



## Tofu: A Popular Food with High Nutritional and Health Benefits

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### INTRODUCTION

Tofu, also known as bean curd, is a highly admired food of plant origin with great nutritional and health benefits. It was first discovered by a Chinese cook about 2000 years ago. In Japan, tofu was introduced in the 18th century. Presently, tofu has become a popular food in many countries of the world, including Americas, Australia, Cambodia, China, Europe, India, Indonesia, Japan, Korea, Malaysia, Myanmar, New Zealand, Philippines, Singapore, Thailand, and Vietnam. Tofu is a versatile form of soybeans that is made by curdling soymilk so that its proteins become coagulated and then pressed into a sliceable cake. There are regional variations in production methods, flavor, texture, and usage of tofu. Tofu is a natural, inexpensive, and nourishing food, which is consumed by people of developed as well as developing nations. It is an excellent source of non-animal protein in the diet of vegetarian. Tofu varies in texture from soft to firm to

extra-firm. Soft tofu has a smoother texture and is suited for sauces, salad dressings, and desserts. Firm and extra-firm tofu are used for baking, stir-frying, and grilling. Tofu is commonly found in Asian cuisine, particularly in East and Southeast Asia. The neutral flavor of tofu allows it to be easily incorporated into any recipe. In India, tofu is used as a low-fat replacement for paneer. Tofu can be frozen in its original packaging up to five months. This process will actually alter its colour and texture, making it more spongy and absorbent, and more yellowish in colour. Currently, a range of tofu products are available for purchase online.

Tofu is derived from soya protein. It can be soft, firm or extra firm and has a subtle flavour. Typical tofu making procedures include several steps like cleaning, soaking, grinding beans in water; filtering, boiling, coagulation, and pressing. Coagulation of the soymilk is the most important step in tofu

making process. Two types of coagulants namely salts and acids are used commercially. The texture of tofu can also be altered by freezing, puréeing, and cooking. Fresh tofu is prepared directly from the soy milk, and processed tofu is made from fresh tofu. It can be found in bulk or individual packages, both of which are refrigerated. Now a days, tofu is consumed throughout the world due its several health benefits. Tofu is easily available in baked, smoked, roasted or fried form, and is used in savory and sweet dishes. It serves as a beneficial meal for both sexes, and all age groups. Tofu is an outstanding substitute for meat, and seafood. It is pertinent to mention that tofu should be rinsed before consuming. Once the container is opened, it should be refrigerated to keep it preserved. In order to keep tofu fresh, it is necessary to change the water inside the container. The present communication delineates the nutritional and health benefits of tofu, a plant originated food, which is widely consumed in many countries of the world.

### NUTRITIONAL VALUE OF TOFU

Tofu is a widely enjoyed food made from soybeans, and is a good source of protein, vitamins (A, C, D, E, K, and the B vitamins, such as riboflavin, thiamine, niacin, pantothenic acid, biotin, vitamin B-6, vitamin B-12 and folate), and minerals (calcium, phosphorus, potassium, magnesium, iron, zinc, manganese, selenium, and copper). In addition, tofu is also rich in omega-3 fatty acids that are needed for good health. Tofu also provides the required amino acids, which are crucial to a healthy, and balanced diets. It is mentioned that one block of hard tofu, weighing 122 grams (g) contains 177 calories, 5.36 g of carbohydrate, 12.19 g of fat, 15.57 g of protein, 421 mg of calcium, 282 mg of phosphorus, 178 mg of potassium, 65 mg of magnesium, 3.35 mg of iron, 2 mg of zinc, and 27 micrograms (mcg) of folate. It also provides small amounts of niacin, riboflavin, thiamin, vitamin B-6, choline, manganese, and selenium. It is recommended that daily requirement of protein for man and woman is 56 grams and 46 grams, respectively. We roughly need 0.80 grams of good quality protein/kg body weight/day. A single serving of tofu provides protein to make up over 18% of our daily requirement. Moreover, one can get 33% of iron requirements for a day just by consuming tofu once. Tofu is one of the

few superfoods that can be considered a healthier alternative to fish. Tofu is used in many meat substitutes, such as tofu sausages and tofu burgers.

### TYPES OF TOFU

Several types of tofu are available for various uses.

- **Fermented tofu:** It is a briny, creamy variety, which has been pickled. It is served as a dip for fresh vegetables or can be used to season rice or porridge.
- **Silken tofu:** It is also known as Japanese-style tofu and is generally used in desserts, smoothies, puddings, and dips. It can also be used as an egg substitute in baking. It is creamy and soft in texture and has very high water content.
- **Regular tofu:** Regular tofu has a spongy texture and can be sold as soft, medium, firm, and super firm depending on its water content. The soft variety is used in soups, and the firm variety is generally used for stir-fries and it can even be baked. The extra firm can be used as a meat substitute.
- **Smoked tofu:** Smoked tofu has a rich, deep flavor and can be eaten raw as an appetizer or added to a salad. Traditionally, this variety was smoked over tea leaves, but now it is done over beech wood.
- **Seasoned tofu:** It is already pre-seasoned with different flavors, such as barbeque or teriyaki.

### HEALTH BENEFITS OF TOFU

Tofu represents an excellent source of many nutrients like protein, vitamins and minerals, which are highly imperative for keeping good health. The antioxidant and anti-inflammatory properties of soy peptides found in fermented soy food like tofu can help to protect the blood vessels from oxidative and inflammatory damage. Research indicates that eating soy-based products can prevent breast cancer, osteoporosis, and cardiovascular disease. Menopausal women can rely on tofu for production of oestrogen. It also helps to bring down the incidence of hot flashes in women. Persons with low immunity are susceptible to infections. Therefore, tofu plays an important role in building strong immune system that provides a shield against some infections.



High blood cholesterol and hypertension are the common health problems, which may occur due to meat consumption. Tofu being rich in good cholesterol and omega-3 fatty acids, can remove all the harmful effects meat causes to our health. The health benefits of tofu are summarized as follow.

1. It strengthens muscle and bone health.
2. It reduces bad cholesterol level (LDH) and thus, prevents heart problems
3. It enhances body weight loss.
4. It prevents migraine headaches.
5. It regulates blood sugar and helps in diabetes.
6. It prevents prostate cancer in men.
7. It Inhibits ageing process.
8. It eases menopause symptoms in women.
9. It helps to prevent osteoporosis.
10. It prevents kidney diseases.
11. It maintains cardiovascular health.
12. It prevents anemia.
13. It prevents liver damage.
13. It improves brain health.
14. It prevents hair loss.
14. It prevents endometrial cancer in post-menopausal women.
15. It reduces the risk of lung cancer.
16. It boosts immunity.

### PRECAUTIONS

It is pertinent to mention that people who are allergic to soy products must avoid intake of tofu in their diet. Women who have a family history of breast cancer and those who are currently battling breast cancer are advised not to eat tofu. An individual having kidney and gallbladder stones should not consume tofu. Persons who are born

with congenital hypothyroidism or those suffering from hypothyroidism are advised to avoid consumption of soy-bean and soy-products including tofu. Sometimes, tofu may cause gas, bloating, abdominal cramps, diarrhea, nausea, vomiting, headache or fever. It is suggested that genetically modified tofu should not be consumed, as it can cause kidney stone, liver, and digestive problems. As high intake of tofu might produce harmful effects, therefore, it is highly imperative that tofu should be consumed in moderate amounts to avoid health problems.

### CONCLUSIONS

Tofu, a plant originated food, is a very rich source of protein, minerals and vitamins. It can be considered as a good alternative to meat and fish. Tofu is consumed in many countries of the world including India. Scientists have recognized several health benefits of tofu. However, higher intake of tofu should be avoided. It is recommended that more comprehensive and systematic studies should be undertaken to establish the beneficial role of tofu in preventing various health problems in both sexes and in different age groups.

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