Soy for Health

Make the Soy Connection
SOY FOR GOOD HEALTH

Soyfoods have long been important in Asian diets, where they are valued for their nutrient content and culinary versatility. For health-conscious Westerners, soyfoods and other legumes are among the variety of healthful options for meeting protein needs.

Evidence suggests that dietary protein is more satiating than fats and carbohydrate, and therefore potentially beneficial for weight management. Recent data indicates that the recommended dietary allowance (RDA) for protein may be too low and that protein intake exceeding the RDA may be advantageous. In fact, the protein RDA for children may be 50 percent lower than what is optimal. Consuming high quality protein, such as soy protein, is important for building and maintaining muscle in response to resistance exercise.

Many soyfoods, such as edamame, are good sources of certain vitamins and minerals such as folate and potassium. In addition, like many plant foods, they provide a variety of phytochemicals. These biologically active plant compounds are not essential nutrients, but may confer health benefits. Soyfoods have received particular attention for being uniquely rich sources of one group of phytochemicals called isoflavones. Some soyfoods are also good sources of fiber.

Within the past 15 years, soyfoods have attracted the attention of researchers for their potential to reduce risk of certain chronic diseases. There is evidence indicating that soyfoods may lower risk of coronary heart disease, osteoporosis and certain cancers. They may also help alleviate menopausal symptoms.

Clinical and epidemiologic evidence suggests a reasonable intake of soyfoods is 2-3 servings daily.
CANCER

Governmental institutions and academic laboratories are rigorously investigating the potential for soy to reduce cancer risk. Interest in this area was initially prompted by two observations:

- Soybeans contain a number of purported chemopreventive (anti-cancer) compounds and are essentially unique dietary sources of one class of compounds: isoflavones.
- Rates of certain cancers are quite low in countries where soyfoods are commonly consumed.

BREAST CANCER

Asian populations have much lower rates of breast cancer than Western populations and evidence suggests that soyfood intake may be one reason for this difference. Current thinking is that, to derive the proposed protective effects, soy consumption must occur during childhood or adolescence. Epidemiologic studies indicate that the consumption of just one to two servings of soyfoods per day early in life reduces breast cancer risk by 25 to 50 percent. Protection is thought to result from isoflavone-induced changes in the developing breast, which makes breast cells permanently more resistant to being transformed into cancer cells.

PROSTATE CANCER

Animal studies indicate that soy protein and isoflavones suppress the development of spontaneous and chemically-induced prostate cancer. Asian studies have found that men who eat soyfoods regularly are about 30 to 50 percent less likely to develop prostate cancer than those who do not. Also, there is evidence from animal and human studies that soybean isoflavones inhibit both the growth and spread (metastasis) of prostate tumors. Preliminary research also suggests that soy protein and isoflavones may slow the rise in levels of prostate specific antigen (PSA) – an indicator of prostate cancer – in men with prostate cancer. However, not all studies show this to be the case. In addition, preliminary research found that isoflavones markedly reduced the side effects associated with radiation treatment for prostate cancer.
Coronary heart disease is the number one killer of Americans. Nearly 1.5 million Americans had a heart attack in 2011 and about 400,000 Americans died of coronary heart disease. The number of coronary heart disease deaths was equally divided between men and women.

Lifestyle greatly impacts the likelihood of developing coronary heart disease. The most important risk factors include elevated blood cholesterol, hypertension, diabetes and smoking.39

Dietary choices can significantly impact the risk of developing coronary heart disease. Diet is well known to affect blood cholesterol levels and blood pressure as well as other important coronary heart disease risk factors.76 For example, diet can reduce oxidation and inflammation – two factors that affect the health of the arteries – and can help lower blood triglyceride levels.

To substantially reduce coronary heart disease risk requires making comprehensive dietary changes since no single food will dramatically lower risk. A wealth of evidence indicates that soyfoods can make important contributions to better-for-you diets.

Soyfoods potentially reduce coronary heart disease in three ways:

In 1999, the U.S. Food and Drug Administration approved a health claim for soyfoods due to the ability of soy protein to directly lower blood LDL-cholesterol levels.40 Estimates vary, but the results of recent meta-analyses indicate that soy protein lowers LDL-cholesterol by approximately 4 - 6 percent.41-45 Estimates are that each 1 percent decrease in LDL-cholesterol can lower coronary heart disease risk by approximately 1 - 3 percent.46, 47

Soyfoods are generally low in saturated fat, high in omega-6 polyunsaturated fat and one of the few plant sources of essential omega-3 fatty acids.48 Consequently, replacing commonly consumed protein-rich foods in traditional Western diets with soyfoods can improve the fatty acid profile of the diet and, as a result, lower LDL-cholesterol by approximately 4 percent.49 Furthermore, recent evidence indicates that the ideal substitution for saturated fat is a mixture of omega-6 and omega-3 polyunsaturated fat. Soyfoods are good choices for this replacement since they provide high quality protein and both omega-6 and omega-3 fatty acids.50

Several studies have found that Asians who consume 2 - 3 servings of soyfoods daily are as much as 50 percent less likely to have heart disease.51-53 This degree of protection is far greater than what could be achieved through cholesterol reduction alone. Furthermore, a 3-year intervention study recently found that, in young postmenopausal women, the consumption of isoflavone-rich soy protein inhibited the progression of subclinical atherosclerosis.54 Clinical studies suggest that soy may reduce coronary heart disease by favorably affecting multiple risk factors independent of elevated LDL-cholesterol levels.

For example, soy has been shown to:

+ Modestly raise HDL-cholesterol41
+ Modestly lower fasting and postprandial blood levels of triglycerides41, 55
+ Modestly lower blood pressure56
+ Make LDL-cholesterol less atherogenic57
+ Directly improve the health of the coronary arteries58
OSTEOPOROSIS

Soyfoods can be part of a diet that improves bone health. The high quality protein they provide is important for bone health. The calcium in fortified soymilk and calcium-set tofu is absorbed as well as calcium from cow’s milk. A recent U.S. prospective epidemiologic study found that the consumption of soymilk and cow’s milk equally reduce risk of osteoporosis among postmenopausal women.

There is also interest in the possible skeletal benefits of soybean isoflavones because of their estrogen-like effects. The presence of isoflavones in soyfoods may explain why, in two large Asian epidemiologic studies, soy consumption was associated with about a one-third reduction in fracture risk. However, clinical studies investigating the effects of isoflavones on bone mineral density have produced mixed results, with some studies showing pronounced benefits and others showing relatively little effect. Further, three of the largest and longest trials failed to find that isoflavone supplements affect bone mineral density in postmenopausal women.

MENOPAUSE

The observation that Asian women are much less likely to report having hot flashes than Western women led to the hypothesis that soyfoods, because they contain isoflavones, may alleviate menopausal symptoms. More than 50 clinical trials have examined the effect of soyfoods or isoflavone supplements on hot flash frequency and/or severity. Although some recent reviews and analyses of the literature have concluded isoflavone-rich products alleviate hot flashes, most have found that the data do not allow definitive conclusions to be made even though more trials than not showed benefit.

However, the most recently conducted statistical analysis of the literature supports the efficacy of isoflavones. This systematic review and meta-analysis, which included 19 and 17 studies, respectively, found that isoflavone supplements consistently reduced both the frequency and severity of hot flashes. When including the placebo response, overall frequency and severity were reduced by about 50 percent. Approximately half of that reduction is attributed to the placebo effect and half from isoflavones. Supplements that contained an isoflavone ratio similar to that found in soybeans produced the largest benefits. The level of relief provided by isoflavones is consistent with the degree of benefit deemed satisfactory by women seeking non-hormonal treatments for hot flashes.

The protein, calcium and perhaps isoflavones in soyfoods are important for maintaining bone health.

During menopause, women who find that soy alleviates their hot flash frequency or severity generally feel an improvement within just a few weeks.
ABOUT USB

The 69 farmer-directors of USB oversee the investments of the soy checkoff to maximize profit opportunities for all U.S. soybean farmers. These volunteers invest and leverage checkoff funds to increase the value of U.S. soy meal and oil, to ensure U.S. soybean farmers and their customers have the freedom and infrastructure to operate, and to meet the needs of U.S. soy’s customers. As stipulated in the federal Soybean Promotion, Research and Consumer Information Act, the USDA Agricultural Marketing Service has oversight responsibilities for USB and the soy checkoff.

ONLINE RESOURCES

Help your clients and patients make the soy connection for better health. Access peer-reviewed, fully-referenced technical bulletins on a variety of health topics, plus delicious healthy recipes, through USB’s Web site. For more information, please visit: SoyConnection.com.