SoyConnection By U.S. Soy

Overview of Common Soyfoods

From both culinary and health perspectives, individual soyfoods have varying attributes, making them easy to incorporate into diets of people with different tastes and nutritional needs.
Soyfoods are often classified as either traditional Asian foods, like tofu and soymilk which have been consumed for centuries by some Asian populations, or as modern soyfoods, like plant-based meat alternatives made from soy protein. Among traditional Asian products, soyfoods are further divided into two groups: fermented and unfermented.

Traditional Non-Fermented Soyfoods

Whole Soybeans

- Are an excellent source of protein, fiber and iron, are predominantly polyunsaturated fat, have isoflavones and are a source of choline, a nutrient that can be low in plant-based diets such as flexitarian, vegetarian, and vegan.[1,2]
- Mature soybeans can be purchased in dried form or as a canned product.
- Most often consumed as edamame (green soybeans), which are soybeans harvested at about 80% maturity, accounting for their higher moisture and sugar content.[3]
- Can be roasted to create soynuts, a snack item that undergoes minimal processing and therefore, like all whole soyfoods, retains all of the nutrients found in whole soybeans. Soynuts may be made with added oils and flavorings.

Soymilk

- Liquid expelled from soaked soybeans.
- Many versions have a protein content comparable to that of cow's milk and, if fortified, have a comparable calcium content as well.
  - Calcium bioavailability from fortified soymilk was shown in healthy young women to be comparable to calcium bioavailability from cow's milk.[4]
  - Fortified soymilk and soy yogurt are the only plant-based milk and yogurt included in the milk group of the current Dietary Guidelines for Americans.
  - In addition to calcium, fortified soymilk typically includes vitamin D in the form of ergocalciferol.

Tofu

- Made by adding a coagulant to soymilk and pressing the resulting curds into a solid block.
- Good source of protein and can contribute calcium when a calcium-containing coagulant (calcium sulfate) is used.
- In a study involving premenopausal women, calcium bioavailability from tofu was shown to be similar to the bioavailability of calcium from cow's milk.[5]
- Firm tofu is often higher in protein and calcium than soft tofu.
- Silken tofu is a more custard-like product in which the curds are not pressed, and it tends to be lower in nutrients than its pressed counterpart.
- Because of the various methods and ingredients used in tofu production, nutrient content varies greatly and it's best to depend on package labels for nutrient information rather than food databases.

Traditional Fermented Soyfoods

Miso

- Produced by fermentation of soybeans and rice or barley with koji mold (Aspergillus oryzae) and added salt.
- Widely used as a condiment in Japan where countless variations of this product are available.
- May have a number of health benefits including that it may improve immune function, inhibit oxidation and function as a probiotic.[6]
- Often high in sodium.[7]

Natto

- Traditional Japanese food made from whole soybeans that have been fermented with Bacillus subtilis var. natto.
- Has a distinctive odor and viscous texture and has not gained popularity outside of traditional Japanese cooking.
- In Japan, it is often served with rice as a breakfast food.
- Bacillus natto produces nattokinase, an enzyme which exhibits a fibrinolytic activity[8] and some data suggest it may contribute to the reduction of CVD mortality.[9]
- One of the few plant sources of vitamin K2, which may promote bone health.[10]

Tempeh

- Considered Indonesia's staple source of protein.[11]
- Produced through a fermentation process that binds soybeans into a cake form. Fermentation is achieved by aging the tempeh with a starter, which is a Rhizopus fungus.

- In Indonesia, tempeh making is often a home-based art where the soybeans are wrapped in banana leaves and left to ferment.
- Several studies suggest tempeh has a role in combating anemia.[11]

Modern Soyfoods

Soy Flour

- Made from ground roasted soybeans and is available as either a full-fat or defatted product.
- Good source of protein and has isoflavones.
- Often added to baked goods for its beneficial effects on texture due to its content of both protein and lecithin.
- Sometimes used as an egg replacer in vegan baked products.
- Typically 50% protein on a caloric basis.[12]

Textured Vegetable Protein (TVP)

- Dried granular product made from defatted soy flour.
- Sometimes flavored to taste like beef or chicken and must be rehydrated before using in recipes.
- Excellent source of protein (11 g/half-cup prepared) with a long shelf life and is a common ingredient in ready-to-eat meals for camping, survival kits, and the military.
- Economical protein source that is valuable for preparing low-cost meals.

Plant-Based Meat Alternatives

- Extensive variety of plant-based meat alternatives made from SPI and SPC are available.
- Composition varies depending upon the main ingredients, source of fat, and micronutrients that are added.
- Almost always an excellent source of protein, with some providing as much as 15g/serving. Some plant-based meat alternatives are fortified with micronutrients, such as vitamin B12 and zinc. In Canada, all plant-based meat alternatives are fortified with vitamin B12.
- Different types of fat are used in production, and sodium amounts may vary.
- A recent analysis concluded that despite the degree to which they are processed, soy-based burgers compare well with meat-based burgers with respect to nutritional and health attributes.[13]

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