



Is Soy Bad for You? Here's What the Science Says

By Karen Asp, MA, CPT, VLCE
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There is perhaps no other plant-based food that's more controversial than soy. Many people have shunned soy from their diet, fearing that it causes health woes like [breast cancer](#), while others embrace soy as a health food.

So which is it? Here's what you need to know about soy:

- [Health Benefits](#)
- [Soy and Breast Cancer Risk](#)
- [Can Men Eat Soy?](#)
- [Are Some Soy Products Healthier Than Others?](#)

What Is Soy?

Soybeans are a type of legume that humans have cultivated and eaten for [at least 7,000 years](#). A nutrient-dense food, soybeans are rich in fiber, protein, B vitamins, magnesium, and potassium. Soybeans are used to make a variety of products, from healthful, minimally processed foods such as soy milk and tofu to less-healthy versions like soy oils and protein isolates. (More on that [below](#).)

Health Benefits

"Soy can make an important contribution to a healthy diet," says Mark Messina, PhD, a former program director with the National Cancer Institute who now serves as executive director at the Soy Nutrition Institute. While there are thousands of studies about soy—and enough that you can cherry-pick the ones you want to support any message—the preponderance of evidence demonstrates a range of health benefits associated with consuming the legume. "Soy can make an important contribution to a healthy diet," Messina says.

Soy and Heart Health

Research suggests that soy may be protective against heart disease. A [study](#) published in 2020 in the American Heart Association's journal *Circulation* examined data from more than 200,000 people and found that those who ate at least one serving of tofu per week were 18% less likely to develop heart disease than people who rarely ate tofu, even after adjusting for other contributing factors such as overall diet quality and body mass index. "Other human trials and animal studies of isoflavones, tofu, and cardiovascular risk markers also have indicated positive effects, so people with an elevated risk of developing heart disease should evaluate their diets," said lead author Qi Sun, MD, a researcher at Harvard T.H. Chan School of Public Health, upon the release of the study.

Soy is also free from artery-clogging cholesterol, and studies have shown that soy foods can lower cholesterol. In one study from the [Journal of Nutrition](#), soy lowered cholesterol levels by 3–4%.

In addition to soy's direct benefits on heart health, Messina notes that adding more soy foods into the diet has the effect of "crowding out" foods higher in saturated fat such as meat and dairy, which is another way that eating more soy can lead to lower cholesterol.

Not only does soy directly lower cholesterol, it also [appears beneficial](#) in reducing blood pressure.

Soy and Cancer

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Research involving human subjects (as opposed to other animals) suggests that soy does not increase the risk of cancer, and in fact, it may actually lower the risk of certain types of cancers. As Karen Collins, MS, RDN, CDN, FAND, of the American Institute for Cancer Research [explains](#), “Population studies don’t link soy consumption with increased risk of any cancer, and limited evidence shows soy possibly protecting against lung cancer in people who have never smoked tobacco, and either no effect or decreased risk of prostate cancer.” A 2018 meta-analysis reviewed the available research on soy intake and prostate cancer and found that eating soy foods was associated with a significantly lower risk of prostate cancer. One [2009 study](#) found that, when compared to men who ate the least amount of soy foods, men who ate the most soy had a 26% lower risk of prostate cancer.

There’s also good news on the breast cancer front. “Cultures that eat a lot of soy have lower risks of breast cancer,” says Sharon Palmer, MSFS, RDN, plant-based dietitian in Ojai, Calif., and author of *California Vegan*. “Because moderate intake of soy is [not linked](#) to a rise in breast cancer risk, all of the major cancer organizations have removed cautions of soy from their consensus statements.”

Why Do People Think Soy Can Raise Breast Cancer Risk?

One of the biggest myths about soy is that it can increase breast cancer risk. These concerns have stemmed from two observations, the first being that soy is a uniquely rich source of isoflavones, naturally occurring plant constituents that are classified as phytoestrogens, or plant estrogens. Secondly, in one mouse model, isoflavones stimulated the growth of tumors that respond to the hormone estrogen. That finding led some to believe that consuming soy can increase breast cancer risk.

However, Messina notes that this misconception misses some important points: Isoflavones differ from the hormone estrogen, and mice metabolize isoflavones differently than humans. Also, “clinical studies show neither soy foods nor isoflavones increase indicators of breast cancer risk,” he adds.

In fact, observational studies show that women who consume soy after a breast cancer diagnosis are less likely to die from their disease or even suffer recurrence. That’s why organizations including the [American Cancer Society](#), [American Institute for Cancer Research](#), and the [World Cancer Research Fund International](#) have concluded that women with breast cancer can safely consume soy.

Other Benefits

Soy may hold special benefits for women going through menopause, as studies show that soy can reduce menopausal side effects. According to a recent study published in the journal [Menopause](#), women who ate a plant-based diet that included ½ cup of cooked soybeans daily experienced a 79% reduction in hot flashes.

A 2021 study published in the [American Journal of Clinical Nutrition](#) also shows that soy improves cerebral blood flow in older men and women, which could be important for memory. In the study, adults aged 60 to 70 went through two diet phases, one of which included eating 25.5 grams of soy protein (via soy nuts) daily for 16 weeks and another in which they didn’t eat soy for 16 weeks. Following MRI and numerous cognitive tests, researchers concluded that soy nut consumption improved their cerebral function.

Research is even underway to evaluate the potential of soy to reduce wrinkles. One study from the journal [Phytotherapy Research](#) found that phytoestrogens, such as those in soy, can help alleviate changes in the skin caused by aging. And soy protein has been shown to be [as effective as animal protein](#) for promoting gains in muscle mass and strength.

Longevity is another health benefit linked with soy intake. [Tofu](#), which is made from soybeans and water, is a staple in the diet of the people of Okinawa, one of the world’s five Blue Zones—regions where people not only live the longest but also the healthiest. According to Dan Buettner’s book, *The Blue Zones Solution*, people in Okinawa eat eight times more tofu than Americans, and Buettner ranks it in his [top longevity foods](#) from the region

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Can Men Eat Soy?

Men can—and should—eat soy. “Soy does not produce feminizing effects, so in other words, there’s no effect on testosterone, sperm/semens or gynecomastia,” says Messina. A study published in 2021 in the journal *Reproductive Toxicity* found that soy foods did not affect reproductive hormones such as testosterone in men, confirming findings of an earlier meta analysis published in *Fertility and Sterility*. And as mentioned above, [some research](#) has linked high intake of soy foods with a significant reduction in prostate cancer risk.

Are Some Soy Products Healthier Than Others?

Soy products can range from unprocessed to highly processed. For the maximum health benefits, focus mainly on soy products that are unprocessed or minimally processed. “The more whole the food, generally the better it is, as it retains all of the original nutrients in the plant food,” Palmer says.

So how might a soy pyramid look from the most healthy to least healthy soy foods? Follow this guide:

Unprocessed: Soya beans, edamame

Minimally processed: Soy milk, tofu, tempeh, soy nuts

Moderately processed: Miso, natto, soy yogurts

Highly processed: Extruded soy proteins (like soy protein isolate), soy oils and faux meats

How Much Soy Should You Eat?

Soybeans are a nutritious plant food associated with a host of health benefits, as discussed above, and you shouldn’t hesitate to consume it daily in its unprocessed form. While other forms like tofu and tempeh can also be part of a healthful plant-based diet, because they are processed, albeit minimally, Forks Over Knives recommends enjoying them in moderation. As a gauge, Palmer says that she consumes fortified soy milk daily and eats tofu or tempeh, edamame, and soy-based yogurt a few times a week.

Is Soy Bad for the Environment?

You may have heard claims that soy production is destroying the Amazon rainforest. It's true that soy production has been a leading cause of deforestation in Brazil, but the culprit behind the crisis is animal agriculture. "Various reports estimate that 70–90% of the world's soy crop is used to feed livestock and fish, and only 7% is consumed by humans," Scott Stoll, MD, says. Additionally, regulatory measures have helped curb the impact of soy on the Amazon. Stoll explains:

"In April 2006, Greenpeace intervened with a comprehensive report that exposed the devastating impact of the soy industry on one of the most important ecosystems in the world. The report led to the formation of a Soy Working Group and the creation of a soy moratorium agreement demanding companies not purchase soy from a supply chain involved in deforestation, uses slave labor, or threatens Indigenous lands. Through regular satellite monitoring and aerial surveillance, the Soy Working Group monitors the region for any new deforestation from soy production. Every year since its inception the soy moratorium has been reviewed and renewed. Today, soy is no longer seen as a major driver of deforestation in the Brazilian Amazon."

Ready to get started? Check out [Forks Meal Planner](#), FOK's easy weekly meal-planning tool to keep you on a healthy plant-based path. To learn more about a whole-food, plant-based diet, visit our [Plant-Based Primer](#).