

## Other Soy Products

**Miso:** Also called bean paste; made from fermented soybeans. Easily digested; provides B-vitamins and protein. Used in sauces, soups, dips, marinades, salad dressings, main dishes, and as a condiment. Available in Japanese markets and health food stores; must be refrigerated in air-tight container.

**Soy sauce:** Made from fermented soybeans, wheat, yeast, and salt. Used for seasoning. Japan and China produce many varieties.

**Tempeh:** “Cake” made of fermented soybeans; good source of protein and used as a meat substitute.

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# Soy Foods —Discover the Goodness

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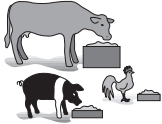
## Did you know?



Tofu has been used as food for hundreds of years and is a primary source of protein for more than 1 billion people daily.



Iowa State University has released more than 50 varieties of specialty, food-grade soybeans.



American livestock eat over 22 million tons of soybean meal yearly.



Soy products are valued ingredients in many commercially prepared foods because they add protein, improve crust color, act as an emulsifier to hold fats, and extend shelf life. They are used in frozen desserts, coffee whiteners, candy products, chocolate coatings, soup bases, and gravies.



Lecithin extracted from soybean oil is used in candies to keep chocolate and cocoa butter from separating.



In 1904 George Washington Carver discovered that soybeans are a valuable source of oil and protein. In 1937 two chemical engineering students, at what was then Iowa State College, explored the possibility of puffing soybeans for use as a nutritious breakfast cereal.



A bushel of soybeans (60 pounds) makes 120 pounds of tofu.



The U.S. grows more than half of the world's soybeans.



The U.S. collection of soybeans includes more than 15,000 varieties.



Soybeans probably arrived in the U.S. in the 1700s.

## Tofu

Fat and cholesterol can be reduced by using tofu in place of or in combination with meat, eggs, or dairy ingredients.

Tofu can replace or complement ground meat in chili, spaghetti sauce, or sloppy joes.

Tofu can replace or combine with ricotta or cottage cheese in meat or vegetarian lasagna, manicotti, pasta primavera, or ravioli.

Puréed tofu can replace or combine with eggs in scrambled eggs or quiche, and in cookies or bars. (Use 5 tablespoons puréed tofu for each egg.)

Puréed tofu can replace or combine with milk, cream, or yogurt in twice-baked potatoes, mashed potatoes, potato casseroles, fruit smoothies, breakfast drinks, dips, salad dressings, puddings, cheesecake, and cream pies. (Use an equal amount of puréed tofu to replace yogurt, milk, or sour cream.)

“Baker’s Blend” is a homemade substitute that can replace equal amounts of buttermilk or milk in baked products. To make, combine 12 ounces extra firm tofu, 1 cup water, and 2 tablespoons lemon juice or white vinegar in a food processor. Refrigerate in covered container up to one week.

Tofu can be frozen up to 5 months. Drain, squeeze out the excess water, and put in a freezer bag or container with a tight lid. Frozen tofu will look slightly tan but this is a harmless color change. Thaw in the refrigerator overnight or in the microwave (heat on high for 3 to 4 minutes). When thawed the tofu will be spongier, firmer, and chewier.

### Quick Recipe Substitutions

For:	Use:
1 cup margarine	$\frac{3}{4}$ cup soybean oil
$\frac{1}{2}$ cup margarine	$\frac{1}{3}$ cup soybean oil
1 ounce baking chocolate	3 tablespoons cocoa + 1 tablespoon soybean oil
1 cup milk	1 cup fortified soy milk
1 cup fruit yogurt	Blend 1 cup tofu + desired fruit
1 cup cottage cheese	1 cup puréed tofu
1 egg	1 tablespoon soy flour + 1 tablespoon water or 5 tablespoons puréed tofu

## Kitchen Guidelines for Using Soy Foods

Many soy foods can be used in combination with or as substitutes for other common ingredients. Follow these tips when experimenting in your kitchen.

### Canned soy beans

Use interchangeably with other canned beans (such as kidney, navy, pinto, red beans) in soups, stews, chili, Mexican dishes, baked beans, and 3-bean salad.

### Soy flour

If roasted soy flour is not available, raw soy flour can be toasted to enhance its nutty flavor. Place soy flour in a dry skillet and cook over moderate heat, stirring occasionally until lightly browned. Avoid over-browning.

Soy flour is rich in protein but does not contain the specific protein (gluten) responsible for the structure in baked products. Thus, best results are achieved by using soy flour to replace some, but not all, of the all-purpose flour called for in a recipe.

In non-yeast products, place 2 to 4 tablespoons soy flour in measuring cup; add all-purpose flour to make 1 cup.

In yeast products, place 2 tablespoons soy flour in measuring cup, then add all-purpose, bread, or whole wheat flour to make 1 cup.

Products containing soy flour brown more quickly, so you'll need to lower the oven temperature and/or shorten the baking time.

### Soy nuts

Check labels. Some snack products labeled as "soy nuts" are made by frying unhulled beans in oil and adding seasonings. Other soy nuts are made by dry roasting soybeans that have had the hulls removed. Both may be available in health food stores. The dry roasted forms can replace or combine with walnuts, pecans, peanuts, or sunflower seeds in trail mix, caramel corn, granola, salad toppings, cookies, brownies, and cereal bars.

### Textured soy products

Use the frozen or rehydrated product to replace or combine with ground meat in BBQ sandwiches, pizza, spaghetti sauce, chili, skillet dinners, casseroles, tacos, and other Mexican dishes.

Use the dried, granular form to replace or combine with rolled oats or other packaged cereals (such as Rice Krispies®) in fruit crisp, granola, muffins, cookies, and bars.

## One Healthy Bean

The versatile soybean is used in thousands of products—from margarine and baby food to printing ink and particle board. It has high nutritional value and also is being studied as a potential "functional food" that could offer specific health benefits in addition to its known nutritional benefits.

- Soybeans are rich in protein and can be the foundation of a plant-based diet. They provide all the amino acids that the body needs but cannot make.
- Soybeans, soy flour, and textured soy products are rich in fiber, folate, and iron.
- Since soy milk is lactose-free, it is often used by individuals who cannot tolerate the lactose in cow's milk.
- Soybeans are the richest source of isoflavones, a unique plant chemical that comes close to replicating estrogen. Isoflavones may help reduce heart disease risk, maintain strong bones in women, protect against some cancers, and provide relief from some menopausal symptoms, such as hot flashes.
- Studies have shown that including soy protein as part of a diet low in saturated fat and cholesterol can reduce the risk of coronary heart disease. Researchers report that eating 25 grams of soy protein per day can lower serum cholesterol by reducing the LDL (bad) cholesterol levels. The Food and Drug Administration is considering a request to add a "heart healthy" label tag on soy foods that contain at least 6.25 grams of soy protein per serving. A decision is expected by October 1999. Check package labels for more information.

### A serving a day

Some research studies show that eating as little as one serving of soy foods per day may reduce the risk of some types of cancer. Each of the following is one serving of soy foods.

- 1/2 cup tofu
- 1/2 cup cooked soybeans (green or mature)
- 1/2 cup textured soy product
- 1/4 cup soy nuts
- 1/4 cup soy flour (defatted)
- 1 cup soy milk

## Product

### Soy flour

Made from soybeans that have been ground into a fine powder.

Roasting the flour removes the 'beany' or 'metallic' aftertaste that is often present in raw soy flour.

Full-fat soy flour contains all the natural oils from the soybean. Defatted soy flour has had the oils removed during processing and is the type most commonly available in stores.

Soy flour can replace part of the wheat flour in cakes, cookies, muffins, quick breads, pancakes, waffles, and yeast breads. Stir before measuring since it tends to pack.

Full-fat soy flour is sometimes used in pancake mix since the oil in the flour can replace part of the eggs. Commercial bakers use soy flour to extend shelf life of baked products and to reduce fat absorption in doughnuts and other fried foods.

### Soy oil

Can be extracted from soybeans with a chemical solvent, or made by physically pressing the beans.

Soy oil is used for cooking, baking, and frying. Margarine, shortening, and vegetable oil are usually made from soybeans unless otherwise labeled.

## Benefits

Soy flour has about 20 grams protein per half cup — about three times as much as whole wheat or all-purpose flour.

It has about the same amount of fiber as whole wheat flour and seven times as much fiber as all-purpose flour.

The amount of isoflavones in soy flour varies and depends on genetics, growing conditions, and processing method.

Soy oil is high in polyunsaturated and monounsaturated fats. Like corn oil, it has about 2 grams of saturated fat per tablespoon.

LoSat Soy™ oil is made from beans developed at Iowa State University by traditional breeding methods. It has only 1 gram of saturated fat per tablespoon. That's equal to the amount in canola oil, most of which is imported from Canada.

## Product

### Textured soy products

Soy flour can be physically compressed to restructure the protein fibers. The resulting products are available in dried and frozen forms and can be used to extend or replace ground meat. Frozen forms are ready to use; dried forms must first be rehydrated with boiling water.

### Tofu

Tofu, or soybean curd, is made by cooking crushed soybeans with water and coagulating the fresh, hot soy milk. It is usually found in the produce, dairy, or deli section of the grocery store in water-filled, air tight packages weighing 10 to 16 ounces.

Tofu is available in different consistencies—extra firm, firm, and soft.

Silken tofu refers to a specific processing method that produces a soft, creamy, custard-like product.

Tofu is very versatile because it is bland, porous, and absorbs the flavors of other ingredients.

Firm tofu holds its shape and can be diced. It is good stir-fried, grilled, or added to soups and casseroles.

Soft and silken tofu are ideal for recipes where blending is required. They can be used instead of cream cheese, sour cream, ricotta or cottage cheese, mayonnaise, or yogurt in dips, salad dressings, and main dishes.

After opening, change water daily, refrigerate, and use within one week.

## Benefits

They are a good source of fiber and low-fat protein. Dried forms have about 11 grams protein per half cup.

All types of tofu are rich in protein and easily digestible. Protein content varies from 5 to 13 grams per 4 ounces.

Tofu contains no saturated fat or cholesterol and is very low in sodium.

Tofu made with calcium sulfate is an excellent source of calcium.

Soft or silken tofu gives a smooth, rich, mousse-like texture to parfaits, puddings, desserts, dips, and fruit shakes — and boosts the protein value.