

The Health Effects of Soy

A Reference Guide for Health Professionals

SNI GLOBAL
SOY NUTRITION INSTITUTE
With support from U.S. Soy





There is a soy food for nearly every diet and lifestyle, and there are benefits to consuming soy foods at all ages and stages of life. This publication is designed to provide an overview of the health effects of soy foods and soybean components. At the end of this booklet, you will find intake recommendations and a soy foods glossary.

To view the peer-reviewed publication from which this information is sourced, scan the QR code.

Read *The Health Effects of Soy: A Reference Guide for Health Professionals*
https://www.frontiersin.org/articles/10.3389/fnut.2022.970364/full





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SOY FOODS OVERVIEW

Traditional Asian Soy Foods

There are two general categories of Asian soy foods: fermented and unfermented. Fermented soy foods include natto, tempeh, and miso whereas unfermented foods include soymilk and tofu. Globally, most soy is consumed in the unfermented form, excluding soy sauce, which is a condiment, not a food.
See the **Soy Foods Glossary on page 30** for more information on soy foods and soy products.

Soy Protein Ingredients

A wide array of foods are made using concentrated sources of soy protein, often referred to as "soy protein ingredients". The primary ingredients are soy protein isolate (SPI), soy protein concentrate (SPC), and soy flour. Most often, these ingredients are found in packaged foods, such as cereals, energy bars, and infant formulas. Soy protein ingredients are widely used by the food industry for their functional attributes related to solubility, gelation, hydrating capacity, emulsification, adhesion/cohesion, and foaming.

Ingredient	% Protein
Soy protein isolate (SPI)	≥90%
Soy protein concentrate (SPC)	65-90%
Soy flour	50-65%

Soy Protein Quality

There is a large body of research that has investigated the quality of soy protein, although until recently much of that research focused on concentrated sources of soy protein such as SPI and SPC. Soy protein is a high-quality protein similar to the quality of animal protein.

Both SPI and SPC have protein digestibility corrected amino acid scores (PDCAAS) of ~1.0 (the highest possible score), which is higher than beef (0.92), pea protein concentrate (0.73), kidney beans (0.68), pinto beans (0.63), rice (0.53), and wheat gluten (0.25). Soy is also highly ranked when assessed through the digestible indispensable amino acid score (DIAAS): tofu (97%), soymilk (117%), soy-based burger (107%) when using the IAA reference pattern for the older child, adolescent, and adult. In comparison, the DIAAS for 80/20 lean ground beef and a popular pea protein-based burger are 110% and 83%, respectively.



ISOFLAVONES

The health effects of soy have been rigorously investigated for more than 30 years, in large part because the soybean is a uniquely rich source of isoflavones. Isoflavones are diphenolic molecules that naturally occur in a wide range of commonly consumed plants but in negligible amounts except for soybeans. They bind to both estrogen receptors thereby potentially influencing gene transcription. Isoflavones are much less potent than the hormone estrogen; however, because circulating isoflavone levels following

soy food ingestion are much higher than estrogen levels in pre- and postmenopausal women, they have the potential to exert physiological effects.
The three isoflavones found in soybeans, genistein, daidzein, and glycitein, account for about 50%, 40%, and 10%, respectively, of total isoflavone content. Isoflavone ingestion results in a biphasic appearance in human plasma and urine, with levels occurring 1-2 hours and then 4-8 hours following consumption. Many of the proposed benefits of soy foods, such as increasing bone mineral density, hot flash alleviation, and improved cognitive function, may be due to the estrogen-like effects of isoflavones.

See chart on page 18 for isoflavone amounts in popular soy foods.

ISOFLAVONE-RELATED TOPICS

Women with Breast Cancer or at High Risk of This Disease

Despite interest in the role of soy in breast cancer prevention, the results of studies in mice published in the late 1990s raised concern that soy foods – because they contain isoflavones – may worsen the prognosis of women diagnosed with breast cancer. However, clinical intervention studies consistently show neither soy nor isoflavones adversely affect markers of breast cancer risk including breast tissue density and breast cell proliferation. Furthermore, observational studies indicate post-diagnosis soy consumption reduces breast cancer recurrence and breast cancer-specific mortality. Numerous health agencies including the American Cancer Society, Canadian Cancer Society, and the European Food Safety Authority have concluded either that breast cancer patients can safely consume soy foods, and a recent comprehensive review concluded women while being treated for breast cancer can safely consume soy foods.

Prostate Cancer

The low incidence of prostate cancer in soy food-consuming countries helped fuel speculation that isoflavones may be protective



against prostate cancer. Several clinical studies found that soy and isoflavone intake decreased prostate specific antigen (PSA) levels—a marker of prostate tumor growth—in men with prostate cancer. Though there is suggestive observational evidence mostly from case-control studies that soy foods reduce risk of developing prostate cancer, the data are too inconsistent to reach firm conclusions.

Osteoporosis

There is a complex relationship between protein intake and bone health. Overall, studies suggest dietary protein may have a modest beneficial effect, but whether this is dependent on the type of protein is unclear. Several observational studies reported that soy intake was associated with a reduced fracture risk among women. Additionally, a recently published meta-analyses of the clinical research have concluded that soy isoflavones favorably affects bone turnover by reducing bone resorption and/or enhancing bone formation. The clinical research also shows improvements in bone mineral density. Because they offer protein, isoflavones, and in some cases are fortified with calcium, soy foods can be emphasized for those concerned about bone health.[1]

1. Akhlaghi M, Ghasemi Nasab M, Riasatian M, Sadeghi F. Soy isoflavones prevent bone resorption and loss: a systematic review and meta-analysis of randomized controlled trials. Crit Rev Food Sci Nutr. 2020;60(14):2327-2341. doi:10.1080/10408398.2019.1635078.

Cognitive Function

Clinical studies evaluating the impact of soy or isoflavones on cognitive function have produced inconsistent findings although a recent meta-analysis found that isoflavones from supplements and foods improved memory in postmenopausal women. Subsequently published studies support this conclusion. Although further research is needed, the available evidence is quite encouraging.

Thyroid Function

The effect of soy on the thyroid has been examined for nearly 100 years. There is extensive clinical evidence indicating that isoflavones do not affect the main two thyroid hormones, thyronine (T4) and triiodothyronine (T3) in euthyroid individuals, but there is conflicting data about its effect on thyroid stimulating hormone levels. Although less well studied, evidence suggests neither soy nor isoflavones impair thyroid function in individuals with subclinical hypothyroidism or whose iodine intake is marginal. Soy protein does inhibit the absorption of levothyroxine, but this is the case for all foods and many dietary supplements. Consequently, thyroid hormone replacement (e.g., levothyroxine) is to be taken when fasting, typically in the morning at least 1-3 hours before any food is consumed.

Equol Producers vs. Equol Non-Producers

More than 20 years ago, it was hypothesized that individuals who host intestinal microbiota that convert the isoflavone daidzein into equol, which represents about 25-30% of the populations in Western countries, are more likely to benefit from consuming soy foods than those who do not. This hypothesis continues to be rigorously investigated. Clinical studies in Chinese adults have shown equol to be biologically active. A point of uncertainty from the observational studies showing associations between equol synthesis and health outcomes is whether these associations are due to equol per se, or the equol-producing phenotype.[2]



2. Liang S, Zhang H, Mo Y, Li Y, Zhang X, Cao H, Xie S, Wang D, Lv Y, Wu Y, et al. Urinary equol and equol-predicting microbial species are favorably associated with cardiometabolic risk markers in Chinese adults. J Am Heart Assoc. 2024;13(13):e034126. doi:10.1161/JAHA.123.034126.

Puberty Onset

Children throughout much of the world are entering puberty at earlier ages than previous generations. Some have suggested that one factor contributing to this trend is exposure to hormonally active chemicals in the environment, which includes everything from the foods we eat to the air we breathe. For this reason, there has been interest in the impact of soy intake on puberty onset. However, puberty onset is occurring earlier in children from soy food-consuming countries as well as non-soy food-consuming countries. Also, a U.S. cross-sectional study of girls 12-18 years old from a high soy-consuming population found that neither total soy product intake nor the intake of soy-based meat alternatives, traditional soy foods, or soy beverages were significantly related to the age of menses onset (AOM) or the likelihood of early or late AOM. A similar study in boys 12-18 years old found moderate and high isoflavone intake was associated with pubarche onset as determined by first onset of pubic hair but not facial hair growth, a secondary metric of puberty onset. Furthermore, even boys consuming higher levels of soy underwent puberty later than average for U.S. boys.





Male Hormones and Fertility

Classification of soybean isoflavones as phytoestrogens has led to concern that soy may feminize men. However, extensive clinical trial data show neither soy nor isoflavones affect testosterone or estrogen levels in men. Additionally, clinical studies show neither soy nor isoflavones have adverse effects on sperm or semen parameters or risk of developing gynecomastia (breast enlargement in men).

Female Hormones and Menstrual Cycle Length

The classification of isoflavones as phytoestrogens has led to concerns they may cause hormonal disturbances in women. However, clinical evidence indicates that neither isoflavones nor soy impact circulating reproductive hormone concentrations. Soy may increase menstrual cycle length by ~1 day, but this increase does not prevent ovulation.

Soy Consumption During Pregnancy: Maternal Effects

Several prospective cohort studies show that soy intake is associated with a decreased risk of developing gestational diabetes mellitus (GDM). Additionally, a clinical study found that pregnant women who did not eat a soy-containing diet had significantly higher fasting plasma glucose, serum insulin levels, and were more insulin resistant. More recently, studies have shown that women who consumed plant-based diets were less than half as likely to develop GDM. Although the existing research is intriguing, more study is needed to better understand the relationship between soy and GDM.

Soy Consumption During Pregnancy: Fetal Effects

Limited research has evaluated the impact of maternal soy intake on the developing fetus, but evidence suggests that the in utero isoflavone concentrations are too low to have an impact. Nevertheless, an older observational study found that maternal soy intake was associated with an increased risk of hypospadias in the male offspring. However, more robust results from a study published in 2022 showed higher soy isoflavone intake was protective against this condition.

Hot Flash Alleviation

In 1992, researchers first proposed that isoflavones possess enough estrogen-like activity to mitigate menopausal symptoms such as hot flashes. There have been mixed reviews of the efficacy of isoflavones with some reviews reporting no benefits, some modest benefits, and a smaller number reporting more pronounced benefits. However, these reviews have failed to consider that two different types of isoflavone supplements have been used in the intervention trials. When sub-analyzing the data, results show that when supplements provide approximately 50-60 mg total isoflavones, at least 20 mg of which is genistein, the primary isoflavones in soybeans, hot flash frequency and severity is consistently reduced. This amount of isoflavones is provided by approximately two servings of traditional Asian soy foods.

Skin Health and Appearance

Explore soy's impact on skin health.

An intriguing body of evidence suggests soybean isoflavones help to reduce wrinkles and improve other skin parameters. The results from a trial conducted recently add to this evidence. In this 6-month study, postmenopausal women were randomized to receive either 30 grams/day soy protein containing 50 mg isoflavones or 30 grams/day casein, the main protein in cow's milk. Relative to women in the casein group, women in the soy group experienced a statistically significant reduction in wrinkle severity and pigment intensity and an increase in skin hydration. The amount of isoflavones study participants consumed is found in just two servings of soy foods, such as 2 cups of soymilk or 1 cup of tofu. Although the study design does not allow the effects to be attributed to one specific soybean component, existing evidence points directly to isoflavones.[3]



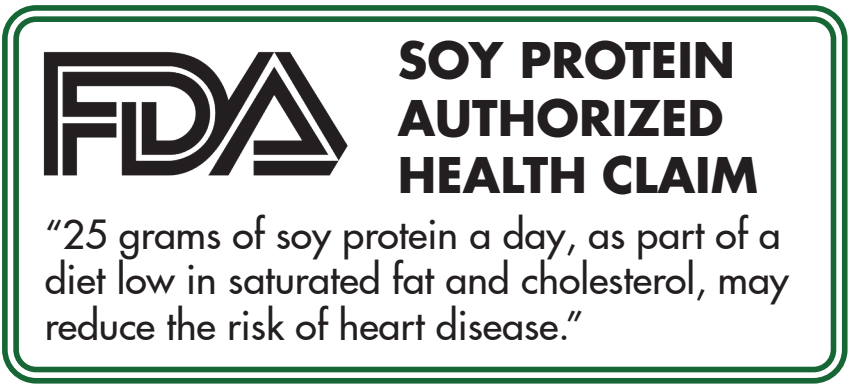
3. Rizzo J, Min M, Adnan S, Afzal N, Maloh J, Chambers CJ, Fam V, Sivamani RK. Soy Protein Containing Isoflavones Improves Facial Signs of Photoaging and Skin Hydration in Postmenopausal Women: Results of a Prospective Randomized Double-Blind Controlled Trial. Nutrients. 2023; 15(19):4113. https://doi.org/10.3390/nu15194113



PROTEIN-RELATED TOPICS

Soy Protein Ingredients (Concentrated Sources of Soy Protein)

While an emphasis on consuming whole foods is important, concentrated sources of soy protein, such as soy protein concentrate and soy protein isolate, provide high-quality protein. Researchers have rigorously investigated the potential benefits and safety of concentrated sources of soy protein, as these ingredients are typically the intervention products used in animal studies and clinical trials, as opposed to traditional Asian soy foods.



Cholesterol Reduction

The cholesterol lowering effect of soy protein has been studied for more than 50 years. Results indicate soy protein intake leads to a modest yet clinically relevant reduction. In 1999, the U.S. Food and Drug Administration formally recognized the ability of soy protein to lower cholesterol when it approved a health claim for soy foods and coronary heart disease (CHD). However, in 2007, the FDA began to review the strength of the evidence supporting the efficacy of soy protein. Nevertheless, meta-analyses of the clinical data published in 2019 confirm the cholesterol lowering effect of soy protein. Health claims for soy protein have been approved in many other countries.

Soy Protein & Muscle Mass

The combination of exercise and dietary protein is a powerful stimulus promoting gains in lean body mass, and research has shown that soy protein promotes gains in muscle mass and strength similarly to animal protein, including whey. Although acute studies assessing the effects of protein on muscle protein synthesis over a 4-5-hour period challenged the value of soy protein, research shows these types of studies do not accurately reflect the results of longer-term studies measuring clinically relevant outcomes including lean body mass and strength. In part, this may be because muscle protein synthesis following resistance exercise may last for at least 24 hours.

Soy Protein & Weight Management

Several studies have examined the impact of soy protein on body composition in adults as dietary protein is increasingly viewed as an important factor in weight loss and weight maintenance strategies. Some evidence suggests dietary protein may be the most effective macronutrient for satiety, and a 2008 review found that soy promotes weight loss similar to other protein sources. A double-blind randomized cross-over trial that involved 17 healthy adults concluded that consuming soy protein exerts comparable effects to whey protein on appetite, energy metabolism, and subsequent energy intake. The findings from this study align with other research, indicating there is little evidence suggesting one source of protein is more effective than another as an aid for weight management.

Gout

Gout is caused by the deposition of monosodium urate crystals in the body and appears in relation to chronic hyperuricemia. Although gout is a worldwide health issue, incidence rates in South Asia, Southeast Asia, and East Asia are moderately lower (~10%) than in Western Europe and North America. Despite the lower rates in regions where soy foods are consumed, among health professionals in Asia there is a belief that soy increases risk of gout. However, the results from clinical trials show that soy protein intake does not exert meaningful effects on blood uric acid levels. Additionally, observational data show that soy foods do not increase the risk of gout. In fact, some evidence indicates soy foods reduce risk of gout.

Kidney Stones

Those prone to developing kidney stones often follow a low-oxalate diet although the importance of doing so has been deemphasized in recent years. The concentration of compounds in different types of soy foods potentially associated with kidney stone formation (e.g., oxalate, protein, sodium, phytate, and calcium) varies markedly.

Therefore, any recommendation to incorporate soy foods into the diet of kidney stone formers should be based on the specifics of the food in the context of the overall diet. Research suggests that as long as other high-oxalate foods are avoided, soy foods can be included in the diet.

Allergy

In the United States, soy is one of nine foods designated as a major allergen that must be called out as an allergen on product labels when present in a food. These nine allergens are responsible for ~90% of all food-related allergic reactions in the United States, however studies show that soy allergies are less common than the other major food allergens (except sesame). Only about 3 out of every 1,000 adults in North America are allergic to soy. Although more children are initially allergic to soy than adults, about 70% of children outgrow their soy allergy by age 10 years. Soy-allergic individuals need to avoid soy foods but can safely consume highly refined soybean oil. Because highly refined soybean oil contains only negligible amounts of soy protein, soybean oil does not elicit allergic reactions in individuals sensitive to soy protein, and as such, does not fall under the allergy labeling regulation. In 2022, the Food and Agriculture Organization and World Health Organization did not include soybeans on their global list of priority food allergens because of the generally low prevalence of soy protein allergy, the relatively low potency of soy protein for triggering an allergic response and because of the low proportions of anaphylaxis, and especially severe anaphylactic reactions.[4]

4. FAO and WHO. 2022. Risk Assessment of Food Allergens. Part 1 – Review and validation of Codex Alimentarius priority allergen list through risk assessment. Meeting Report. Food Safety and Quality Series No. 14. Rome. https://doi.org/10.4060/cb9070en

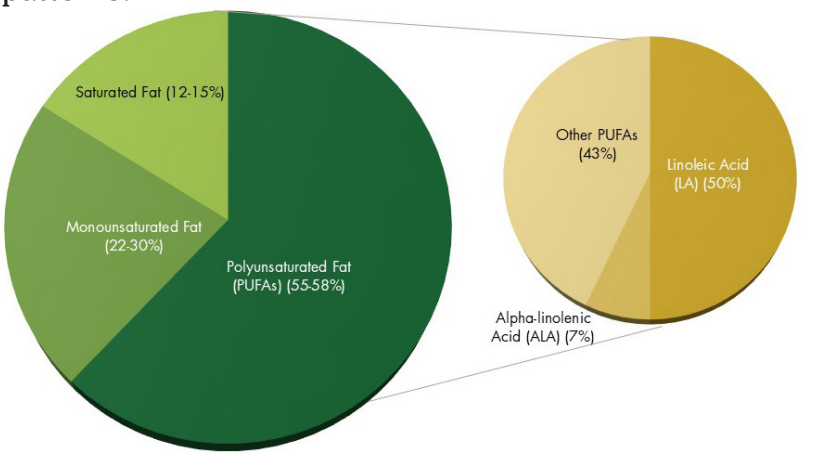


SOYBEAN OIL/OMEGA-6 FAT & INFLAMMATION/OXIDATION

Soybean oil, often labeled as vegetable oil, is the most widely consumed oil in the U.S. and second most consumed globally. It accounts for 7% of U.S. caloric intake and over 40% of the intake of both essential fatty acids: the omega-6 fatty acid linoleic acid and the omega-3 fatty acid alpha-linolenic acid (ALA). Soybean oil was awarded a qualified health claim for its ability to reduce the risk of coronary heart disease based on its cholesterol-lowering effect

when replacing saturated fat in the diet. Linoleic acid accounts for approximately 50% of the fat content of soybean oils. Intriguing evidence indicates that linoleic acid may lower the risk of developing several chronic diseases like type 2 diabetes, liver disease, and dementia.[5] Evidence-based recommendations from health organizations such as the American Heart Association and World Health Organization recommend intake of vegetable oils, including omega-6 PUFA-containing oils, as part of healthy dietary patterns.

Explore more evidence-based information about soybean oil.



SOYBEAN OIL QUALIFIED HEALTH CLAIM

"Supportive but not conclusive scientific evidence suggests that eating about 1½ tablespoons (20.5 grams) daily of soybean oil, which contains unsaturated fat, may reduce the risk of coronary heart disease."

5. Petersen KS, Messina M, Flickinger B. Health implications of linoleic acid and seed oil intake. Nutrition Today. 2025;61(1):19-25. doi:10.1097/NT.0000000000000746.

INTAKE RECOMMENDATIONS

A soy intake recommendation consistent with the results of clinical and observational studies showing a variety of potential benefits and consistent with the dietetic principles of moderation and variety is to consume between **two and four servings of soy daily.** These amounts will provide approximately 15 to 25 g soy protein and 50 to 100 mg isoflavones. Consuming more than these amounts is not associated with adverse effects, but there is little historical precedence for doing so. Furthermore, it is not appropriate to put too much emphasis on one food, no matter how nutritious.



Edamame
(1/2 cup)

Protein: 9.9g
Fiber: 6g
Isoflavone: 34.6mg



Soymilk
(1 cup)

Protein: 8.32g
Fiber: 0g
Isoflavone: 29.1mg



Roasted Soynuts
(1/4 cup- 28g)

Protein: 10g
Fiber: 5.01g
Isoflavone: 41.58mg



Tempeh
(3oz)

Protein: 16.92g
Fiber: ~6.78g
Isoflavone: 30.29mg



Tofu
(3oz)

Protein: 8g
Fiber: 0.91g
Isoflavone: 28mg



Soy Nut Butter
(2 Tbsp- 32g)

Protein: 7.32g
Fiber: 3.4g
Isoflavone: 0.18mg

2-4
daily servings of soy

15-25g
soy protein

50-100mg
isoflavones



Soy Yogurt (6 oz)

Protein: 8.21g
Fiber: 1.53g
Isoflavone: 56.39mg



Soy-Based Burger (1 patty- 100g)

Protein: 15.7g
Fiber: 4.9g
Isoflavone: 6.39mg



Soy Crumbles (1/3 cup)

Protein: 8.23g
Fiber: 2.08g
Isoflavone: 4.32mg



Soy-Based Nutrition Bar

Protein: 17.23g
Fiber: 3.55g
Isoflavone: 9.05mg



Soy Protein Powder (One Scoop)

Protein: 20.33g
Fiber: 0.33g
Isoflavone: 33.22mg

6. U.S. Department of Agriculture, Agricultural Research Service. 2015. USDA Database for the Isoflavone Content of Selected Foods, Release 2.1. Nutrient Data Laboratory Home Page: http://www.ars.usda.gov/nutrientdata/isoflav
7. Messina M. Soy and Health Update: Evaluation of the Clinical and Epidemiologic Literature. Nutrients. 2016 Nov 24;8(12):754. doi: 10.3390/nu8120754. PMID: 27886135; PMCID: PMC5188409.
8. U.S. Department of Agriculture, Agricultural Research Service, Beltsville Human Nutrition Research Center. FoodData Central. [Internet]. [cited Dec. 10, 2025]. Available from https://fdc.nal.usda.gov/.

PRACTICAL WAYS TO ADD SOY

Breakfast

- Opt for soymilk or soy creamer for a morning cup of coffee.
- Scramble tofu with vegetables and picante sauce in a skillet with oil for a plant-based omelet or scramble.
- Prepare your smoothie with silken tofu, soy protein powder or soymilk.
- Sprinkle berries and granola over soy yogurt.
- Smear soynut butter on a whole wheat bagel and top with sliced bananas.
- Add blended tofu to quiches and baked eggs.
- Meal prep overnight oats with soymilk or soy-based yogurt.



Lunch

- Add protein to your favorite salad with edamame and add crunch with soynuts.
- Stir together soybean oil, balsamic vinegar, a little honey, and herbs for a homemade salad dressing.
- Smash tofu with mustard and spices for a plant-based “egg” salad and serve with crackers.
- Add sliced tempeh, fresh vegetables, and ranch dressing to a tortilla for an easy wrap.
- Pair soynut butter with jelly for a twist on a classic sandwich.
- Build a power bowl for lunch. Start with rice or quinoa and top it with tofu or grilled tempeh and raw or cooked vegetables. Sprinkle with soynuts for crunchiness.
- Toss crumbled tempeh in your favorite salad dressing or sauce for an easy protein addition to your salad.





Dinner

- Use soybean oil in homemade marinades, salad dressings, and sauces.
- Grill marinated tofu or tempeh for an easy cookout.
- Add soft/silken tofu to mashed potatoes for added creaminess and protein.
- Replace half of the ground meat in your chili with crumbled tempeh or soy crumbles.
- Add soy crumbles to spaghetti sauce for plant-powered pasta night.
- Crisp up tofu cubes in the air fryer and serve with dipping sauces for an easy kid-friendly dinner.
- Blend silken tofu with roasted red peppers, parmesan cheese, and spices for a simple pasta sauce.
- Mix a few tablespoons of miso into your favorite marinades and soups to add depth to the flavor.
- Scramble tofu with spices to wrap in tortillas with black beans, salsa and your favorite cheese and other toppings.
- Shred firm or extra firm tofu with the large side of a cheese grater and bake until crisp for salad toppings and garnishes.
- Add tempeh bacon to your sandwich with lettuce and tomato to create a plant-based “BLT”.

Snacks



- Add soynuts to trail mix.
- Blend tofu into your favorite dip recipe for added protein.
- Make fresh hummus dip by blending cooked edamame, soybean oil, tahini, and spices.
- Cook frozen edamame in the pods and sprinkle with sea salt.
- Fill celery slices with soynut butter and top with raisins or chocolate chips for a fun after school snack.
- Create a sweet dip by blending soft/silken tofu, honey, and cinnamon, and serve with apple slices.

Sweets

- For baking, swap some of the all-purpose flour with soy flour.
- Melt chocolate in soymilk for a warming hot cocoa recipe.
- Blend silken tofu with chocolate and maple syrup to create a creamy chocolate mousse.
- Mix soymilk into your favorite milkshake recipe.
- Combine soy yogurt with a handful of berries and pour into popsicle molds for a cool treat.
- Blend tofu, soynut butter, brown sugar (or sugar substitute), and bananas for an easy homemade pudding. Pour into small containers and refrigerate for at least 30 minutes.





Soy Connection Recipes



Toastfu

Ingredients

1 block high protein or super extra firm tofu
3 tablespoon liquid aminos
1 tablespoon coconut aminos
1 teaspoon garlic powder (or asafoetida powder if you are FODMAP sensitive)
Oil spray
1 medium, ripe avocado
1 tablespoon Everything But The Bagel Seasoning
1 cup microgreen sprouts
Spritz of lemon or lime

Directions

1. Drain tofu. Option to press it to further remove excess moisture. The more water removed, the crispier the texture of the Toastfu.
2. Cut the entire block down the middle, lengthwise, then cut again into 4 equal “toast” sized pieces.
3. Spray each side of the tofu with olive oil for 2 seconds.
4. In a medium bowl, toss tofu with seasoning.
5. Air fry on 375°F for 18 minutes, or until crispy to your liking.
6. Mash the avocado.
7. Remove the Toastfu from the air fryer and top with avocado, seasoning, and sprouts (lemon or lime optional)
8. We also like adding hummus, dairy-free cream cheese, and other veggies like shredded beets or radishes.
9. Enjoy your Toastfu (Tofu Toast)!



Tempeh Breakfast Hash

By Veronica Rouse, RDN

Ingredients

1 block (8 oz) tempeh, cubed
1 tablespoon soybean oil
1 pound (450g), potatoes, halved
1 tablespoon low-sodium soy sauce
1 small red onion, diced
1 red bell pepper, diced
2 garlic cloves, minced
1 teaspoon smoked paprika
1/2 teaspoon ground cumin
1/4 teaspoon chili powder
Salt and pepper to taste
2 cups baby spinach

Directions

1. Place cubed tempeh in a steamer basket over boiling water. Steam for 10 minutes to remove bitterness. Remove and set aside.
2. Heat 1/2 tablespoon of oil in a large skillet over medium heat.
3. Add the potatoes, season with a pinch of salt and pepper, and cook for 10-12 minutes, stirring occasionally, until tender and slightly crispy. Remove from the pan and set aside.
4. In the same skillet, add the remaining 1/2 tablespoon of oil. Add the steamed tempeh and soy sauce. Cook for 5-7 minutes, stirring occasionally, until golden and crispy.
5. Add diced onion, bell pepper, and garlic to the skillet with the tempeh. Sauté for 3-5 minutes until softened.
6. Return the cooked potatoes to the skillet. Sprinkle smoked paprika, cumin, chili powder, salt, and pepper over the mixture. Stir well to combine. Add the spinach and cook for 2-3 minutes until wilted.



Edamame Cucumber Salad with Ginger Soynut Vinaigrette

By Chelsea LeBlanc, RDN

Ingredients

2 cups shelled frozen edamame, defrosted
1 English cucumber, thinly diced
3 green onions, chopped
1 tablespoon soynut butter
1 tablespoon soybean (vegetable) oil
1 1/2 tablespoon rice wine vinegar
1 1/2 tablespoon low-sodium soy sauce (or tamari for gluten-free)
1 teaspoon sriracha (adjust to taste)
1 tablespoon maple syrup
1/2 teaspoon ground ginger
1/2 teaspoon garlic powder
Water to thin (optional)
Sesame seeds (optional)

Directions

1. Many edamame options come pre-cooked, so you can simply rinse them under cold water to defrost or cook them according to package instructions if needed. Once ready, drain well.
2. In a large mixing bowl, combine the edamame, cucumbers, and green onions.
3. In a small bowl, whisk together the soynut butter, soybean oil, rice wine vinegar, soy sauce, sriracha, maple syrup, ginger, and garlic powder until smooth. Option to add a little water to the mason jar to help get the remaining dressing off the side.
4. Pour the dressing over the salad ingredients and toss until everything is evenly coated.
5. Sprinkle with sesame seeds and serve or refrigerate for 20 minutes to let the flavors meld.



Miso Matcha Chocolate Chip Cookies

Ingredients

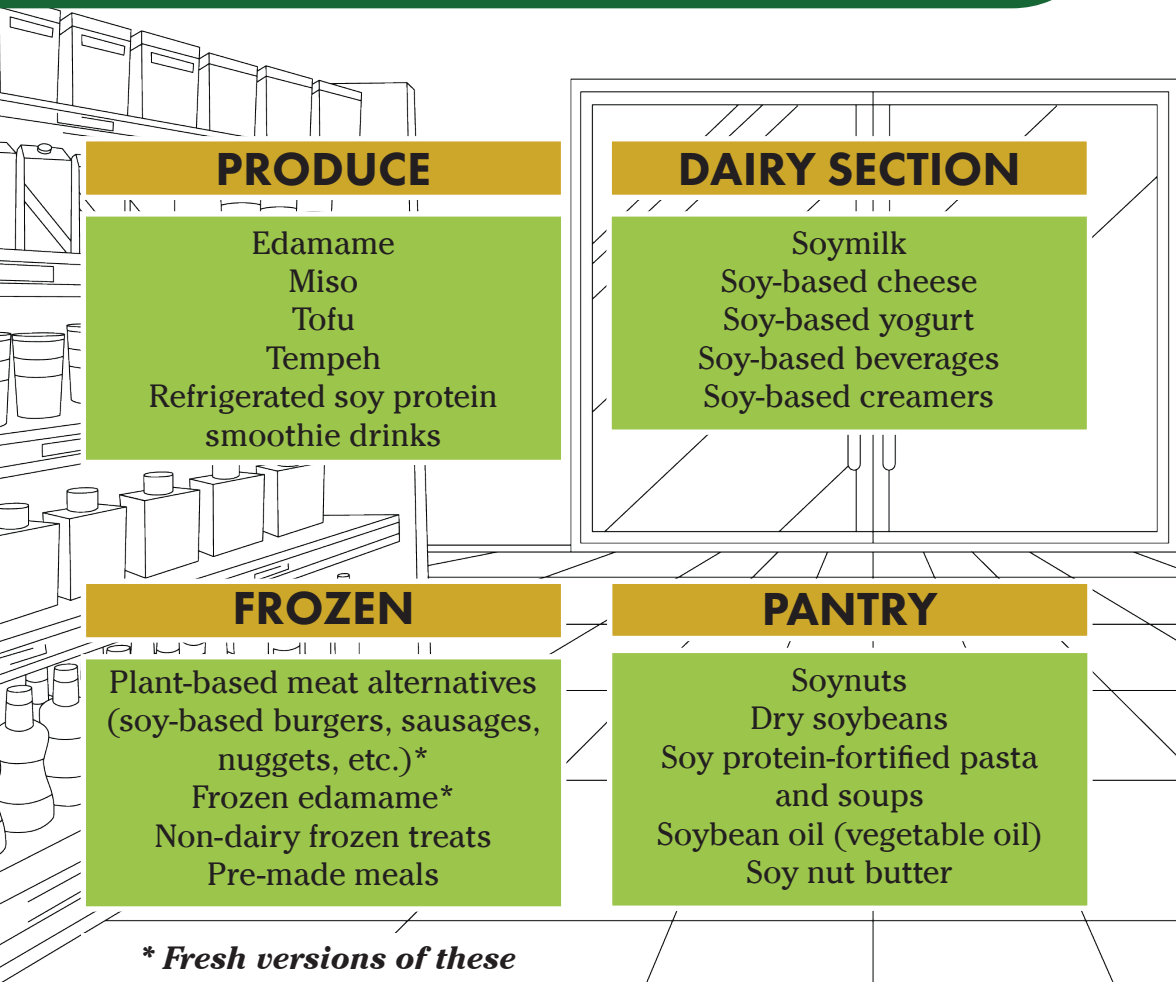
1 cup + 2 Tbsp all purpose flour
1/2 tsp baking soda
1 Tbsp matcha powder
1/2 cup unsalted butter, softened
1/4 cup granulated sugar
1/2 cup light brown sugar
1 Tbsp white miso paste
1/2 tsp vanilla extract
1 large egg, room temperature
1/2 cup dark chocolate chips

Directions

1. Preheat oven to 350° F. Line a baking sheet with parchment paper or lightly grease. In a medium-sized bowl, mix your dry ingredients – flour, baking soda, and matcha powder. Set aside.
2. In a stand mixer, or with a hand mixer, beat together the butter, granulated sugar, brown sugar, miso paste, vanilla extract, and the egg. Mix until light and fluffy, about 1 minute.
3. Add your dry ingredients to the mixer at a low mixing setting, a bit at a time, until fully combined. Be careful not to over-mix.
4. Stir in chocolate chips by hand. Using a cookie or ice cream scoop, measure out 8 cookies onto your baking sheet. Chill in the refrigerator for 20 minutes before baking.
5. Bake for 10–12 minutes, until edges are lightly browned. Remove from oven and let cool 10–15 minutes before serving.

SOY IN THE SUPERMARKET

Soy is easy to find in most local supermarkets. Here is a guide that outlines where you might find your favorite soy products.



PRODUCE

Edamame
Miso
Tofu
Tempeh
Refrigerated soy protein smoothie drinks

DAIRY SECTION

Soymilk
Soy-based cheese
Soy-based yogurt
Soy-based beverages
Soy-based creamers

FROZEN

Plant-based meat alternatives (soy-based burgers, sausages, nuggets, etc.)*
Frozen edamame*
Non-dairy frozen treats
Pre-made meals

PANTRY

Soynuts
Dry soybeans
Soy protein-fortified pasta and soups
Soybean oil (vegetable oil)
Soy nut butter

**** Fresh versions of these products are often available in the meat department.***



CEREAL

Soy protein-fortified hot and cold cereals
Granola
Nutrition/protein bars

BEVERAGES

Protein-fortified nutritional beverages
Meal replacements
Coffee drinks

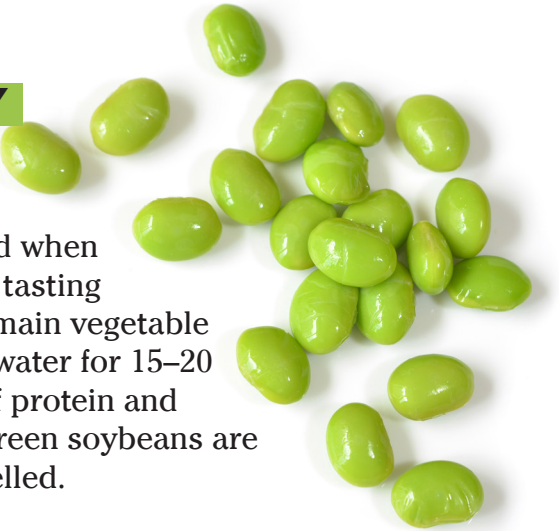
PHARMACY

Soy protein-fortified functional foods like bars and protein powders
Weight management products
Pediatric and adult nutritional supplements

BAKERY

Protein-fortified baked snacks (cookies, brownies, etc.)

SOY FOODS GLOSSARY



Green Soybeans (Edamame)

These large soybeans are harvested when the beans are still green and sweet tasting and can be served as a snack or a main vegetable dish after boiling in slightly salted water for 15–20 minutes. They are a good source of protein and fiber and contain no cholesterol. Green soybeans are sold frozen either in the pod or shelled.

Plant-Based Meat Alternatives

Many meat alternatives are made using soy protein ingredients. The new generation of plant-based meat alternatives is designed to mimic the taste and texture of meat to a greater extent than earlier iterations. These products can be made to resemble any type of meat, such as pork, chicken, or beef. Recent analysis found that none of the qualities commonly attributed to ultra-processed foods (e.g., high caloric density, fast eating rate, fast energy intake rate, soft texture, hyper-palatable, inexpensive, and low satiety) apply to plant-based meat alternatives more so than to beef.[9]

Miso



Miso is a rich, salty condiment that characterizes the essence of Japanese cooking. The Japanese use miso to flavor a variety of foods including miso soup. A smooth paste, miso is made from soybeans and a grain such as rice, plus salt and a mold culture, and then aged in cedar vats for one to three years. Miso should be refrigerated and can usually be kept for more than a year. Use miso to flavor soups, sauces, dressings, marinades, and pâtés.

9. Messina M, Sievenpiper JL, Williamson P, Kiel J, Erdman JW. Perspective: Soy-based meat and dairy alternatives, despite classification as ultra-processed foods, deliver high-quality nutrition on par with unprocessed or minimally processed animal-based counterparts. Adv Nutr. 2022;13:726-38.

Soy Protein Ingredients

Soy protein ingredients include soy flour (~50% protein), soy protein concentrate (~70% protein), and soy protein isolate (~90% protein). These versatile ingredients are available in powdered or textured form and found in a wide range of foods to boost the protein content or to deliver specific textural or functional properties. Soy protein isolates, in particular, are valued for their high protein quality and content and versatility in beverages, nutrition bars, and other nutritional products. A considerable amount of clinical work which has examined the health effects of a range of concentrated sources of soy protein is generally supportive of a positive health impact.[10]

Soybean Oil

Soybean oil, more commonly known as vegetable oil, has a heart-healthy fatty acid profile as it is comprised of almost 90% unsaturated fatty acids, about two-thirds of which is linoleic acid. Soybean (vegetable) oil provides essential omega-3 and omega-6 fatty acids. It has a neutral flavor and a high smoke point, making it perfect for many uses from frying to baking.



Soybeans

As soybeans mature in the pod, they ripen into a hard, dry bean. Although most soybeans are yellow, there are also brown and black varieties. Whole soybeans (an excellent source of protein and dietary fiber) can be cooked and used in sauces, stews, and soups. Whole soybeans that have been soaked can be roasted for snacks. Dry whole soybeans should be cooked before eaten.

10. Messina M, Perspective: Soybeans Can Help Address the Caloric and Protein Needs of a Growing Global Population, Frontiers in Nutrition, 2022; https://doi.org/10.3389/fnut.2022.909464.

Soymilk

Soybeans soaked, ground fine, and strained produce a fluid called soymilk. Plain, fortified soymilk is a good source of high-quality protein and an excellent source of B12 vitamins. Systematic review and meta-analysis of 17 randomized controlled trials comparing the effects on health outcomes of cow's milk to soymilk showed that soymilk consumption may result in small to moderate reductions in blood pressure, low-density lipoprotein cholesterol (LDL-C) levels, and inflammation.[11] Soymilk is commonly found in aseptic containers (nonrefrigerated, shelf stable), but also can be found in quart and half-gallon containers in the dairy case at the supermarket. Soymilk is also sold as a powder that must be mixed with water.



Soynut Butter

Made from roasted, whole soynuts, which are then crushed and blended with soybean (vegetable) oil and other ingredients, soynut butter has a slightly nutty taste.

Tempeh

Tempeh, a traditional Indonesian food, is a chunky, tender soybean cake. Whole soybeans, sometimes mixed with another grain such as rice or millet, are fermented into a rich cake of soybeans with a smoky or nutty flavor. It can last for months in the refrigerator, and even longer in the freezer. Tempeh can be marinated and grilled and added to soups, casseroles, or chili.



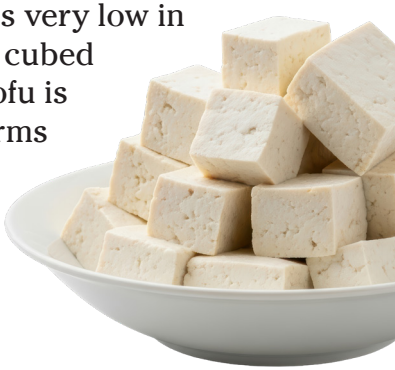
11. Erlich MN, Ghidanac D, Blanco Mejia S, et al. A systematic review and meta-analysis of randomized trials of substituting soymilk for cow's milk and intermediate cardiometabolic outcomes: under- standing the impact of dairy alternatives in the transition to plant-based diets on cardiometabolic health. BMC Med. 2024;22:336.

Textured Vegetable (Soy) Protein (TVP)

TVP is made from dehydrated soy flour and rich in protein. If stored properly in a dark airtight container, it will last over a year in the pantry. To use, rehydrate with hot water or broth. It can be added to soups, sauces, or any dish requiring a ground protein.

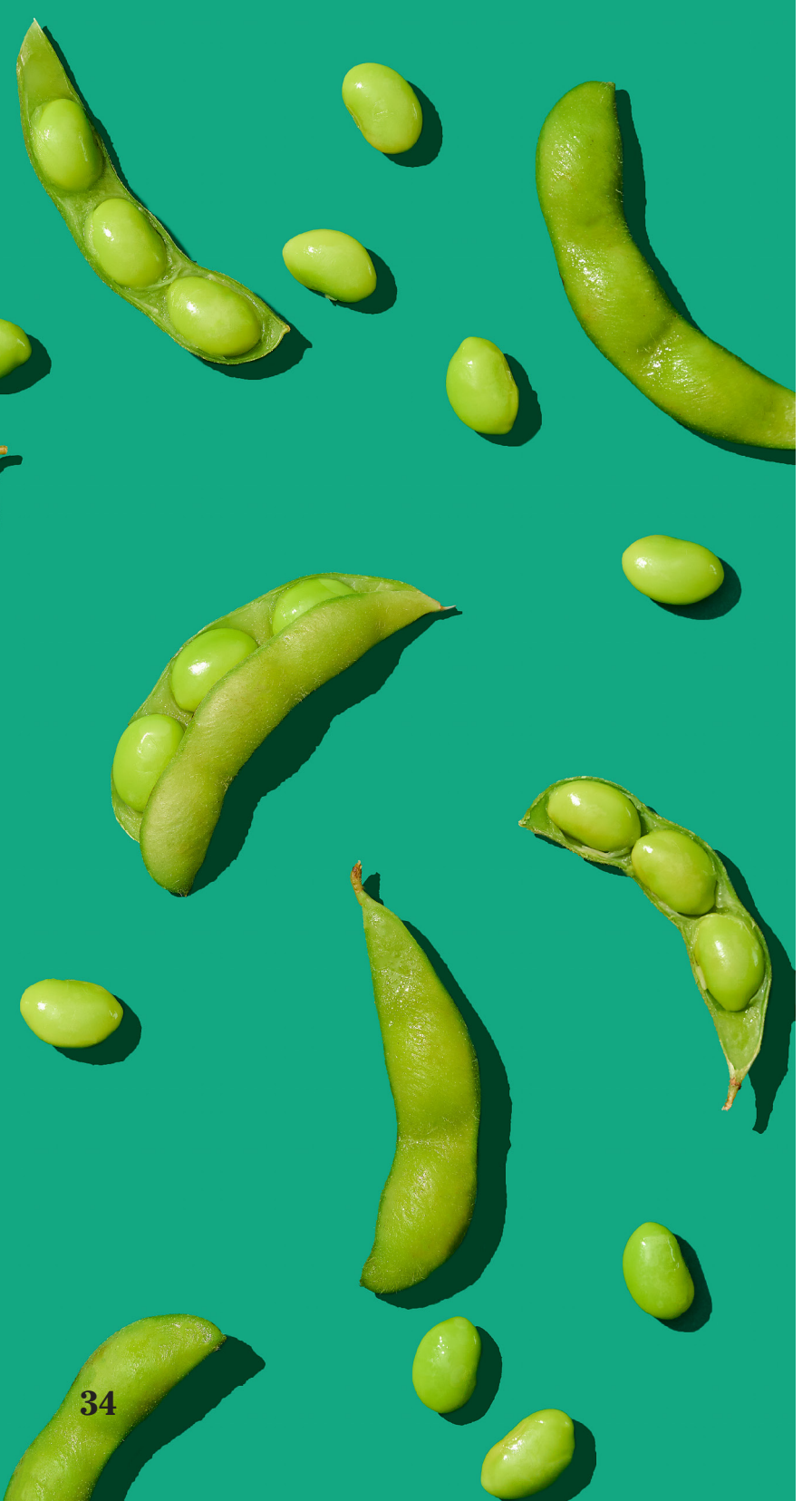
Tofu and Tofu Products

Tofu, also known as soybean curd, is a soft, cheese-like food made by curdling fresh, hot soymilk with a coagulant. Tofu is a bland product that easily absorbs the flavors of other ingredients with which it is cooked. Tofu provides high-quality protein and is very low in sodium. Firm tofu is dense and solid and can be cubed and served in soups, stir fried, or grilled. Firm tofu is higher in protein, fat, and calcium than other forms of tofu. Soft tofu is good for recipes that call for blended tofu. Silken tofu is a creamy product and can be used as a replacement for sour cream in many dip recipes.





Explore more soy ingredient information at USsoy.org.



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