Soy Considerations (for Patients)

Soybeans, a dietary staple in Asia for millennia, are both touted for their health benefits and the subject of controversy in healthcare and the media. Soybeans provide all nine of the essential amino acids (the building blocks of protein) our bodies need. The levels of two sulfur-containing essential amino acids are lower than previously believed, but soy is still considered a high-quality plant protein.[1,2] Soy also provides healthy fats and dietary fiber and is low in carbohydrates and saturated fat.[3] Soy consumption is associated with various health benefits; however, not all soy-containing foods are equally healthful, and individuals with certain health conditions may be better off avoiding soy or limiting their intake.

Soy is available in two forms: foods and supplements. Soy foods, in turn, can be consumed in either fermented or unfermented forms. Fermented soy foods include miso, natto, soy sauce, tempeh, and tofu. Unfermented soy foods include edamame, soy protein isolate, soy protein concentrate, soy flour, and soy milk. Soy supplements generally contain isolated soy proteins and soy-derived phytonutrients, mainly isoflavones.

Soy consumption is associated with a variety of health benefits, ranging from improvements in perimenopause symptoms to improvements in cardiovascular health.

Cancer

Eating soy foods is associated with a reduced risk of total cancer, including gastrointestinal, prostate, and lung cancers, and multiple myeloma.[4] Soy isoflavones may influence cancer development by offering anti-inflammatory and antioxidant effects.[4]

The relationship between soy intake and breast cancer is complex and not fully understood. Soy intake is generally associated with a reduced risk of breast cancer, potentially through its interactions with estrogen receptors.[5] However, the effect of soy on breast cancer risk may also depend on a woman's age, ancestry, the types and amounts of soy foods consumed, and the type of breast cancer a person has, if they have already been diagnosed.[6,7]

If you are concerned about your breast cancer risk or have already been diagnosed with breast cancer, consult with your healthcare provider to determine whether soy intake is appropriate for you.

Image courtesy of 123RF

The Healthy User Effect

Research on soy can be influenced by a phenomenon known as the "healthy user effect." This means that people who eat more soy may also engage in other healthy behaviors, which can make it challenging to distinguish the effects of soy from those of other healthy habits. Despite this, there's still compelling evidence that soy can support health in multiple ways.

Cardiovascular Health

Consuming soy and its unique phytonutrients is associated with a reduced risk of cardiovascular disease.[8] Soybean phytonutrients, including isoflavones such as genistein, lecithin, and stigmasterol, may support cardiovascular health by protecting the inner lining of blood vessels and reducing inflammation.[9] While some research suggests that soy and soy isoflavones decrease cholesterol,[10,11] the effects are small enough that they may not significantly impact most people's cholesterol levels.

Men's Health

Dietary soy and soy isoflavones are associated with a reduced risk of localized, low-grade prostate cancer.[12] While concerns about the impact of soy on men's hormones have been expressed, research suggests that soy consumption does not negatively impact men's testosterone levels.[13]

Women's Health

Soy consumption is associated with modest improvements in headaches and stress and mood concerns in women going through perimenopause.[14] The beneficial effects of soy on perimenopause symptoms are linked to soy isoflavones, which can bind to estrogen receptors on cells to modulate estrogen signaling, and also have anti-inflammatory effects.[14]

Soy may also help women support their bone health. Daily intake of approximately 50 mg of genistein, one of the isoflavones found in soy, is associated with increased bone mineral density (BMD) in postmenopausal women.[15] It is possible to consume 50 mg of genistein per day through typical soy foods such as tempeh and cooked soybeans. Soy isoflavones may support bone health by affecting estrogen receptors and reducing inflammation.[16]

Concerns about the potential estrogenic activity of soy in women have been the subject of debate for decades. However, soy isoflavones are distinct from the hormone estrogen, reducing concerns about strong estrogenic effects.[17]

Soy Special Considerations

Genetically-Modified Soy and Glyphosate

Most conventional soy on the market is genetically modified for use with the herbicide glyphosate, which is associated with harmful health effects, including non-Hodgkin lymphoma[18] and breast cancer.[19,20] Genetically modified soy and soy products contain high residues of glyphosate[21] and should be minimized in your diet. Organic soy products aren't genetically modified or treated with glyphosate.

Pregnancy

High glyphosate exposure during pregnancy is associated with several pregnancy and birth complications, including preterm birth, low birthweight babies, and a higher risk of a newborn needing to go to the neonatal intensive care unit (NICU) compared to women with lower glyphosate exposure.[22,23] Since soy foods are a significant source of glyphosate,[21] it is essential for pregnant women to choose

Soy and your Microbiome

The impact of soy on your health may depend, in part, on your gut microbiome.[30,31] For example, people of Asian descent have a higher ability to produce beneficial metabolites from soy in their gut microbiomes compared to people of European descent.[32,33] While minimally processed soy can be beneficial as part of a whole-food diet, it is important to recognize that its effects may differ from person to person.

organic soy foods. If eating organic soy foods isn't an option, it may be better to minimize total soy intake.

Thyroid Function

If you have a thyroid condition, your healthcare provider may have advised you to limit your soy intake. While existing research suggests that soy intake is associated with a slight increase in thyroid-stimulating hormone (TSH), whether this change in TSH is meaningful to your health is unclear.[24]

If you already struggle with hypothyroidism, the increase in TSH with soy intake may have a more significant impact on your health.[24] If you struggle with hypothyroidism, talk with your healthcare provider to determine if soy foods are appropriate for you.

Soy in Ultra-Processed Foods

Ultra-processed foods – industrially-produced foods made mainly of substances extracted from foods, like oils and sugars, or synthesized in a laboratory – often contain soy.[25] The forms of soy used in these foods are typically soy protein isolate, soy protein concentrate, and soybean oil. The consumption of ultra-processed foods is associated with many health problems, including but not limited to an increased risk of cardiovascular disease, type 2 diabetes, and anxiety.[26] Therefore, it is best to avoid consuming ultra-processed foods and instead stick with minimally processed soy foods, such as edamame, soy nuts, tofu, tempeh, and soy milk.

Soy Allergies, Sensitivities, and Digestive Distress

Soy allergies are relatively common.[27] Due to soy being a common allergen, foods containing soy must have an allergen warning on the product label.

Soy foods may cause digestive upset (constipation, diarrhea, nausea, bloating) in those who are sensitive.[28,29] An elimination diet typically removes soy products. Some people who are sensitive to soy may tolerate fermented soy foods, such as miso or tempeh.

Getting Soy in Your Diet

- Add tofu in place of protein powder to your morning smoothie.
- Enjoy steamed or roasted edamame as a snack.
- Make chocolate pudding using dark chocolate and silken tofu.
- Use tempeh in place of meat (tempeh chili, barbecue tempeh, tempeh tacos).
- Make a glaze for tofu or fish with miso, honey, and sesame oil.
- Make tofu "cheese" by coating a block of tofu with miso and refrigerate for two days. Scrape off the miso and use the "cheese" as a dairy substitute. You can reuse the miso in soups and other recipes.
- Use organic, unsweetened soy milk in place of dairy milk.
- Make edamame hummus using cooked, frozen edamame, tahini, lemon, garlic, and other seasonings to taste.

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