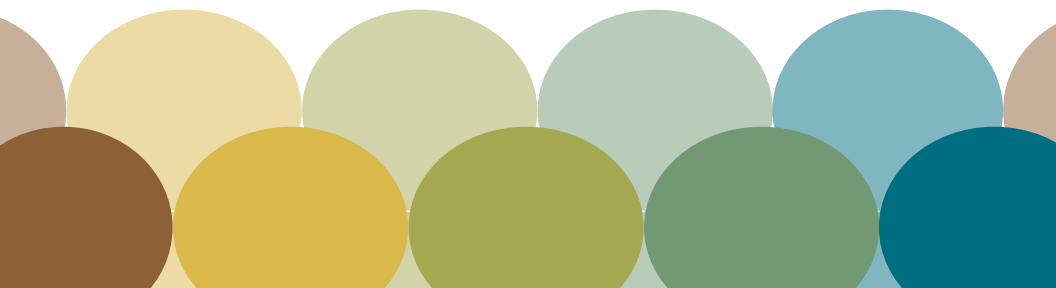


Soyfoods

AND YOUR HEALTH



Soybean History

Soybeans were first domesticated in Northern China around the 11th century B.C.E. Within 1,500 years they had been introduced throughout much of Southeast Asia. Today, a wide variety of soyfoods are important in the cuisines of Japan, many parts of China and other Asian countries. Older Japanese adults and those in Shanghai, a high-soy-consuming city in China, get about 10 percent of their protein from soyfoods which translates to about 1½ servings of soyfoods per day.¹ For many people in these locations, intake is much higher than this.

Soybeans came to Europe and North America sometime in the 1700s. Today, more than 80 million acres of U.S. farmland are planted with soybeans. While the vast majority of soybeans produced in the United States are used for animal feed, soyfoods are growing in popularity as more people learn about their nutritional and health attributes. Historically, soyfoods have been valued for their versatility and the nutrients they provide, but today there is increasing interest in their role in disease prevention.

Soyfoods are Good Nutrition

A serving of soyfoods provides approximately 7 to 15 grams of high-quality protein or as much as 12 to 25 percent of daily protein requirements for the average adult. Like all plant proteins, soybeans provide all of the essential amino acids. But the amino acid pattern of soy protein comes especially close to meeting human requirements, and soy protein is also highly digestible. As a result, the quality of soy protein is considered to be excellent and comparable to animal proteins.² However, unlike many commonly-consumed protein-rich foods, soyfoods are low in saturated fat.

Soyfoods also provide minerals such as potassium and vitamins such as folate.³ And, depending upon processing, they can provide significant amounts of fiber and calcium. In addition, some commercial soy products such as soymilk are fortified with calcium, vitamin D, and vitamin B12.



Soyfoods Provide Isoflavones

Plant foods are rich in bio-active compounds called phytochemicals. These plant chemicals are not nutrients since they are not required in diets. However, they are thought to have important health benefits, especially for protecting against chronic diseases such as cancer and heart disease.

Many phytochemicals are classified as phytoalexins, which are compounds produced by plants for their own defense. But as researchers now understand, these chemicals appear to offer benefits to those who eat the plants as well. Soybeans are the only commonly consumed food to contain meaningful amounts of one group of phytochemicals called isoflavones.⁴ Isoflavones have been intensely investigated for 25 years since the US National Cancer Institute first began studying them for their role in preventing cancer.⁵ Since then, isoflavones have been evaluated for a wide range of health benefits including those related to bone health, heart disease, and menopausal hot flashes.

Isoflavones have a chemical structure that is similar to —although not exactly the same as— the hormone estrogen. For this reason, isoflavones are able to exert some estrogen-like effects. But isoflavones are different from estrogen in many important ways. They are referred to as natural SERMs, which are compounds that act like estrogen in some parts of the body, but have effects that are opposite to those of estrogen in other parts.^{6,7} And some tissues that are affected by estrogen are not affected one way or the other by SERMs such as isoflavones. Because of their selective effects, isoflavones are thought to have some of the same benefits of estrogen without the harmful effects.

The concept of SERMS is a common and important one in medicine. Some of the most important drugs used to treat both breast cancer and osteoporosis are SERMS, and the pharmaceutical industry continues to develop new SERMS for treatment of disease.

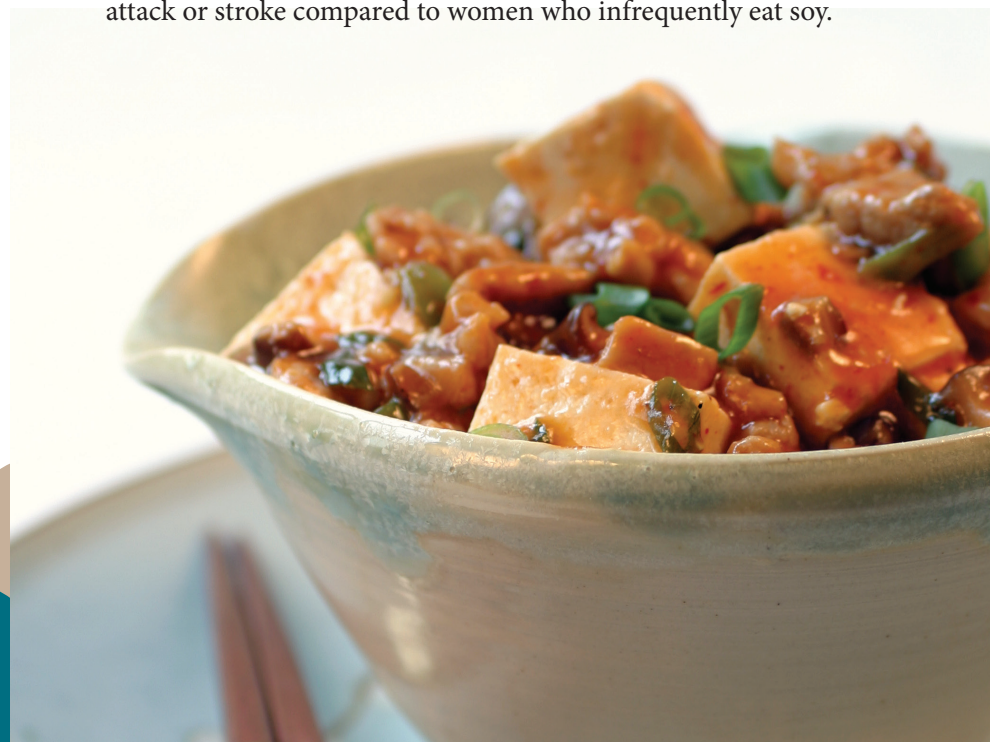
Soyfoods Provide 3-Way Protection Against Heart Disease

Soyfoods may lower heart disease risk in four important ways. First, they are low in saturated fat, high in polyunsaturated fat and provide both the omega-6 and omega-3 essential fatty acids.⁸ The fatty acid profile of soybean oil and full-fat soyfoods is considered ideal for reducing risk of heart disease.⁹ The American Heart Association endorses the use of soyfoods to reduce risk of heart disease because of the healthful fat they provide.¹⁰

In addition, soy protein has a direct cholesterol-lowering effect. For this reason, the US Food and Drug Administration approved a health claim for soyfoods and coronary heart disease.¹¹

The third way in which soyfoods affect heart disease has nothing to do with blood cholesterol levels. Soybean isoflavones may directly improve the health of the arteries which reduces heart disease risk independently of cholesterol levels.¹² This means that soyfoods might help protect against heart disease even in people who have normal cholesterol levels. Finally, soy protein has been shown to lower blood pressure.¹³

Not surprisingly, observational studies from China¹⁴ and Japan¹⁵ involving many thousands of women show that those who regularly eat soyfoods are as much as 50 percent less likely to have a heart attack or stroke compared to women who infrequently eat soy.



Soyfoods and Bone Health

Absorption of calcium in soyfoods such as fortified soymilk and certain types of tofu is similar to the rate of absorption of calcium from cow's milk.¹⁶ Also, like cow's milk, nearly all soymilk is fortified with vitamin D. The high-quality protein in soyfoods may also be important for bone health.

In addition, like the hormone estrogen, isoflavones may provide direct skeletal benefits. Two large studies in Asia found that women who consumed the most soy—the equivalent of about two servings per day— were approximately one-third less likely to suffer fractures.^{17,18} However, clinical studies, in which the effect of isoflavones is compared to a placebo, have produced mixed results. Therefore, it is not possible to conclude that isoflavones have skeletal benefits. Nevertheless, because many soyfoods provide calcium and high-quality protein they can be considered an important part of a diet that protects bone health.



Soyfoods Reduce Menopausal Symptoms

Hot flashes, which are experienced by approximately 70% of North American women, are the primary reason for seeking treatment for menopausal symptoms. Because of the side effects of estrogen therapy, many women seek natural alternatives for relief. Isoflavones have been intensely investigated for their benefits in this regard. The low prevalence of hot flashes among Japanese women has fueled speculation that the isoflavones in soyfoods might help to reduce menopausal symptoms.¹⁹

An analysis of 17 human intervention studies involving nearly 1200 women confirms that isoflavones alleviate hot flashes.²⁰ Soy isoflavones were able to reduce both the frequency and severity of hot flashes by more than 50 percent. The amount of isoflavones that was shown to be effective in this analysis is provided by about two servings of traditional soyfoods.

Soyfoods and Diabetes

Diabetes is a relatively new term used to describe a syndrome of diabetes and obesity that is on the rise in the United States. Because higher-protein diets may aid in weight loss, healthful protein sources like soyfoods can play an important role in fighting diabetes. Furthermore, low-carbohydrate diets have been shown to be effective at treating diabetes and helping to control blood glucose and insulin levels.²¹ Unlike other beans, soybeans are extremely low in carbohydrate so soyfoods fit in well with those restricting carbohydrate intake.

People with diabetes are at an increased risk for several diseases but most notably kidney disease and heart disease. In addition to their benefits for reducing heart disease risk (discussed above), soy protein has been found to place less stress on the kidneys than animal protein.²² Therefore, adding soy to the diet may help to reduce risk of developing kidney disease.

Finally, soyfoods may improve some aspects of the metabolic syndrome, a condition affecting 50 million Americans. The metabolic syndrome includes obesity, high triglycerides, low HDL-cholesterol (the good cholesterol), hypertension, and insulin resistance. Research has shown that when soyfoods replace red meat in a healthy diet, cholesterol and inflammation were reduced and insulin sensitivity (the ability to use insulin) increased.^{23,24} (the ability to use insulin) increased.

Soy and Breast Cancer

While health behavior throughout the lifespan can impact breast cancer risk, diet and lifestyle habits during the first 20 years of life appear to be especially important. Research strongly suggests that girls who consume soyfoods during childhood and/or adolescence may have a markedly lower risk of getting breast cancer later in life.^{25,26} In fact, studies suggest that consuming just one serving daily may reduce risk by as much as 50 percent. Current thinking is that the consumption of soyfoods, likely because they contain isoflavones, causes changes in the developing breast cells that make them permanently less likely to develop cancer. Eating soyfoods during adolescence was one of the six steps recently recommended by a group of scientists for reducing risk of cancer.²⁷

The impact of soy consumption on breast cancer patients has been a much studied topic for nearly 20 years. Human studies show that consuming even high amounts of soyfoods or isoflavones doesn't affect indicators of breast cancer risk.^{38,39} Furthermore, observational studies involving more than 11,000 breast cancer patients have found that women who consume soyfoods after a diagnosis of their disease are less likely to suffer a recurrence of their cancer and to die from their disease.⁴⁰ Not surprisingly given these results, both the American Cancer Society⁴¹ and the American Institute for Cancer Research⁴² have concluded that breast cancer patients can safely consume soyfoods.



Soy and Prostate Cancer

Asian men who regularly consume soyfoods are 50 percent less likely to have prostate cancer than Asian men who consume little soy.²⁸ In animals, adding isoflavones to the diet inhibits the development of prostate tumors. There is also evidence in both animals and humans that isoflavones work in ways to stop prostate cancer from spreading to other tissues.^{29,30} And, preliminary evidence indicates that isoflavones can lessen the side effects of radiation treatment for prostate cancer.³¹ Since prostate cancer is usually diagnosed late in life and these tumors grow slowly, anything that even modestly inhibits their growth or delays their onset could significantly reduce death from this disease. Although chemically lowering blood testosterone levels is one means for treating prostate cancer, the human intervention evidence indicates that soyfoods are not working in this way to protect against prostate cancer. These studies show that soy does not lower testosterone levels or adversely affect sperm or semen measurements.^{32,33}

Finally, the clinical evidence indicates that soyfoods do not impair fertility^{25,33} nor do they adversely affect thyroid function in people with normal-functioning thyroids.⁴³ Soyfoods are also not restricted for hypothyroid patients taking thyroid hormones although, when patients first add soyfoods to the diet, it is prudent to monitor thyroid function.

Soyfoods Are for Everyone

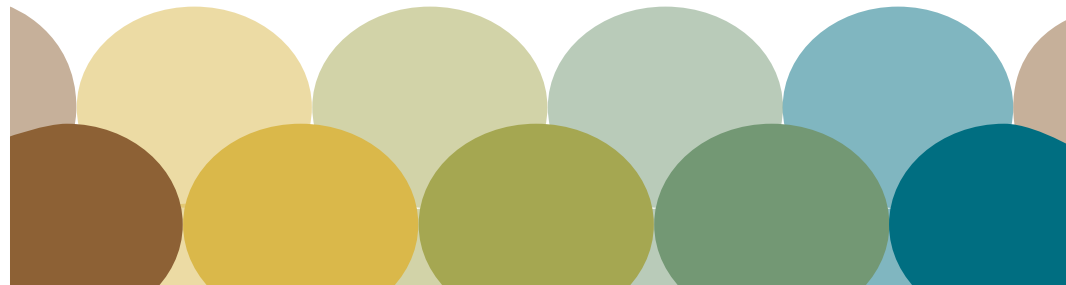
For all healthy people, soyfoods are healthful additions to the diet. A good goal is two servings per day.

Soyfoods have been consumed for centuries by people in Asia at all stages of life, and for decades by Western vegetarians without any apparent ill effects. The evidence indicates that only those who are allergic to soy protein, which is rare among adults, need to avoid soy. The largest study found that one out of 2,000 to 2,500 adults are allergic to soy.³⁴ Children have more food allergies than adults, but by age 10, only one out of every 1000 children has a soy protein allergy.³⁵⁻³⁷

Making Soy a Part of the Diet

- Use soymilk on cereal for breakfast or to make pancakes, waffles or French toast.
- Edamame in the pod or roasted soynuts can be enjoyed as snacks or in salads.
- Check the freezer section of your grocery store for soy-based veggie burgers and hotdogs—perfect for a healthy barbecue or a quick supper.
- Soft silken tofu pureed with herbs and lemon juice makes a good and healthful topping for baked potatoes or as a sandwich spread. This works well as a low fat salad dressing.
- Firm tofu sautéed with vegetables and seasoned with soy sauce and ginger is a healthful Asian-style meal.

For a complete listing of resources as well as a more in-depth copy of this brochure, please visit www.thesoyfoodscouncil.com and look for it in the Resource tab.





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