

## Soy Protein and Cardiovascular Health

- ▶ The cardiovascular system generally refers to the heart and all of the blood vessels in the body. The heart acts as the “pump” that provides the mechanics to maintain a constant circulation of blood. The blood vessels include arteries (which carry oxygen and nutrient rich blood from the heart to the tissues), veins (which carry blood and waste products back from the tissues) and capillaries which are the tiny crossroads of veins and arteries where fresh blood is delivered to cells.
- ▶ Cardiovascular disease (sometimes called coronary artery disease) occurs when the arteries supplying blood to the heart muscle narrow and are ultimately unable to maintain adequate blood flow causing a heart attack. When arteries supplying the brain are blocked, a stroke occurs and when arteries in the periphery are blocked (e.g., legs) gangrene can occur. Cardiovascular disease affects both men and women equally.
- ▶ Arteries become clogged due to build-up of fatty substances that cause plaque which damages the inner lining of arteries (called the endothelium). Cholesterol is a main contributor to this fatty build up. As arteries become clogged, the body’s own attempts to repair this arterial damage is impaired. Continued plaque build-up causes the normally elastic artery to become rigid or “hardened”. This hardening impairs the artery’s ability to vary blood flow to meet the changing needs of the body, thus when physical exertion or cold weather require increase blood flow or dilation of the artery, the arteries are unable to adjust and heart attack, stroke or other cardiovascular events can occur.
- ▶ Numerous studies have shown a strong association between consuming soy protein and improvement in risk factors associated with cardiovascular disease.
- ▶ A meta-analysis of studies investigating soy protein and cholesterol showed that consuming soy protein has a significant effect on lowering blood cholesterol—especially the “bad” LDL cholesterol. Soy protein intake also maintained levels of “good” HDL cholesterol, which is often reduced on low-fat diets. This is important because one of the strongest predictors of heart disease is a low ratio of HDL:LDL cholesterol.

—Anderson J. NEJM 1995

- ▶ Because this association with soy protein and cholesterol was so robust, in 1999, the Food and Drug Administration issued a Health Claim for soy protein, stating:

**“25 grams of soy protein a day, as part of a diet low in saturated fat and cholesterol, may reduce the risk of heart disease. A serving of (name of food) supplies (??) grams of soy protein.”**

- ▶ Interestingly, the United Kingdom now also allows a health claim statement on food package labels regarding soy protein intake and reduced risk of cardiovascular disease. A number of other countries are considering health claims for soy protein and cardiovascular disease at this time.
- ▶ In addition, a number of studies are now finding that the isoflavines in soy protein have effects on maintaining the elasticity of arteries and lessening the “hardening” of arteries. After people consumed soy protein with isoflavones or isoflavones themselves, their arteries were better able to react to stressors that require the artery to dilate, suggesting the soy products made the arteries more elastic and flexible and less likely to be at risk for heart attack or stroke.

—Nestel et al., 1997;Steinberg et al., Cuerao et al., 2003.

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