( $p = 0.020, 0.035, 0.110$ ), 16.0%, 12.3% and 19.6% in men ( $p = 0.036, 0.005, 0.002$ ), and 9.9%, 9.3% and 15.4% in total men and women combined ( $p = 0.010, < 0.001, < 0.001$ ) when the mean intake of soy protein increased from 0.87 (F) or 0.64 (M) g/day (1st tertile) to 8.35 (F) or 7.48 (M) g/day (3rd tertile), respectively. Significant interaction between sex and soy consumption on bifurcation IMT was observed ( $p = 0.008$ ). In conclusion, higher habitual soyfood consumption is associated with decreased bifurcation IMT, plasma TC and LDL-c in middle-aged Chinese adults. The association is more apparent in men than in women.

## **Abstract**

*Kokubo Y, Iso H, Ishihara J, Okada K, Inoue M, Tsugane S. Association of dietary intake of soy, beans, and isoflavones with risk of cerebral and myocardial infarctions in Japanese populations: the Japan Public Health Center-based (JPHC) study cohort I. Circulation 2007;116:2553-62.*

*BACKGROUND: Soy and isoflavones have been proposed to reduce the risk of cardiovascular risk factors, but their potential as preventatives for cardiovascular disease remains uncertain. We investigated the association of soy and isoflavone intake with risk of cerebral and myocardial infarctions (CI and MI). METHODS AND RESULTS: To examine the association of soy and isoflavone intake with the risk of CI and MI, we studied 40,462 Japanese (40 to 59 years old, without cardiovascular disease or cancer at baseline). They completed a food-frequency questionnaire (1990-1992) and received follow-up to 2002. After 503,998 person-years of follow-up, we documented incidence of CI ( $n = 587$ ) and MI ( $n = 308$ ) and of mortality for CI and MI combined ( $n = 232$ ). For women, the multivariable hazard ratios and 95% confidence limits for soy intake  $\geq 5$  times per week versus 0 to 2 times per week were 0.64 (0.43 to 0.95) for risk of CI, 0.55 (0.26 to 1.09) for risk of MI, and 0.31 (0.13 to 0.74) for cardiovascular disease mortality. Similar but weaker inverse associations were observed between intake of miso soup and beans and risk of cardiovascular disease mortality. The multivariable hazard ratios for the highest versus the lowest quintiles of isoflavones in women were 0.35 (0.21 to 0.59) for CI, 0.37 (0.14 to 0.98) for MI,*

and 0.87 (0.29 to 2.52) for cardiovascular disease mortality. An inverse association between isoflavone intake and risk of CI and MI was observed primarily among postmenopausal women. No significant association of dietary intake of soy, miso soup, and beans and isoflavones with CI or MI was present in men. CONCLUSIONS: High isoflavone intake was associated with reduced risk of CI and MI in Japanese women. The risk reduction was pronounced for postmenopausal women.