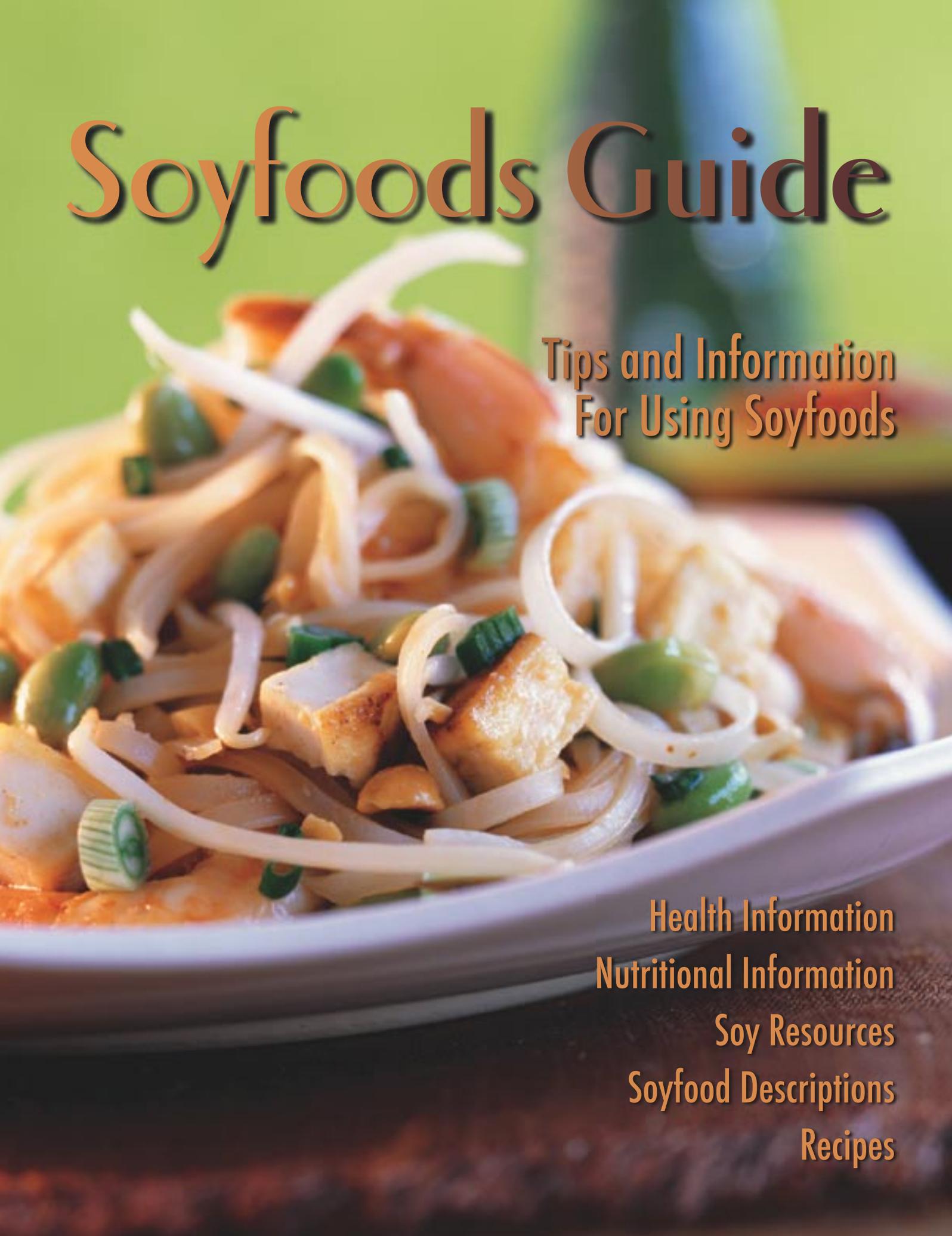


Soyfoods Guide

A close-up photograph of a bowl of stir-fried rice noodles. The noodles are light-colored and appear to be coated in a sauce. They are topped with fresh bean sprouts, sliced green onions, and pieces of golden-brown fried tofu. The background is a soft, out-of-focus green, suggesting a natural setting.

Tips and Information
For Using Soyfoods

Health Information
Nutritional Information
Soy Resources
Soyfood Descriptions
Recipes

Soybean Oil

...more than you know

Although this *Soyfoods Guide* contains information primarily about soy protein, another major component of the soybean, soybean oil, is the most widely used vegetable oil in the country. Liquid soybean oil is low in saturated fat and high in poly- and monounsaturated fats and is among the most healthful of all edible oils. It is also one of the few nonfish sources of omega-3 polyunsaturated fatty acids, which may be beneficial in helping to prevent cancer and heart disease.

Although liquid soybean oil is used in a number of products, including salad dressings, cooking oils, and some brands of margarine, other food applications require a more solid form of oil for increased stability and texture. Hydrogenation is the process of rearranging the chemical structure of a liquid oil to make it more solid, which also produces trans fatty acids.

Hydrogenated vegetable oils became very popular in the '70s and '80s as a replacement for oils that are high in saturated fat, such as lard, tallow, and some tropical oils.

More recent research suggests that trans fatty acids may behave similarly to saturated fats in the body, and the Food and Drug Administration (FDA) decided to require food manufacturers to list trans fatty acid content on the Nutrition Facts panel on food labels. In the meantime, the soybean industry is working diligently on creating new varieties of soybeans that will produce a more healthful oil

that does not require hydrogenation. Simultaneously, soybean processors are developing new oil-processing techniques that prevent the formation of trans fat.

It is important to keep in mind that even today, trans fats represent only 2.6 percent of the average American's total caloric intake, whereas saturated fats represent approximately 12.5 percent of total calories. Most health authorities do not recommend replacing trans fats with saturates, and instead advocate reducing the total amount of fat in the diet. The American Heart Association's Nutrition Committee suggests total fat intake be less than 30 percent of total calories. The best advice is to look for oils that are high in poly- and monounsaturated fat and relatively low in saturated fat, such as liquid soybean oil.



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Revisiting the Importance of Soyfoods as Sources of Protein

By Mark Messina, PhD, Adjunct Professor, Department of Nutrition, Loma Linda University, and president of Nutrition Matters, Inc.

The popular view of soyfoods has changed considerably in the last few decades. Once considered to be merely a good protein source for vegetarians and other health conscious people, today these foods are consumed at least once a week by 30 percent of Americans. The current interest in soy is due less to its protein content and more to reports suggesting it may reduce risk of a variety of chronic diseases including cancer, heart disease, and osteoporosis.

The current perspective on soyfoods has merit. International scientific symposia addressing the role of soy in chronic disease prevention and treatment have been held every one to two years since 1994 and more than 10,000 soy-related articles have been published in the scientific and medical literature during the past 15 years. Furthermore, more than 25 clinical trials have examined the impact of soyfoods or soybean isoflavones on bone loss in postmenopausal women and three, large, long-term government-funded trials are currently underway.¹

Also, in 1999, the FDA approved a health claim for soy and coronary heart disease based on the cholesterol-lowering properties of soy protein.² And the National Cancer Institute has been actively investigating and funding research on the anti-cancer effects of soyfoods and soybean constituents for 15 years.³ There is no doubt that few foods

have attracted the attention of the scientific community as much as soy.

So eating soyfoods in hopes of preventing chronic disease makes sense. But anyone who even causally follows media coverage of nutrition knows that, when it comes to chronic disease research, inconsistency and conflicting findings are the norm. Whether it is studies examining the relationship between vitamin E and heart disease, calcium and osteoporosis, folate and heart disease, or low-fat diets and cancer, most of the findings vary over time. To some extent, this inconsistency is not surprising, however.

Studying the impact of diet on chronic disease risk is no easy feat. Chronic diseases like osteoporosis, cancer, and heart disease take years to develop and ideally, should be studied in large groups of individuals. Unfortunately, the enormous cost of intervention trials limits their size and duration; these limitations enhance the likelihood of this research producing inconsistent results. While the scientific literature regarding the disease-preventive aspects of soyfoods is also inconsistent, there is no reason for this to dampen enthusiasm for soyfoods. As discussed below, on the basis of nutrient content alone – especially protein content – adding more soyfoods to your diet makes a lot of sense. So in a sense it is a time to revisit that older view of soyfoods.

Changing Perspectives on Dietary Protein

As late as 1939, nutritionist J. S. McLester, in his book *Nutrition and Diet in Health and Disease*, credited the consumption of large amounts of animal protein (far in excess of current recommendations) with the accomplishments of Western civilization.⁴ And between 1950 and 1975 the Nutrition Division of the Food and Agriculture Organization considered protein deficiency to be the most serious and widespread problem in the world.⁵ As it was later recognized the problem wasn't really a lack of protein as much as it was simply a lack of calories. Part of this misunderstanding was because recommendations

Although typical Western protein intake exceeds dietary requirements, often subsets of the population don't meet recommendations. For example, in the United States this is the case for about 30% of adult females overall and about 40% of men and women over 70 years of age.¹² For this reason, and because of the possible advantages of higher-protein diets, it has become increasingly important for the public to have access to healthy sources of protein-rich foods. Evidence indicates that soyfoods are excellent choices as they are low in saturated fat and rich in high-quality protein. Furthermore, unlike animal protein, soy protein doesn't adversely affect kidney function.^{13, 14}

There is impressive evidence indicating that protein intakes exceeding the RDA may be useful for weight management, helpful for preventing osteoporosis, and promoting overall health.

were derived from infant protein requirements that were mistakenly estimated to be three times higher than they are now known to be.

In the 1970s protein began to fall out of favor. In fact, arguments were made that the recommended dietary allowance (RDA) was too high. In part, this was because of epidemiologic observations showing that populations with lower rates of chronic diseases consumed less overall protein and especially, much less animal protein. Later, high protein diets were seen as increasing risk of osteoporosis and possibly cancer and heart disease. Protein was known to detrimentally affect kidney function.

But once again the pendulum has swung back. Today, there is impressive evidence indicating that protein intakes exceeding the RDA may be useful for weight management,⁶⁻⁸ and helpful for preventing osteoporosis^{9, 10} and promoting (via muscle synthesis) overall health.¹¹ Given the worldwide obesity epidemic, the possibility that protein helps to maintain ideal body weight is particularly intriguing.

Soyfoods as Sources of Protein

Soyfoods are generally high in protein relative to most plant foods. For example, protein typically represents between 20% and 30% of the total caloric content of legumes but, in the case of soybeans, this figure is about 35%. Consequently, whole soybeans and many traditional soyfoods, such as tofu and tempeh, provide significant amounts of protein. Meat substitutes and beverages made using soy protein products (often referred to as Western soy products) such as isolated soy protein, soy protein concentrate, and soy flour which by definition are at least 90%, 65%, and 50% protein, respectively, often provide 15 grams per serving. A 1/4-cup serving of soynuts provides 15 grams of protein. Equally important, the quality of soy protein is excellent.

Protein quality is determined by two factors: how well the amino acid (the building blocks of protein) pattern matches the biological requirement for amino acids, and how well a given protein is digested. On both counts soy protein comes off quite well. When

consumed at the protein RDA (0.8 g/kg body weight), soy protein provides both the essential and non-essential amino acids in amounts sufficient to meet biological requirements.^{15, 16} The digestibility of soy products is also quite good.¹⁷ Not surprisingly, most soy protein products have a protein score that is very high^{18, 19} and for this reason soy protein is considered to be a complete protein similar in quality to milk and meat protein.^{17, 20, 21} Accordingly, in 2000, the U.S. Department of Agriculture allowed soy protein (and other high-quality proteins) to replace 100% of meat protein in the Federal School Lunch Program.²⁰ To qualify for complete substitution, a protein must have a value that is at least 80% that of milk protein.

Despite the high quality of soy protein, questions are sometimes raised about the value of soyfoods for supporting increases in lean body mass (muscle) in response to resistance exercise.²² However, research indicates this concern is unfounded. For example, in a small study of older men undergoing a 12-week resistance-training program, no statistically significant differences in muscle growth, body composition, and maximal dynamic strength were noted between participants consuming a diet in which 60% of the protein was derived from beef, or a lactoovovegetarian diet in which 60% of the protein was derived from textured vegetable (soy) protein.²³ In both groups, men improved from 14 to 38 percent.

Even stronger data come from a recently published study by Candow et al.²⁴ In this study, 27 young adults underwent a six-week resistance training program during which their diets were supplemented with 1.2 g/kg soy protein, whey protein, or carbohydrate. Each subject completed all three phases. Lean muscle mass increased with training in all three groups; the increase in the protein supplemented groups was significantly greater than the control but there were no differences between the soy and whey groups. Similar changes were noted in regard to the squat and bench press; all three groups experienced increases, the increases in the soy and

whey were greater than the control, and there were no differences between the two protein-supplemented groups.

Fatty Acid Profile

As was recently highlighted by the American Heart Association, soyfoods are a convenient means by which to displace more traditional sources of protein in the U.S. diet, many of which are high in saturated fats.²⁵ This is because soybean oil (and the fat found in soyfoods) has an excellent fatty acid profile. About 85% of the total fat is unsaturated, mostly in the form of the essential omega-6 fatty acid, linoleic acid. When replacing saturated fat, linoleic acid lowers blood cholesterol levels. Furthermore, the soybean is one of the few good plant sources of the omega-3 fatty acid, α -linolenic acid; about 7% of soybean oil is comprised of this fatty acid.²⁶ Not only is this fatty acid essential but some evidence indicates that α -linolenic acid exerts independent coronary benefits.²⁷

Summary and Intake Recommendations

Many Americans do not meet the RDA for protein and intriguing research suggests protein intakes above the RDA may be helpful for weight management. Therefore, there is a need for a variety of healthful sources of protein. Evidence indicates that soyfoods are good choices in this regard. They provide high-quality protein but are low in saturated fat. In addition, there is research suggesting that soyfoods may have a role in reducing risk of chronic disease including certain cancers, osteoporosis, and coronary heart disease. Thus, soyfoods can be viewed as protein-rich foods that can make important contributions to an overall healthful diet. Americans would benefit by consuming 15-20 grams (2-3 servings) of soy protein daily. That amount represents only about 25% of overall protein intake and thus soy would simply be one other healthy source of protein in the U.S. diet.

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I'll have a Latte with Soymilk, Please ...musings on the evolution of soyfoods

By Kim Galeaz, a registered and certified dietitian, freelance nutrition and culinary consultant based in Indianapolis, Indiana

I still can't get over how omnipresent soyfoods seem today. That may be a slight exaggeration, but soyfoods really do seem to be everywhere. Take coffee shops, for example. Who would have ever dreamed of hearing someone order a morning cup of coffee, latte or cappuccino with soymilk, let alone see the words soymilk on the menu board? Who could have imagined that at the world's largest fast food chain, McDonald's, you'd be able to find edamame? Yes, edamame – tasty, crunchy, green sweet soybeans – is on their Asian salad.

In my unscientific opinion, when something makes it on the menu at McDonald's and Starbucks, that pretty much means it commonplace and accepted by the masses.

The popularity contest with new foods usually starts in the supermarket and then ends in the restaurant. For example, do you remember when just about the only soyfoods you could find in the supermarket were soymilk in the aseptic carton, water-packed tofu, tempeh, miso and canned or dried soybeans? Maybe a veggie burger or two in the freezer case?

But today, nearly every supermarket offers soyfoods in the produce area, freezer case, dairy case, canned goods aisle and even the specialty foods and/or nutrition area. You have hundreds of soyfoods to choose from.

In addition to Asian restaurants with traditional tofu or tempeh stir-fries and miso soup, you'll find casual dining places offering soy veggie burgers. Trendier restaurants feature edamame (pronounced ed-a-MAH-may) as an appetizer, on salads or even as a side vegetable.

Join me as we take a look at just how far soyfoods have come over the years, evidenced not only by sheer numbers of products, but by how easily they fit into everyday life.

Breakfast

Soymilk over your favorite cereal was probably the original breakfast choice with soyfoods. But now you can pour soymilk over any number of soy cereals.

Soy flakes, soy flakes with raisins, soy granolas and soy O-shaped cereals can be topped with your favorite flavor of soymilk. Soymilk choices have evolved from just shelf-stable aseptic packages to refrigerated cartons in the dairy case right along side other milk. Plus, you have fat-free, low-fat and full-fat, just like regular milk.

Oh but there's more, like soymilk varieties with no sugar added, enhanced with not just calcium, but additional vitamins and minerals and even fiber and the ever-important omega-3 fatty acids.

What about waffles? You can make them from scratch with soy flour and soymilk, or you can just buy the frozen ones, heat and eat.

Breakfast and brunch casserole recipes can be made with soy ingredients, from soy cheese and soymilk to tofu and sausage-style crumbles. Even breakfast convenience products are available that include eggs, veggie sausage, potatoes, onions and green peppers.

Smoothies are the perfect drinkable breakfast. Add fruit to soymilk, tofu and/or soy protein isolate powder to a blender and you are on your way. Soy protein powders come in convenient canisters and flavors such as vanilla, chocolate and strawberry. If you're going to tell me you don't even have time to plop ingredients in a blender before you rush out the door, soyfoods are a step ahead of you. Convenient single-serve containers of pre-made blueberry, peach, mango, raspberry or strawberry smoothies, with or without live active cultures, can be found in the refrigerated case today.

Smoothies are the perfect drinkable breakfast. Add fruit to soymilk, tofu and/or soy protein isolate to a blender and you are on your way.

Stir some of that soy granola in soy yogurt. Soy yogurt is available in 6 oz. single serve, one quart sizes and flavors from blueberry to raspberry.

If you're looking to spread some soy on that morning whole grain bagel, English muffin or toast, simply open a jar of soynut butter. But first you'll need to decide if you want creamy, chunky, creamy or chunky with honey, or creamy or chunky unsweetened. Whew. Just like the peanut butter aisle.

Don't forget that morning cup of coffee, either. Whether you're at home or a coffee shop, you can add soymilk or plain or flavored soymilk coffee creamers.

Quick & Easy Family Meals

Vegetables

We all need to eat more vegetables, so if you're bored with the usual repertoire of corn, green beans and carrots, add some variety with soybeans. Three soybeans, to be exact, will work perfectly for family meals - yellow, black and green. Choose the traditional dried or canned yellow (also known as white or tan) soybeans. Substitute them for other white beans in any favorite dish. Canned black soybeans are almost exactly like typical black beans, only with a little more protein.

Green sweet soybeans (edamame) are the shining star when it comes to family-friendly vegetables. Over the years, parents have told me their toddler, child or teen that never eats vegetables WILL eat green sweet soybeans! I suspect it's because they are sweet (sweeter than any other soybean), have just the right crunch and are a welcome "new" vegetable. They're available fresh or frozen. (For meals, use green sweet soybeans that have been shelled; save in-the-pod edamame for an impressive appetizer at your next party!) Just like the array of frozen vegetable blends in the freezer case, you'll find veggie blends with green sweet soybeans, too. Look for bags of frozen garden blends, oriental blends and even a soy succotash – edamame instead of lima beans with corn!

Make soups with edamame (Minestrone) or sprinkle them on your mixed green lettuce salads along with soy shredded cheese (Swiss, Italian-blend, provolone, Pepperjack or cheddar) and top with a soymilk or tofu based salad dressing. You'll find traditional types like Ranch, Italian, 1000 Island and Dill.

Main Entrée

Soy pastas are now available in six different shapes – elbow macaroni, penne, angel hair, spaghetti, rotini and lasagna – so many kid-favorite entrees can be

prepared with this “you can’t tell the difference” soy product. Make macaroni and cheese, spaghetti and meatballs – oh yes, there are even pre-made soy meatballs today – and lasagna with soy pasta. But what about that all-time family movie night favorite? Pizza can be made practically all soy by using soy parmesan, mozzarella or provolone style cheeses, soy sausage-style crumbles and soy pepperoni slices.

One of the most consumer-friendly soy products is burger-style crumbles. These precooked frozen or refrigerated crumbles look and taste like ground beef. Use them in any recipe calling for ground beef – chili, spaghetti sauce, sloppy Joes, lasagna taco and burrito filling, stuffed peppers and casseroles. Since these crumbles are precooked, they just need to be heated thoroughly. The old-fashioned version of these crumbles was – and still is – textured (soy) vegetable protein, a dry crumbled soy product. Busy moms and families will welcome not having to rehydrate textured soy protein.

But if all these dishes with soy ingredients still sounds like too much cooking for you, then reach for an already prepared entree. Either refrigerator or frozen, you can find chili, lasagna, meatballs, macaroni & cheese, penne with tomatoes and other Mexican, Mediterranean and Thai flavored entrée dishes. Microwave. Eat.

Throw together a Dagwood deli sandwich with soy deli slices in traditional flavors such as ham, roast beef, turkey, bologna, Philly steak style or Italian salami. Add a couple slices of soy American cheese and tofu-based mayonnaise. Several tortilla/wraps are available today with soy protein ingredients, so you can enjoy your personal wrap with nearly all the ingredients from soy.

Tofu, that ubiquitous soyfood, has thankfully become more consumer-friendly over the years. Tofu, the actual word, needs a serious makeover, though, if it wants to be more socially accepted. Most people

can pronounce tofu, but they just don’t like the way it sounds. Or looks. Tofu is very odd and unfamiliar to most people and they just don’t know what to do with “that white blob.” Of course you can cube it for stir fry dishes and choose between aseptic or water packed, and even soft, firm or extra firm. But skeptical cooks can now buy tofu already seasoned and baked. Consider these common flavors: Thai, teriyaki, tomato basil or lemon pepper.

Rest assured, if chocolate is your snack of choice, there *are* chocolate soy snacks

For the lazier cook who doesn’t even want to chop or dice, there are precut tofu chunks, already flavored with Asian, Cuban, Mediterranean, lime or teriyaki seasonings.

Super Snacks

Rest assured, if chocolate is your snack of choice, there *are* chocolate soy snacks. Specifically, chocolate covered soynuts in either milk chocolate or better-for-you dark chocolate. You’ll get a double-dose of heart-healthy benefits by popping a handful of these from the soy protein in the soynuts and phytochemicals in the dark chocolate. Here’s another chocolate choice, too; chocolate soynut butter is now available and spreads beautifully on bananas or apples for a super-healthy snack.

Soynuts, roasted soybeans, can be found in just about any flavor imaginable now. Tired of snacking on the plain salted or unsalted ones? Try ranch, barbecue, sour cream & onion or wasabi. Dry roasted edamame (green sweet soybeans) are also available today in salted and wasabi flavors.

I haven’t even touch on party or holiday foods, desserts, or even grilling out, but you probably get the idea that soyfoods are everywhere and can be used for almost any occasion or dish. So, don’t be afraid to try something a little different. You never know, you might just like it!

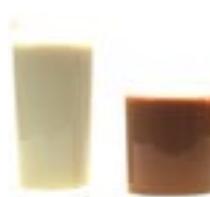
How Soy Fits Into the USDA's Food Pyramid



The Dietary Guidelines for Americans gives science-based advice on food and physical activity choices for health. To see the full 80-page Dietary Guidelines report, go to www.healthierus.gov/dietaryguidelines/.

Soyfoods can be an important part of a healthy diet as proscribed by the new USDA food pyramid. Most soyfoods contain no cholesterol, little or no saturated fat, high quality protein, and dietary fiber. Many soyfoods also provide essential vitamins and minerals, such as B vitamins, vitamins A and D, calcium, iron, and potassium.

Soy protein may help to reduce the risk of heart disease by lowering cholesterol and increasing the flexibility of blood vessels. Soybeans also contain important bio-active components that have begun to show promise in relieving menopausal symptoms, maintaining healthy bones, and preventing cancer.



Grains

- Soy cereal
- Soy grits
- Soy waffles
- Soy pasta
- Soy bread
- Soy flour

Consuming at least three or more ounce-equivalents of whole grains per day can reduce the risk of several chronic diseases and may help with weight maintenance.

Soy flour is part of this group. Substitute up to one-fourth of the total flour in your favorite baked product recipe.

Vegetables

- Green soybeans (edamame)
- Canned soybeans
- Soynuts

One-half cup of green soybeans (edamame) contains 10 grams of soy protein.

All soybeans are a good source of dietary fiber and isoflavones.

Fruits

- No soy-based foods in this category.

Any fruit or 100% fruit juice counts as part of the fruit group. Fruits may be fresh, canned, frozen, or dried, and may be whole, cut-up, or pureed.

Oils

- Soybean oil (also called vegetable oil)

Soybean oil is rich in polyunsaturated fat and contains only minimal saturated fat. Fats, like soybean oil, are needed to regulate your body temperature.

Fats, like soybean oil, help transport fat-soluble vitamins throughout your body.

Soybean oil is a rich source of omega-three fatty acids.

Soybean oil, labeled "vegetable oil," is a good source of the antioxidant Vitamin E.

Milk

- Soy beverage
- Soy cheese
- Soy yogurt
- Soy ice cream

According to the new USDA food guidelines, protein choices for those who do not consume milk products include calcium-fortified soy beverages, soybeans, soy yogurt, soy cheese, and tempeh.

Soy ice cream products are a part of this group, but do not contain as much calcium or protein as the other soy products in this group.

Meat & Beans

- Soy burgers
- Soy hot dogs
- Soy nuggets
- Soy burger-type crumbles
- Tofu
- Soynuts
- Canned soybeans
- Green soybeans (edamame)
- Soy nut butter

According to the new USDA food guidelines, protein choices in this category include all of the above listed soyfoods.

Soybeans are a source of high-quality protein and include all eight of the essential amino acids.

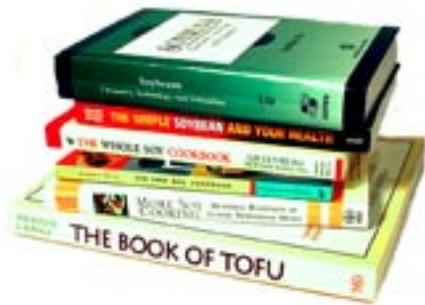
For more information about soyfoods, visit the web site www.soybean.org.

For more information about the USDA Dietary Guidelines Food Pyramid: www.mypyramid.gov

Soyfoods Composition

Soyfood	Calories	Protein (grams)	Fat (grams)	Carbohydrates (grams)	Fiber (grams)	Calcium (Mg)	Iron (Mg)	Zinc (Mg)	Thiamine (Mg)	Riboflavin (Mg)	Niacin (Mg)	Vitamin B (Mg)	Folate (Mcg)	Sugar (grams)	Sodium (Mg)	Phosphorus (Mg)	Potassium (Mg)
Miso (2 tsp)	21	1.1	.61	2.8	.5	7	.27	.33	.01	.025	.086	.022	3	.47	365	15	16
*Soy Burgers (1 burger)	103	10	3	8.3	3.3	-	-	-	-	-	-	-	-	.7	243	-	-
*Soy Cheese, Cheddar, singles (1 slice)	40	4	3	0	0	-	-	-	-	-	-	-	-	0	185	-	-
*Soy Cheese, Mozzarella, singles (1 slice)	20	2	0	3	0	-	-	-	-	-	-	-	-	1	220	-	-
*Soy Chik Pattie (1 pattie)	150	9	6	15	2	-	-	-	-	-	-	-	-	1	570	-	-
*Soy Crumbles (2/3 cup)	70	9.6	.8	5.3	2	-	-	-	-	-	-	-	-	1	256	-	-
Soy Flour, Defatted (1 cup)	33	4.7	.12	3.84	1.8	24	.92	.25	.07	.025	.26	.057	305	-	2	67	238
Soy Flour, Full-fat, roasted (1 cup)	375	29.6	18.5	28.6	8.2	160	4.9	3.0	.35	.80	2.8	0	193	-	10	405	1735
Soy Flour, Low-fat (1 cup)	327	41	5.9	33.4	9	165	5.27	1.0	.33	.25	1.9	.46	361	-	16	522	2262
*Soy Hot Dog (1 dog)	62	11.3	1.5	2.6	3.3	-	-	-	-	-	-	-	-	.3	323	-	-
Soy Protein Concentrate (1 oz.)	94	16.5	.13	8.8	1.6	103	3.0	1.2	.09	.04	0.2	.04	96	-	1	238	624
Soy Protein Isolate (1 oz.)	96	22.8	1.0	2.0	1.6	50	4.1	1.1	.05	.03	0.4	.03	50	-	285	220	23
*Soy Protein, Textured (1/4 cup)	80	12	0	7	4	-	-	-	-	-	-	-	-	3	2	-	-
*Soy Sausage Pattie (1 pattie)	55	7.2	1.5	4.5	1.2	-	-	-	-	-	-	-	-	.8	235	-	-
*Soy Yogurt (8 oz.)	150	5	3.5	24	1	-	-	-	-	-	-	-	-	13	40	-	-
*Soybeans, Canned, Yellow (1/2 cup)	150	13	7	11	3	-	-	-	-	-	-	-	-	3	140	-	-
*Soybeans, Canned, Black (1/2 cup)	120	11	6	8	7	-	-	-	-	-	-	-	-	1	30	-	-
*Soybeans, Green in pod (1/2 cup)	100	8	3	8	1	-	-	-	-	-	-	-	-	1	10	-	-
*Soybeans, Green bean (2/3 cup)	105	9.5	4	10	8	-	-	-	-	-	-	-	-	2	3.5	-	-
*Soybeans, Roasted (1/4 cup)	136	10	6	8	5	-	-	-	-	-	-	-	-	1	24	-	-
Soymilk (1 cup)	120	9.19	5.1	11.3	3.2	10	1.4	.05	.39	.17	.36	0	5	-	29	120	345
*Soynut Butter (2 Tbs)	170	8	11.6	9.8	3	-	-	-	-	-	-	-	-	2.8	113	-	-
Tempeh (1 cup)	320	30.6	17.9	15.6	-	184	4.48	1.89	.129	.59	4.3	.357	40	-	15	442	684
Tofu, Firm, Water-packed (1/2 cup)	97	10	5.6	3.7	.5	204	1.8	1.27	.11	.13	.01	.07	42	.7	10	185	222
Tofu, Firm, Silken (1 slice)	52	5.8	2.3	2.0	.1	27	0.87	.51	.08	.03	.20	.0	-	1.0	30	76	163

Source unless specified: Nutrient Database Laboratory, USDA Food Composition Data, USDA. Web Site: www.nal.usda.gov/fnic/cgi-bin/nut_search.pl
 * Information taken from commercial product nutrition facts label on package. Saturated fat is not listed because most soy-based products have insignificant amounts of saturated fat. (-) Information not available on nutrition label or USDA database.



Books

- *Soybeans, Chemistry, Technology, and Utilization*, by KeShun Liu
- *The Simple Soybean and Your Health*, by Mark Messina and Virginia Messina
- From the Illinois Center for Soy Foods, Barbara Klein, Editor
 - *Textured Vegetable Protein in the American Kitchen*
 - *Tofu in the American Kitchen*
 - *Around the World with Soy*
 - *Soy for the Last Minute Chef*
 - *Baking with Soy*
- *The Book of Tofu*, by William Shurtleff
- *The Soy Zone*, by Barry Sears Ph.D.

Web Sites

- www.soybean.org
- United Soybean Board - www.talksoy.com
- Stratsoy (University of Illinois) - www.stratsoy.uiuc.edu/expert/askhealth.html
- Soyfoods Association of North America - www.soyfoods.org
- Illinois Center for Soy Foods - www.soyfoodsillinois.uiuc.edu
- Soy Isoflavone Database - www.nal.usda.gov/fnic/foodcomp/Data/isoflav/isoflav.html
- Illinois Soybean Board - www.ilsoy.org
- Iowa Soyfoods Council - www.iasoybeans.com
- Michigan Soybean Promotion Committee - www.michigansoybean.org
- Missouri Soybean Council - www.mosoy.org
- Nebraska Soybean Board - newsoybeans.unl.edu
- North Dakota Soybean Council - www.ndsoybean.org
- Ohio Soybean Council - www.soyohio.org

Soy Newsletters

- Soy Connection newsletter on soy health/nutrition - www.talksoy.com

Soy Research, Health

- Soy/Health Fact Sheets: www.talksoy.com/Health/HealthFactsSheets.htm
- International Symposium on the Role of Soy in Preventing and Treating Chronic Disease: www.talksoy.com/Media/ChronDiseaseSym.htm

Soyfood Protein & Isoflavone Content

Soyfood	Serving Size	Total grams soy protein/serving	Total milligrams (mg) isoflavone/serving
Miso	1 Tablespoon	2	7
Soybeans, Green, Cooked	1/2 cup	11	50
Soybeans, Black, Cooked	1/2 cup	9	40
Soybeans, Yellow, Cooked	1/2 cup	14	78
Soybeans, Roasted, Plain	1/4 cup	15	78
Soymilk, Plain, Unfortified	1 cup	7	10
Soymilk, Plain, Fortified	1 cup	10	43
Soy Flour, Defatted	1/4 cup	12	42
Soy Flour, Full-Fat	1/4 cup	8	33
Soy Flour, Low-Fat	1/4 cup	11	50
Soy Crumbles, Meat Alternative	1/2 cup	11	9
Soy Protein Isolate Powder, Plain	1/3 cup	23	53
Textured Soy Protein, Dry	1/4 cup	11	33
Tempeh	1/2 cup	16	53
Tofu	1/2 cup	10	25

Source: Soyfoods Association of America, *Soyfood Facts*, www.soyfoods.org
 Soy protein and isoflavone levels may vary with products based on manufacturing process and the source of soy protein. Additional information on soyfood isoflavone content can be found at: *Soy Isoflavone Database* - www.nal.usda.gov/fnic/foodcomp/Data/isoflav/isoflav.html

How Does Your Garden Grow?

Want to try growing your own soybeans in the garden? Edamame, large soybeans that are harvested when the beans are still green and sweet tasting, are easy to grow in your garden. They like full sun and are adaptable to most soil types. They are ready to harvest in 65 to 90 days, and planting seeds every week or so will let you fresh soybeans throughout the summer. Edamame is best—from both a flavor and nutrition standpoint—if eaten soon after picking. Edamame is a delicious, healthy snack. Because it is something you can eat with your fingers and its flavor has a light sweetness blended with a nutty taste, edamame appeals to children and adults alike. Boil the freshly picked pods for about ten minutes in salted water. Drain the pods and serve them heaped in an attractive bowl. They are equally delectable as finger food whether served slightly warm from cooking, at room temperature, or lightly chilled. Hold the pod and gently push the beans out of the pod, pop them into your mouth, and enjoy their sweet, nutty flavor. For more information about how to grow soybeans in your garden and a list of edamame varieties, visit the National Garden Bureau’s Web site at: www.ngb.org.



Soy Flour (50% protein)

Soy flour is made from roasted soybeans ground into a fine powder. All soy flour gives a protein boost to recipes. Soy flour is 50 percent protein. However, defatted soy flour is an even more concentrated source of protein than is full-fat soy flour. Soy flour is gluten-free, so yeast-raised breads made with soy flour are more dense in texture. There are three kinds of soy flour available: Natural or full-fat, which contains the natural oils found in the soybean; defatted, which has the oils removed during processing; and lecithinated, which has had lecithin added to it.

Hydrolyzed Vegetable Protein (HVP)

Hydrolyzed vegetable protein (HVP) is a protein obtained from any vegetable, including soybeans. HVP is a flavor enhancer that can be used in soups, broths, sauces, gravies, flavoring and spice blends, canned and frozen vegetables, meats, and poultry.

Lecithin

Extracted from soybean oil, lecithin is used in food manufacturing as an emulsifier in products high in fats and oils. It also promotes stabilization, antioxidation, crystallization, and spattering control.



Soy Protein, Textured (Flour or Concentrate)

Textured soy protein usually refers to products made from textured soy flour and textured soy protein concentrates. Textured soy flour is made by running defatted soy flour through an extrusion cooker, which allows for many different forms and sizes. It contains 50 percent protein as well as the dietary fiber and soluble carbohydrates from the soybean. When hydrated, it has a chewy texture. It is widely used as a meat extender. Often referred to simply as textured soy protein, textured soy flour is sold dried in granular and chunk style and is bland in flavor. Textured soy protein concentrates are made by extrusion and are found in many different forms and sizes. Textured soy protein concentrates contain 70 percent protein as well as the dietary fiber from the soybean. When hydrated, they have a chewy texture and contribute to the texture of meat products.

Soy Grits

Soy grits are similar to soy flour except that the soybeans have been toasted and cracked into coarse pieces rather than the fine powder of soy flour. Soy grits can be used as a substitute for flour in some recipes. High in protein, soy grits can be added to rice and other grains and cooked together.



Soy Protein Isolate (Isolated Soy Protein) (90% protein)

When protein is removed from defatted flakes, the result is soy protein isolate, the most highly refined soy protein. Containing 90 percent protein, soy protein isolates possess the greatest amount of protein of all soy products. They are a highly digestible source of amino acids (building blocks of protein necessary for human growth and maintenance). Isolates are bland in flavor.

Soy Protein Concentrate (70% protein)

Soy protein concentrate comes from defatted soy flakes. It contains 70 percent protein while retaining most of the bean's dietary fiber. It is a highly digestible source of amino acids and is bland in flavor.

Soy Fiber (Okara, Soy Bran, Soy Isolate Fiber)

There are three basic types of soy fiber: okara, soy bran, and soy isolate fiber. All of these products are high-quality, inexpensive sources of dietary fiber. Soy bran is made from hulls (the outer covering of the soybean), which are removed during initial processing. The hulls contain a fibrous material that can be extracted and then refined for use as a food ingredient. Soy isolate fiber, also known as structured protein fiber (SPF), is soy protein isolate in a fibrous form.



Soybean Oil & Products

Soybean oil, also referred to as soyoil, is the natural oil extracted from whole soybeans. It is the most widely used oil in the United States, accounting for more than 75 percent of our total vegetable fats and oils intake. Oil sold in the grocery store under the generic name "vegetable oil" is usually 100 percent soybean oil or a blend of soybean oil and other oils. Read the label to make certain you're buying soybean oil. Soybean oil is cholesterol free and high in polyunsaturated fat. Soybean oil also is used to make margarine and shortening.



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Green Vegetable 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 high in protein and fiber and contain no cholesterol. Green soybeans are sold frozen in the pod and shelled.

Natto

Natto is made of fermented, cooked whole soybeans. Because the fermentation process breaks down the beans' complex proteins, natto is more easily digested than whole soybeans. It has a sticky, viscous coating with a cheesy texture. In Asian



Soy Protein Products (Meat Analogs)

Protein products made from soybeans contain soy protein or tofu and other ingredients mixed together to make a protein product. These protein products are sold as frozen, canned, or dried foods. Usually, they can be used the same way as the foods they replace. With so many different protein products available to consumers, the nutritional value of these foods varies considerably. Generally, they are lower in fat, but read the label to be certain. Protein products made from soybeans are excellent sources of protein, iron, and B vitamins.

Soy Beverages

Soy beverages can be made with soymilk or isolated soy protein. Flavorings or fruit juices may be added. They can be purchased ready to drink or in a dry-powder form to which liquid is added.



Soy Cheese

Soy cheese is made from soymilk. Its creamy texture makes it an easy substitute for most cheeses, sour cream, or cream cheese and can be found in a variety of flavors. Products made with soy cheese include soy pizza.

Whipped Toppings, Soy-Based

Soy-based whipped toppings are similar to other nondairy whipped toppings, except that hydrogenated soybean oil is used instead of other vegetable oils.

Infant Formulas, Soy-Based

Soy-based infant formulas are similar to other infant formulas except that a soy protein isolate powder is used as a base. Carbohydrates and fats are added to achieve a fluid similar to breast milk. The American Academy of Pediatrics says that for term infants whose nutritional needs are not being met from maternal breast milk or cow milk-based formulas, isolated soy protein-based formulas are safe and effective alternatives to provide appropriate nutrition for normal growth and development.



Soy Nut Butter

Made from roasted, whole soynuts, which are then crushed and blended with soybean oil and other ingredients, soynut butter has a slightly nutty taste, significantly less fat than peanut butter, and provides many other nutritional benefits as well.

Soy Yogurt

Soy yogurt is made from soymilk. Its creamy texture makes it an easy substitute for sour cream or cream cheese. Soy yogurt can be found in a variety of flavors in natural food stores.



Nondairy Soy Frozen Desserts

Nondairy frozen desserts are made from soymilk or soy yogurt. Soy ice cream is one of the most popular desserts made from soybeans.

Whole Soybeans (dry, canned, green)

Soybeans belong to the legume family and are native to East Asia. Soybeans can be purchased as dry whole soybeans, canned yellow or black soybeans, and green (fresh or frozen) and shelled or in the pod.

Green Soybeans (Fresh, Frozen)

Green vegetable soybeans (also called edamame) are harvested at 80 percent maturity. Edamame soybeans are a special bean variety that are bigger and sweeter than traditional soybeans grown in fields by most farmers. Cooked and lightly salted, these little green beans are a popular snack in Asia. These beans are often sold in the freezer section of natural food stores and should be stored in the freezer. Fresh beans, purchased still in the pod, should be cooked and stored in the refrigerator.

Whole, Dry Soybeans

Soybeans are harvested when they are fully mature and dry. As soybeans mature in the pod, they ripen into a hard, dry bean. Whole, dry soybeans can be found in grocery and health food stores.

Most soybeans grown in fields by farmers are smaller than food-grade beans used to make tofu and soymilk. Field beans may be cleaned and used in recipes after they have been soaked and cooked.

Do not eat soybeans raw. Soybeans must be cooked to destroy the protease inhibitor found in soybeans. Heat treatment is necessary to decrease the activity of the inhibitors and improve the digestibility of the proteins.

Storing

Dry soybeans can be stored in an airtight container for long periods of time. Cooked soybeans, both yellow and black, are available in cans in natural food stores.

Cooking Tips

- Do not add salt or acidic ingredients (such as tomatoes, lemon juice, or vinegar) to yellow soybeans until they are thoroughly cooked. Acidic products delay the softening process. However, you may add these when cooking black soybeans to help them retain their shape.
- One 15-ounce can of white or black soybeans is equal to 1 1/2 cups of cooked soybeans.
- Substitute canned soybeans (white or black) in your favorite recipes that call for beans.
- Substitute green cooked soybeans in recipes that call for green peas or beans.

Cooking Dry Soybeans

- Soak soybeans in 4 cups of water for each cup of beans for 8 hours or overnight. If you soak beans longer than 8 hours, place them in the refrigerator.
- Drain and rinse the beans, then add 4 cups of fresh water for each cup of beans you started with.
- Bring to a boil, reduce heat, and skim off excess foam. Simmer about 3 hours, adding more water as needed, until beans are tender. They will remain somewhat firm compared to cooked navy beans.

Yield: 1 cup dry beans = 2-3 cups cooked beans.

Pressure Cooker Method

- Place presoaked (8-12 hours soaked), drained, and rinsed beans in a pressure cooker.
- Add 4 cups of water plus 2 tablespoons of cooking oil for the first cup of beans, and 3 cups of water and 2 tablespoons of vegetable oil for each additional cup of beans (oil controls foaming).
- Do not fill the cooker above the halfway mark! Cook with fifteen pounds of pressure for 9 to 12 minutes.
- Quickly release pressure by placing cooker under cold running water.
- Drain immediately.



A tradition in Japan, green vegetable soybeans, also known as edamame, are a wonderful snack and versatile vegetable that can be used in many dishes. Cooked in a pot of boiling water until tender, the sweet soybeans can be squeezed out of the pod directly into your mouth for a delightful and healthy appetizer.

Tofu Jalapeno Poppers

- 8 oz firm tofu
- 24 fresh jalapeno peppers, 2-1/2 to 3-inch size
- 1 1/4 oz taco seasoning mix, prepared
- 2 cups flour
- 4 eggs, beaten
- 1/4 cup water
- 1-1/2 cups dry bread crumbs
- 1/2 cup Parmesan cheese, grated
- 1 tsp salt
- 1/4 tsp pepper
- soybean oil (vegetable oil) as needed

Cut tofu into 2 x 1/2 x 1/2-inch strips. Place tofu on a thickness of several paper towels on a cutting board and position board on a slant to allow excess liquid to drip off. Wash peppers. Use plastic gloves to avoid retaining the hot flavor on your fingers. Slit the pepper lengthwise up both sides, leaving the stem intact. Remove seeds.

Roll tofu strips in taco seasoning. Place into pepper; press pepper together. Roll pepper in flour.

Beat eggs and water together. Mix bread crumbs, cheese, 1 teaspoon salt and 1/4 teaspoon pepper together.

Holding the stem of each floured pepper, dip into egg mixture and then into crumb mixture to coat entire surface; repeat to get

a nice coating. Place on waxed paper-lined pan and refrigerate until ready to use.

Deep-fry at 375°F 2 to 5 minutes or until browned. Drain and serve hot.

Nutritional Analysis per popper: 109 calories, 2 g fat (.4 g sat fat), 33 mg cholesterol, 111 mg sodium, 13 g carbohydrate, 4.4 g protein (3.4 g soy protein), 0.6 g dietary fiber.

Roasted Soy Nuts

Use up to 2 cups of beans per baking sheet. Soak beans for 8 hours or more. Drain the beans, then spread into a single layer. Bake at 350°F, stirring after 15 minutes, then stirring every 5 minutes until golden brown and crunchy. The total time will vary depending on the moisture of the beans, but should take about 25 minutes. Watch carefully when the beans are getting close to done.

Yield: 1/2 cup nuts from 1 cup beans. Per serving: 122 calories, 6 g total fat (1 g sat fat), 10 g protein (10 g soy protein), 9 g carbohydrate, 2 mg sodium, 0 mg cholesterol, 5 g dietary fiber.

More recipes...

More recipes can be found at www.soybean.org.

Chocolate Monkey Peanut Shake

- 1 cup soymilk, vanilla
- 1 banana, sliced and frozen
- 1/2 cup ice cubes
- 2 Tbs chocolate syrup
- 1 Tbs peanut butter, creamy

Blend all ingredients in blender on high for 30 seconds or until smooth. Serve immediately.

Yield: 2 servings. Per serving: 200 calories, 6 g fat (1 g sat fat), 0 mg cholesterol, 95 mg sodium, 32 g carbohydrate, 6 g protein (4.1 g soy protein), 2 g dietary fiber

Serving tip: Drizzle chocolate syrup in a swirl down the inside of clear glasses. Pour shake into glasses and top with an additional swirl of chocolate.

Tropical Shake

- 1 pkg (10.5 oz.) soft silken tofu
- 1 medium banana
- 1/2 can (12 oz.) unsweetened orange-pineapple juice, chilled
- 1 can (8 oz.) unsweetened crush pineapple, chilled

Mix all ingredients in a blender until thoroughly smooth. Serve immediately or refrigerate. Shake well before serving.

Yield: 5 cups. Per serving: 176 calories, 3 g fat (.1 g sat fat), 0 mg cholesterol, 6 mg sodium, 35 g carbohydrate, 5.1 g protein (2.9 g soy protein), 1.4 g dietary fiber.

Recipe replacements: Replace can of pineapple with box of frozen strawberries or favorite frozen fruit. Substitute orange-pineapple juice with your favorite juice. For sweeter taste, add 1 tablespoon of honey.

Divine Banana

- 2 large banana
- 2 cups chocolate soymilk
- 1/4 cup soy nut butter
- 4 scoops soy protein powder mix

Mix all ingredients in a blender until thoroughly smooth. Serve



Soy smoothies and shakes are easy to make, and it's fun to create your own recipes. A little soymilk and some fruit mixed in a blender will get you off and running. Add a few more secret ingredients and you will create your own masterpiece. Here are few recipes to get you started.

immediately or refrigerate. Shake well before serving.

Yield: 4 cups. Per serving: 280 calories, 8.5 g fat (1 g sat fat), 0 mg cholesterol, 254 mg sodium, 36 g carbohydrate, 16 g protein (6 g soy protein), 1.5 g dietary fiber.

Strawberry Heaven

- 1/2 cup frozen strawberries, thawed, including juice
- 2 Tbs powdered soy protein isolate
- 2 Tbs water
- 1/2 cup crushed ice

Thoroughly mix thawed strawberries, soy protein isolate and water in blender. Add crushed ice and blend until smooth. Serve in a 12-ounce glass.

Yield: 1 serving. Per serving: 62 calories, 0.4 g fat (0 g saturated fat), 0 mg cholesterol, 113 mg sodium, 7 g carbohydrate, 25 g protein (23 g soy protein), 1.2 g dietary fiber.

Orange Orange

- 1 cup vanilla soymilk
- 1 can (15 oz.) mandarin oranges, well drained
- 1/2 can (12 oz.) frozen orange juice concentrate, undiluted

Mix all ingredients in a blender until thoroughly combined. Serve immediately or refrigerate. Shake well before serving.

Yield: 4 cups. Per cup: 185 calories, 1.5 g fat (0 g sat fat), 0 mg cholesterol, 18 mg sodium, 41 g carbohydrate, 3.2 g protein (1.6 g soy protein), 1.3 g dietary fiber.

Soymilk

Soymilk is the rich, creamy milk of whole soybeans. It is lactose-free and casein-free. Soymilk is available in regular and low-fat varieties, and some brands are fortified with calcium, vitamin D, and/or vitamin B-12. Soymilk comes in plain, vanilla, chocolate, and strawberry flavors. The color of plain soymilk varies from tan to white. Note that soymilk is not the same as soy infant formula.

Storing Soymilk

Soymilk is found in aseptic (non-refrigerated) containers, and in refrigerated plastic or cardboard quart and half-gallon containers. Unopened, aseptically packaged soymilk can be stored at room temperature for several months. Once it is opened, soymilk must be refrigerated. It will stay fresh for about five days. Soymilk also is sold as a powder, which must be mixed with water. Soymilk powder should be stored in the refrigerator or freezer.

Cooking Basics

Soymilk may be consumed as a beverage or substituted for dairy milk in most recipes. Culinary chefs prefer cooking with whole soymilk versus "non-fat" or "light" forms to provide firmer consistency in cooked dishes such as puddings and custards.

Soymilk Tips

- Soymilk can be used in almost any way that cow's milk is used.
- Use soymilk to make cream sauces that are cholesterol-free and low in saturated fat.
- Make rich pancake and waffle mixes.
- Create your own delicious shakes with soymilk, soy ice cream or tofu, soy yogurt, and fruit.
- Use soymilk to make cream soups.
- Try soymilk instead of evaporated milk to produce lower-fat custards and pumpkin pies.
- Mix 1 teaspoon of your favorite powdered fruit drink mix with 1 cup of soymilk for a refreshing drink.

Protein power tip...

- Add a box of silken soft tofu in blender to smoothie recipes.
- Add isolate soy protein powder to favorite smoothie recipe.

Soy Flour

Soy flour is made from roasted soybeans that have been ground into a fine powder. Two kinds of soy flour are available. Full-fat soy flour contains the natural oils that are found in the soybean. Defatted soy flour has the oils removed during processing. Both kinds of soy flour will give a protein boost to recipes; however, defatted soy flour is even more concentrated in protein than full-fat soy flour.

Storing

Full-fat soy flour should be stored in the refrigerator or freezer to preserve its freshness. Defatted soy flour may be stored on the shelf.

Cooking Basics

Soy flour tends to pack down in a container, so always stir or sift it before measuring. Baked products containing soy flour tend to brown more quickly, so you may want to lower oven temperatures slightly.

Substituting Soy Flour

Since soy flour is free of gluten, which gives structure to yeast-raised breads, soy flour cannot replace all of the wheat or rye flour in a bread recipe. However, using about 15 percent soy flour in a recipe produces a dense bread with a nutty flavor and a wonderful moist quality.

Just place two tablespoons of soy flour in your measuring cup for every cup of wheat flour before measuring all-purpose or other flour called for in the recipe.

In baked products, such as quick breads, that are not yeast-raised, up to 1/4 of the total amount of flour called for in the recipe can be replaced with soy flour. For each cup of flour called for, use 1/4 cup soy flour and 3/4 cup wheat flour (all-purpose or whole wheat).

Soy Flour Tips

- In your own kitchen, use soy flour to thicken gravies and cream sauces, to make homemade soymilk, or to be added to a variety of baked foods.
- Premix a batch of 1 part soy flour and 3 parts wheat flour so that it is ready to use when you bake.



Mouth Watering Apple Cinnamon Pancakes

- 1 cup buttermilk pancake mix
- 3/4 cup* vanilla soymilk
- 1/2 tsp cinnamon, ground
- 1/3 cup apples**, peeled and diced

Mix pancake mix, soymilk and cinnamon together until blended. Stir in apples. Cook as directed on pancake mix package. Makes 8 to 9, 4-inch pancakes.

* The amount of soymilk may vary with pancake mix. Use the same amount of soymilk as the liquid amount stated in the package directions.

** May substitute 1/3 cup apple pie filling for the apples.

Yield: 8-9 4-inch pancakes. Per pancake: 170 Calories, 2 g fat (0 g sat fat), 0 mg cholesterol, 830 mg sodium, 36 g carbohydrate, 4 g protein, 0 g dietary fiber.

Corn & Soy Muffins

- 1-1/2 cup all purpose flour
- 1/2 cup yellow cornmeal
- 1/4 cup soy flour
- 1/4 cup sugar
- 1 Tbs baking powder
- 1/2 tsp salt
- 1 cup light soymilk
- 2 eggs
- 1/4 cup soybean oil

Mix flour, cornmeal, soy flour, sugar, baking powder and salt.

Combine soymilk, eggs and oil; add to dry ingredients and mix only enough to moisten. Fill oiled muffin tins.
Bake at 400°F for 15 minutes.

Yield: 12 muffins. Per muffin: 162.4 calories, 6.2 g fat (1 g sat fat), 35.4 mg cholesterol, 237.9 mg sodium, 22.8 carbohydrates, 4.2 g protein (.6 g soy protein), 1.0 g dietary fiber.

Soy Granola

- 3 cups uncooked quick-cooking oats
- 1 cup sliced unblanched almonds
- 3 Tbs margarine
- 1 cup honey
- 1/2 cup vanilla flavored soy protein powder mix
- 1 tsp cinnamon
- 3 cups soy cereal flakes or whole-grain cereal
- 1/2 cup dried golden raisins

- 1/2 cup dried cranberries or cherries
- 1/2 cup dried banana chips or pitted dates
- 1/2 cup roasted soynuts

Preheat oven to 325°F. Spread oats and almonds in single layer in 13x9-inch baking pan. Bake 30 minutes until lightly toasted, stirring frequently with wooden spoon.

Remove pan from oven and set aside. Melt butter. Combine honey, butter, soy protein powder, and cinnamon in large bowl and blend well. Add oat/almond mixture and toss until completely coated.

Spread mixture in single layer in baking pan. Bake 20 minutes or until golden brown. Cool completely. Break mixture into chunks. Add oat chunks to cereal and dried fruits. Store in airtight container at room temperature for up to 2 weeks.

Yield: 12 cups. Per serving: 363 calories, 12 g fat (2.4 g sat fat), 0 mg cholesterol, 125 mg sodium, 59 g carbohydrate, 11 g protein (7 g soy protein), 6.4 g dietary fiber.

Cranberry Nut Bread

The zesty combination of cranberry and orange flavors makes this quick bread unusually good.

- 3 1/2 cups all-purpose flour
- 1/2 cup soy flour
- 1 1/2 cups granulated sugar
- 4 tsp baking powder
- 1 tsp salt
- 1 1/2 cups orange juice
- 1/2 cup water
- 1/2 cup oil
- 2 eggs
- 2 Tbsp freshly grated orange peel or 2 tsp. dried orange peel
- 1 1/2 cups dried cranberries, or 3 cups fresh or frozen cranberries (do not thaw), coarsely chopped
- 1 cup chopped nuts

Preheat the oven to 325°F. Coat two 9" x 5" loaf pans with cooking spray.

Mix together the all-purpose flour, soy flour, sugar, baking powder, and salt. Set aside.

Mix the orange juice, water, oil, eggs, and orange peel in a large bowl. Add the dry ingredients and mix until just blended. Fold in the cranberries and nuts.

Pour the batter into the prepared pans. Bake for 55 to 65 minutes, until a toothpick inserted in the center comes out clean. Let the bread cool for 10 minutes in the pans, then turn out onto a wire rack to cool completely.

*Makes 2 loaves of 12 slices each
Per serving (1 slice): 232 calories, 9 g fat (1 g sat fat), 20 mg cholesterol, 170 mg sodium, 35 g carbohydrate, 4 g protein (3 g soy protein), 2 g dietary fiber*

Chocolate Chip Muffins

Kids of all ages will love these.

- 1 1/2 cups all-purpose flour
- 1/2 cup soy flour
- 2 tsp baking powder
- 1 tsp baking soda
- 1/2 tsp salt
- 1 cup granulated sugar
- 1/2 cup vegetable oil

- 3 eggs
- 1/2 cup soymilk
- 2 tsp vanilla extract
- 1/2 cup mini chocolate chips
- 1/2 cup chopped walnuts (optional)

Preheat the oven to 375°F. Coat a muffin tin with cooking spray.

Mix together the all-purpose flour, soy protein isolate or soy flour, baking powder, baking soda, and salt. Set aside.

Beat together the sugar, oil, eggs, soymilk, and vanilla in a large mixing bowl. Add the flour mixture and mix until just moistened. Fold in the chocolate chips and walnuts.

Fill the muffin cups three-fourths full with the batter.

Bake 22 to 25 minutes, until a toothpick inserted in the center of one of the muffins comes out clean. Remove muffins from tin and cool on a wire rack.

Makes 12 muffins Per muffin: 290 calories, 4 g fat (3.2 g sat fat), 55 mg cholesterol, 1290 mg sodium, 36 g carbohydrate, 5 g protein (3.8 g soy protein), 2 g dietary fiber



Photo courtesy of University of Illinois photographer David Riecks

Soy Protein Powder

If you want to get the most soy protein per serving in your meals, then try adding some soy protein isolate powder in your favorite recipes.

Soy protein isolate is a dry powder food ingredient that is made from defatted soy flakes. Containing 90 percent protein, soy protein isolates possess the greatest amount of protein and all the essential amino acids of all soy products.

Soy protein isolate powder is sold in canisters in health food sections of stores. It's often labeled as "soy protein powder drink mix."

Storing

Kept sealed and dry, it is shelf-stable for many months. Look for use-by dates on the container.

Recipe Ideas

- Read the nutrition label of your soy protein powder for the protein level/serving.
- Add a serving of plain soy protein isolate to your favorite soup. Remove a small amount of hot soup and blend it with the isolate powder. Add the mixture to the soup.
- Whisk a serving of plain soy protein isolate powder into cooked Marinara sauce or your favorite sauces.
- Mix a serving of flavored soy protein shake powder with cold juice, milk, or soymilk.
- Mix a serving of soy protein powder into your favorite hot cereal.
- Try mixing soy protein powder to your favorite salad dressings for extra protein kick.

Protein Power Drinks

Most of the soy protein powder drinks on the market are made with soy protein isolate.

Soy protein powders come in plain, vanilla, chocolate, and strawberry flavors.

Many brands are sold in canisters with expiration dates stamped on the bottom. Several brands are fortified with calcium.

Soy Protein Products

Soy protein products (also called meat analogs) are foods made from soy protein and other ingredients mixed together. Food scientists know how to make these products taste quite good.

Where to Find

Look for soy protein products in grocery stores in the following locations:

- Refrigerated case
- Freezer case
- Dry, prepared foods

Storing

Frozen or refrigerated soy protein products should be stored accordingly at home. Others come in dry-mix boxes and may be stored on the shelf.

Cooking Basics

Follow package directions. Soy protein products can be included in many of your favorite recipes.

Recipe Tips

- Soy protein products can usually be used the same way as many of the traditional foods you use.
- Using soy protein products in highly seasoned dishes, such as tacos, minimizes the flavor difference between them and other protein products.
- Use a package of soy crumbles for when preparing your favorite spaghetti, sloppy joe, chili, stroganoff, or hamburger casserole recipes.



Warm Orange Soybean Oil Vinaigrette

- 2/3 cup soybean oil
- 1/4 cup cider vinegar
- 2 Tbsp orange juice
- 1 Tbsp finely chopped shallots
- 3/4 tsp each grated ginger root and chopped fresh thyme
- 1/4 tsp ground white pepper
- Kosher salt

Combine all ingredients in small saucepan; mix well. Bring mixture to boil. Makes 1 cup.

Yield: 6 servings (3 Tbsp each). 126 calories, 2.2 g fat (1.3 g sat fat), 0 mg cholesterol, 510 mg sodium, 31.8 g carbohydrate, 1 g protein (0 g soy protein), .2 g dietary fiber.

Serving tip: Toss 1 1/2 lbs. fresh torn spinach leaves with warm dressing. Garnish with bacon bits, chopped hard-cooked egg, sliced fresh mushrooms, sliced almonds or mandarin orange sections. Makes 6 servings.

Mediterranean Soup

- 1 cup chopped onion
- 2 cloves garlic, minced
- 2 Tbs soybean oil (vegetable oil)
- 2 quarts vegetable or chicken broth
- 2 quarts water
- 3 cups textured soy protein (10 oz.)
- 2 cups brown rice, uncooked
- 2 tsp oregano leaves, dried, crumbled
- 1 tsp thyme leaves, dried, crumbled
- 1 tsp salt
- 1 tsp ground pepper
- 3 quarts diced tomatoes, canned
- 2 cups zucchini, diced (3/4 inch)
- 1 cup celery, sliced
- 1/2 cup parsley, chopped (optional)



Saute onion and garlic in oil until tender. Add broth, water, soy protein, brown rice and seasonings.

Bring mixture to boil; reduce heat and simmer, covered, 30 minutes. Add tomatoes, zucchini and celery; return to boil, reduce heat and simmer 20 minutes or until rice is tender.

Portion 12 ounces into large bowls, if desired. Sprinkle 1 teaspoon minced parsley over each serving.

Yield: 6 servings (12 oz. each). 182 calories, 2.2 g fat (1.3 g sat fat), 2.0 mg cholesterol, 510 mg sodium, 31.8 g carbohydrate, 11 g protein (8.6 g soy protein), 3.6 g dietary fiber.

Soy Stuffed Pepper

- 1/2 cup chopped onion
- 2 cloves garlic, minced
- 1 tsp soybean oil
- 8 oz frozen all soy protein crumbles
- 1 cup diced tomatoes
- 1 cup water
- 1/3 chopped Anaheim chilies
- 1/2 teaspoon ground cumin
- 1/2 tsp salt
- 1/4 tsp ground pepper
- 1 cup uncooked brown rice cooked according to package directions
- 6 medium green peppers
- Water
- Prepared salsa, optional



well. Bring mixture to boil; reduce heat and simmer 15 minutes. Gently mix in cooked rice. Cut 1/2 inch off the stem end of peppers; remove seeds and membrane. Bring water and 1 teaspoon salt to boil in large saucepan. Cook in boiling water 3 to 5 minutes; invert on paper towels to drain. Fill peppers with 3/4 cup of crumbles-rice mixture; place in 8-inch square baking dish. Bake at 376° F 20 minutes or until thoroughly heated. If desired, serve with salsa.

Yield: 6 servings. 284 calories, 2.5 g fat (0.3 g sat fat), 0 mg cholesterol, 158 mg sodium, 49.5 g carbohydrate, 20 g protein (20 g soy protein), 11.9 g dietary fiber.

Sauté onion and garlic in oil until softened. Add protein crumbles, tomato, water, chilies, cumin, 1/2 teaspoon salt and pepper; mix

Shrimp and Tofu Pad Thai

- 8 oz rice noodles, dried
- 1/2 cup sugar
- 1/3 cup ketchup
- 1/4 cup water
- 1 1/2 Tbsp soy sauce
- 2 tsp Worcestershire sauce
- 1/8 tsp cayenne pepper, ground
- 2 Tbsp vegetable oil
- 1 1/2 cups (8oz) tofu, firm, drained and diced into 1/2 inch cubes
- 1 1/2 cups (8oz) shrimp, small, cooked
- 2 tsp garlic, fresh, chopped
- 1 egg, beaten
- 3 cups bean sprouts, fresh
- 1/2 cup edamame, cooked and drained
- 1/2 cup green onions, chopped, divided
- 1/2 cup peanuts, chopped, divided



Soak noodles for 30 minutes in hot tap water; drain and set aside. (Noodles will be flexible, but not soft.)

Mix sugar, ketchup, water, soy sauce, worchestershire sauce and cayenne pepper in small bowl; set aside.

Heat oil in wok or large frying pan over high heat. Add tofu, shrimp and garlic, stirring constantly, for 3 minutes. Stir in noodles, stirring constantly to keep from sticking. Add ketchup mixture, stirring constantly, for 2 minutes or until sauce is absorbed.

Push noodles to side of pan. Add egg and stir until cooked. Add bean sprouts, edamame, 1/4 cup green onions and 1/4 cup peanuts, stirring until mixed with egg and noodles.

Mound mixture on large serving plate. Sprinkle remaining green onions and peanuts over top. Serve immediately.

Yield: 6 servings. Per serving: 430 calories, 15 g Fat (2.5 g sat fat), 110 mg cholesterol, 670 mg sodium, 57 g carbo-

Textured Soy Protein

Textured soy protein is one of the most economical soy protein sources on the market. It's made from defatted soy flour or soy protein concentrate that is compressed and extruded into granules or chunks. It is sold as a dried, granular product. When rehydrated with water, textured soy protein has a texture similar to ground beef or other meat products. Textured soy protein is often labeled as TSP® or TVP®. TSP® is a registered trademark of PMS Foods. TVP® is a registered trademark of Archer Daniel Midlands.

Where to Find

Textured soy protein is not always easy to find in the supermarket. It's normally carried in natural food stores in the bulk food area or the flour section. Because it is a dry product, you can find mail-order companies on the Internet that sell it.

Storing

Textured soy protein has a long shelf life. Stored in a tightly closed container at room temperature, it will keep for several months. Once it has been rehydrated, store the textured soy protein in the refrigerator and use it within a few days.

Cooking Basics

Most recipes call for textured soy protein to be rehydrated before it is used in recipes. Read the package directions for rehydration. When using textured soy protein in soups and sauces, you do not have to rehydrate it before use – just be sure the recipe has enough liquid in it. Textured soy protein chunks should be simmered a few minutes before using.

Recipe Tips

- Use textured soy protein to replace all or part of the ground meat in almost any recipe. Replace one-fourth of the ground beef in meat loaf or burgers.
- Generally, textured soy protein will triple in volume when hydrated. For example, 1 pound dry textured soy protein will make about 3 pounds hydrated textured soy protein.
- For one pound of ground beef, substitute 1 1/2 cups dry textured soy protein and hydrate with 1 1/2 cups water.

Tofu

Tofu is probably the most versatile soyfood to use in cooking. Also known as soybean curd, tofu is a soft, cheese-like food made by curdling fresh, hot soymilk with a coagulant. In recipes, tofu acts like a sponge and has the miraculous ability to soak up any flavor that is added to it.

Types of Tofu

Two main types of tofu are available in American grocery stores.

Water-Packed (Extra-Firm, Firm) tofu is dense and solid and holds up well in stir-fry dishes, soups, or on the grill – anywhere that you want the tofu to maintain its shape. Water must be squeezed out before using.

Silken (Extra-Firm, Firm, Soft, Reduced Fat) tofu is made by a slightly different process that results in a creamy, custard-like product. Silken tofu works well in puréed or blended dishes.

Storing Tofu

- Tofu most commonly is sold in water-filled tubs, vacuum packs, or in aseptic brick packages. Unless it is aseptically packaged, tofu should be kept cold. As with any perishable food, check the expiration date on the package. Once the tofu package is open, leftover tofu should be rinsed and covered with fresh water for storage. Change the water daily to keep it fresh, and use the tofu within a week.

- Tofu can be frozen up to five months. The texture will be spongy, chewy, and more meat-like. After thawing tofu in refrigerator, squeeze out excess water.

Recipe Tips

- Replace all or part of the cream in creamed soups with silken soft tofu.
- Substitute puréed silken soft tofu for part of the mayonnaise, sour cream, cream cheese, or ricotta cheese in a recipe. Use it in dips and creamy salad dressings.
- Mix 1 box instant pudding mix, 1 1/2 cups soymilk, and 10 ounces of silken tofu for dessert. Chill for 2 hours.
- Crumble it into a pot of spicy chili sauce and it tastes like chili.
- Cubes of firm tofu can be added to any casserole or soup.
- Slices of extra-firm tofu can be baked on broiler pan at 375°F for 20-25 minutes. Marinate slices in your favorite sauce for extra flavor.
- Substitute 1/4 cup soft tofu for 1 egg in your favorite brownie box mix.

Tofu Pressing

To reduce the amount of water in water-packed tofu, place the block of tofu on a pie plate or shallow dish. Stack another plate on top of the tofu. Add weight to the plate (use more dishes or canned goods) and wait 15-20 minutes; then pour off water.

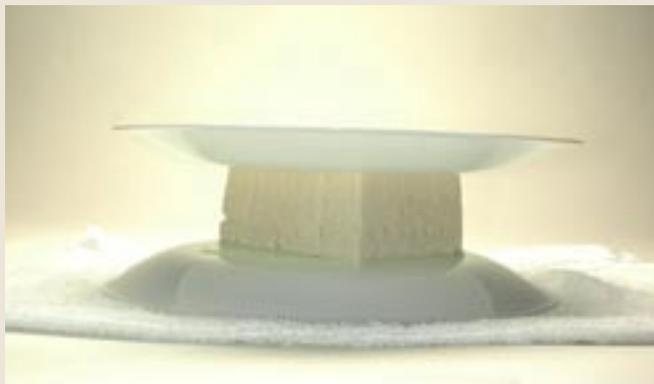


Photo courtesy of University of Illinois photographer David Riecks

Enchiladas

A Mexican classic that has become an American favorite.

- 2 cans (10 oz each) enchilada sauce
- 1 Tbsp soybean oil
- 3/4 cup onion, finely chopped
- 3/4 cup red or green bell pepper, finely chopped
- 1 cup frozen soy crumbles
- 12 6" corn tortillas
- 1 can (16 oz) refried beans with green chilies
- 1/2 cup green onion, chopped
- 1 cup taco flavored cheddar cheese, shredded

Preheat the oven to 350° F. Coat a 9" x 13" baking dish with cooking spray. Spread one cup enchilada sauce over the bottom of the pan and set the rest aside.

Heat the oil in a nonstick skillet and sauté the onion and bell pepper until almost tender. Remove 2 tablespoons and set aside for topping.

Add the soy crumbles to the onion and pepper mixture in the pan and heat through. Set aside.

Wrap the tortillas in a damp towel and soften them by heating in the microwave on high for 30 seconds. Removing tortillas from the towel one at a time, spread about 3 tablespoons of the refried beans down the center of each tortilla. Top with about 2 tablespoons of the crumble mixture and 2 teaspoons each of the chopped green onions and shredded cheese. Roll up the tortilla and place seam side down in the prepared pan. Continue in this way until all tortillas have been filled.

Spread the remaining sauce over the enchiladas. Sprinkle with the reserved onions and peppers and top with the remaining half cup of shredded cheese.

Bake for 20-25 minutes, until heated through.

Yield 12 servings. Per serving (1 enchilada): 170 calories, 6 g fat (2.5 g sat fat), 10 mg cholesterol, 470 mg sodium, 23 g carbohydrate, 7 g protein (6 g soy protein), 4 g dietary fiber.

Chocolate Mousse

This is a dessert or snack with a rich chocolate flavor that whips up in no time in a blender!

- 2 pkg (12 oz. each) soft silken tofu
- 1/2 cup oil
- 1 1/2 cups sugar
- 1/2 cup cocoa
- 1/4 tsp salt
- 1 1/2 tsp vanilla

Blend all the ingredients until smooth and creamy.

Pour into 5 oz individual serving containers.

Chill until firm and serve.

Top with whipped topping, if desired.

Yield: 8 servings. Per serving: 330 calories, 17 g fat (2.5 g sat fat), 0 mg cholesterol, 75 mg sodium, 43 g carbohydrate, 5 g protein (all soy protein), 1 g dietary fiber



More Recipes

Additional dessert recipes can be found on the Internet at www.soybean.org.



Photo courtesy of University of Illinois photographer David Riecks

Rich and Decadent Cheesecake

This richly flavored cheesecake is a perfect finale for a meal!

- 1 8-inch prebaked graham cracker crust
- 1 pkg (12 oz) extra firm silken tofu
- 1/2 lb cream cheese
- 1 cup sour cream
- 2 Tbsp corn starch
- 1 cup sugar
- 2 Tbsp butter, softened
- 2 tsp vanilla

Preheat oven to 350° F

Mix tofu, cream cheese, sour cream, corn starch and sugar in mixing bowl on low until sugar has dissolved

Add butter and vanilla and blend until smooth

Pour the filling into prebaked crust

Bake for 45-50 minutes until firm, knife will not come out clean one inch from edge

Chill completely, preferably overnight.

Yield: 8 servings. Per serving: 330 calories, 19 g fat (12 g sat fat), 60 mg cholesterol, 140 mg sodium, 32 g carbohydrate, 6 g protein (4.5 g soy protein), 0 g dietary fiber.

Optional: Topping can be added by mixing 3/4 cup sour cream and 1/4 cup powdered sugar and spread on top of cooled cheesecake

Soy - For your heart

The Food and Drug Administration (FDA) says foods containing soy protein may reduce the risk of coronary heart disease (CHD). Foods that meet the FDA guidelines can label their products with this claim.

The soy health claim is based on the FDA's determination that 25 grams of soy protein per day, as part of a diet low in saturated fat and cholesterol, may reduce the risk of heart disease by reducing blood cholesterol levels.

To get the heart-healthy benefits of soy protein, the FDA recommends that consumers incorporate four servings of at least 6.25 grams of soy protein into their daily diet for a total of at least 25 grams of soy protein each day.

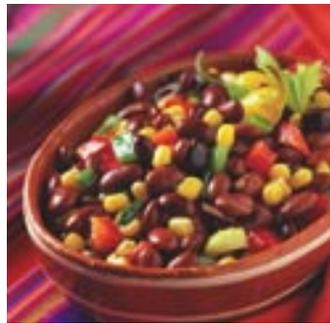
In order to claim the healthful effects of soy, a soyfood must meet the following criteria:

- 6.25 grams or more soy protein
- Low fat (less than 3 grams)
- Low saturated fat (less than 1 gram)
- Low cholesterol (less than 20 mg)

Foods made with the whole soybean may also qualify for the health claim if they contain no fat in addition to that present in the whole soybean. These would include soyfoods such as tofu, soymilk, soy-based burgers, tempeh, and soynuts.

New food product labels may now say, "Diets low in saturated fat and cholesterol that include 25 grams of soy protein a day may reduce the risk of heart disease. One serving of (name of food) provides ____ grams of soy protein."

For more information, go to www.cfsan.fda.gov/~dms/fdsopr.html.



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