



SETTING THE RECORD STRAIGHT ON SOY

Soy has been part of Asian diets for centuries, but it has long been the focus of much debate. Soy is unique compared to other legumes in that soy is higher in protein and good fat and much lower in carbohydrate.¹ Despite over 25 years of extensive research, much confusion remains regarding soy and its benefits.

1 SOY IS NUTRIENT-DENSE

- ✔ Soy products have been recognized for their complete protein.¹ One serving of soy—such as soymilk, soy nuts, edamame, or tofu—offers approximately 7 to 15 grams of high-quality protein which contains all nine essential amino acids in adequate amounts.
- ✔ Soy is low in saturated fat and each serving provides a good source of a variety of vitamins and minerals, including potassium, a nutrient of public health concern.¹
- ✔ Some traditional soy foods, like soymilk, are fortified with additional vitamins and minerals. The 2015-2020 Dietary Guidelines for Americans consider soymilk fortified with calcium, vitamin A, and vitamin D, an appropriate dairy alternative because its overall nutrient composition, including protein quality, is similar to dairy.²

2 PLANT ESTROGEN IS NOT THE SAME AS HUMAN ESTROGEN

- ✔ Soy has been in the spotlight because it contains phytoestrogen (isoflavones), also known as plant estrogen. Isoflavones are not human estrogen and failure to understand this difference has led to confusion.
- ✔ Isoflavones are plant compounds that are similar in chemical structure to human estrogen, but they bind to the body's estrogen receptors differently and function differently.^{3,4}
- ✔ Research has not found any adverse effects on reproductive hormones, such as estrogen in women or testosterone in men, who consume soy or isoflavones derived from soy.^{4,5}



3 SOY MAY REDUCE HOT FLASHES DURING MENOPAUSE

- ✔ During menopause, isoflavones derived from soybeans may reduce the severity of hot flashes for some women.⁶
- ✔ Research indicates that a dietary supplement containing 60mg/day of isoflavones including 19mg of genistein can alleviate frequency and severity of hot flashes.⁷



4 SOY IS NOT ASSOCIATED WITH AN INCREASED RISK OF BREAST CANCER

- According to the American Cancer Society, soy can be safely consumed by women who have or have had breast cancer.⁸
- Research suggests soy is not associated with an increased risk of breast cancer.^{9,10,11}
- Clinical evidence supports that soy does not adversely affect markers of breast cancer risk.^{12,13,14}

5 SOY IS HEART HEALTHY

- As part of a diet low in saturated fat and cholesterol, 25 grams of soy protein per day may reduce the risk of heart disease.¹⁵
- When it comes to soy, choose whole or minimally processed soyfoods, such as edamame, soymilk, soy nuts, tofu, and tempeh, to gain the most nutritional benefits.

6 SOY DOES NOT IMPACT THYROID FUNCTION

- Overall research suggests that soy does not impact thyroid function in healthy individuals or postmenopausal women.^{16,17,18}

ISOFLAVONE CONTENT OF SOYFOODS

SOYFOOD	SERVING SIZE	TOTAL (MG) ISOFLAVONE/SERVING
Miso	1 tbsp	7
Soybeans, Green, Cooked	1/2 cup	50
Soybeans, Black, Cooked	1/2 cup	40
Soybeans, Yellow, Cooked	1/2 cup	78
Soybeans, Roasted, Plain	1/4 cup	78
SoyMilk, Plain, Unfortified	1 cup	10
SoyMilk, Plain, Fortified	1 cup	43
Soy Flour, Defatted	1/4 cup	42
Soy Flour, Full-Fat	1/4 cup	33
Soy Flour, Full-Fat	1/4 cup	50
Soy Crumbles	1/2 cup	9
Soy Protein Isolate Powder, Plain	1/3 cup	53
Textured Soy Protein, Dry	1/4 cup	33
Tempeh	1/2 cup	53
Tofu	1/2 cup	25

Source: United States Department of Agriculture Nutrient Database.



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1. Messina M. Soy and Health Update: Evaluation of the Clinical and Epidemiologic Literature. *Nutrients*. 2016; 8(12):754. 2. U.S. Department of Agriculture and U.S. Department of Health and Human Services. Dietary Guidelines for Americans, 2015. 8th Edition. Washington, DC: U.S. Government Printing Office, 2015. 3. Oseni T, et al. Selective estrogen receptor modulators and phytoestrogens. *Planta Medica*. 2008;74(13):1656-1665. 4. Hooper L, et al. Effects of soy protein and isoflavones on circulating hormone concentrations in pre- and post-menopausal women: a systematic review and meta-analysis. *Human Reproduction Update*. 2009;15(4):423-440. 5. Hamilton-Reeves JM, et al. Clinical studies show no effects of soy protein or isoflavones on reproductive hormones in men: results of a meta-analysis. *Fertility and Sterility*. 2010;94(3):997-1007. 6. Taku K, et al. Extracted or synthesized soybean isoflavones reduce menopausal hot flash frequency and severity: systematic review and meta-analysis of randomized controlled trials. *Menopause*. 2012;19(7):776-790. 7. Williamson-Hughes PS, Flickinger BD, Messina MJ, Empie MW. Isoflavone supplements containing predominantly genistein reduce hot flash symptoms: a critical review of published studies. *Menopause*. 2006;13:831-9. 8. Rock CL, et al. Nutrition and physical activity guidelines for cancer survivors. *CA: A Cancer Journal for Clinicians*. 2012;62(4):242-274. 9. Xie Q, et al. Isoflavone consumption and risk of breast cancer: a dose-response meta-analysis of observational studies. *Asia Pac J Clin Nutr*. 2013;22(1):118-127. 10. Chen M, et al. Association between soy isoflavone intake and breast cancer risk for pre- and post-menopausal women: a meta-analysis of epidemiological studies. *PLoS One*. 2014;9(2):e89288. 11. Zhao T, et al. Dietary isoflavones or isoflavone-rich food intake and breast cancer risk: A meta-analysis of prospective cohort studies. *Clinical Nutrition*. 2017;38:10-1016. 12. Khan, S. A., et al. Soy isoflavone supplementation for breast cancer risk reduction: A randomized phase II trial. *Cancer Prev Res (Phila)*. 2012;5(2):309-319. 13. Shike, M., et al. The effects of soy supplementation on gene expression in breast cancer: a randomized placebo-controlled study. *Journal of the National Cancer Institute*. 2014;106(9). 14. Messina M, et al. It's time for clinicians to reconsider their prescription against the use of soyfoods by breast cancer patients. *Oncology (Williston Park)*. 2013;27(5):430-437. 15. US Food and Drug Administration. Food labeling: health claims; Soy protein and coronary heart disease. Fed Reg. 2017;82:50324-46. 16. Messina M, Redmond G. Effects of soy protein and soybean isoflavones on thyroid function in healthy adults and hypothyroid patients: a review of the relevant literature. *Thyroid*. 2006;16(3):249-258. 17. Huser S, et al. Effects of isoflavones on breast tissue and the thyroid hormone system in humans: a comprehensive safety evaluation. *Arch Toxicol*. 2018;92(9):2703-2748. 18. EFSA ANS Panel (EFSA Panel on Food Additives and Nutrient Sources added to Food). Scientific opinion on the risk assessment for peri- and post-menopausal women taking food supplements containing isolated isoflavones. *EFSA J*. 2015;13(4246):342.