

Soybeans

Soybeans are members of the pea (legume) family of vegetables. Eating soybean-based foods may reduce the risk of a range of health problems, including coronary heart disease. More research is needed, but the evidence so far suggests that it could be wise to include whole soy foods in the daily diet.

Soybeans also contain hormone-like substances called phytoestrogens that mimic the action of the hormone oestrogen. The health benefits of soy for menopausal women could include fewer hot flashes, protection from coronary heart disease and lowered risk of osteoporosis.

However, while whole soy foods have been shown to have health benefits, the benefits of taking phytoestrogen supplements are unproven. See your doctor or dietitian for further guidance.

Nutrition profile

Soy is a high quality protein. It is one of only two known plant foods to contain all the essential amino acids, similar to those found in meat (the other plant food is amaranth seed, a wild green). Some soy products can be a source of calcium and iron, such as Chinese tofu or tempeh (made with a calcium coagulant) and calcium fortified soy drinks. The soybean is:

- High in fibre
- High in protein
- Low in saturated fat
- Cholesterol-free
- Lactose-free
- A good source of omega-3 fatty acids
- High in phytoestrogens.

Phytoestrogens explained

Soybeans are thought to be of some health benefit to menopausal women. Soybeans contain hormone-like substances called phytoestrogens ('phyto' means plant). Given the right conditions, these compounds mimic the action of the female hormone oestrogen, but with much lower potency - about 1,000 times less.

There are two types of phytoestrogen: isoflavones and lignans. Soybeans contain about 50 times more isoflavones than other members of the legume family, such as lentils and peanuts. (Lignans are found in cereals, vegetables and fruits.)

Soybeans and menopausal hot flashes

Women in Japan and China typically have fewer hot flashes during menopause than their Western counterparts. This observation led to research into dietary differences, including the fact that Asian women tend to have soy-rich diets, while Western women have meat-rich diets.

It is thought that a soy-rich diet helps reduce menopausal symptoms such as hot flashes because the phytoestrogens act like a mild form of hormone replacement therapy. The reduction rate of hot flashes varies from one study to the next, from 1.9 per cent to 45 per cent. However, it should be noted that some women in the studies experienced a reduction in hot flashes while taking dummy treatments too (the placebo effect).

More research is needed, but soybeans seem to offer promise in helping some women to manage menopausal hot flashes. If phytoestrogens do work, studies suggest that you need at least 2-3 serves of soy products daily. This would mean either:

- 500ml soymilk per day
- 100g tofu per day
- 4-5 slices of soy linseed bread per day (depending on the brand).

Soybeans and coronary heart disease

Oestrogen may protect women against coronary heart disease during their reproductive years, but rates of heart disease increase remarkably after menopause. Soybeans have been shown to lower blood cholesterol levels as well as lipoproteins, both known risk factors for heart disease.

A meta-analysis (an analysis of a number of studies on a topic) of 38 clinical trials found that 31-47g of soy protein can reduce blood cholesterol levels by as much as 20 per cent. This amount of soy protein is found in two to three serves of soy products.

It isn't known whether the phytoestrogens or the soy proteins (or both, working in combination) are responsible for this health benefit. However, studies have shown that eating soy protein without isoflavones results in only small cholesterol reductions and isoflavone supplements alone have minimal cholesterol lowering effects.

The cholesterol lowering benefits of eating soy foods may be better if the total diet is high in carbohydrate. This seems to help with the breakdown of the isoflavones. In recognition of the evidence, the United States Food and Drug Administration approved a health claim in 1999 acknowledging the heart health benefits of including at least 25g soy protein daily in a diet low in saturated fat.

Other possible health benefits of soy

The soybean needs further research before its health benefits are conclusively known. The health benefits of soy are not without controversy. Some research suggests that it may adversely affect thyroid function in some people. The suggested health benefits of whole soy foods include:

- Lowered blood pressure
- Improvements to blood vessels, such as greater elasticity of artery walls
- Reduced risk of osteoporosis
- Protection against various cancers, including those of the breast, colon, prostate and skin
- Management of endometriosis.

How much is enough?

Generally, it is thought that 30-50mg of isoflavones is enough to offer health benefits. Examples of the average isoflavone content in one serve include:

- Half a cup of soybeans 40-75mg isoflavones
- Quarter cup of soy flour 45-69mg isoflavones
- One 250ml glass of soy drink 15-60mg isoflavones
- One 115g block of tofu 13-43mg isoflavones
- One 110g block of tempeh 41mg isoflavones
- One container of soy yoghurt 26mg isoflavones
- Two slices of soy bread 7-15mg isoflavones
- Teaspoon of soy sauce 0.4-2.2mg isoflavones.

However, be aware that fermented soy products like soy sauce are high in salt.

Genetically modified soy products

Some people don't wish to eat genetically modified (GM) foods. Soy products imported from the United States are the main source of GM ingredients in food sold in Australia. Some soybean crops have been genetically modified to be resistant to herbicide but they are otherwise identical to the usual soybean.

GM soy is found in obvious soy products, such as tofu or soy flour, but it can also be found in a wide range of other foods such as chocolates, potato chips, margarine, mayonnaise, biscuits and bread. Food regulations in Australia require foods that contain genetically modified ingredients to be labelled.

Helpful tips

If you want to increase your intake of phytoestrogens, you could:

- Choose whole soy foods like soymilk, soy yoghurt, soy bread and tofu.
- Check the ingredient list to make sure that the soy foods you buy are made from whole soybeans.
- Ensure that products such as cereals contain soy protein and not just added isoflavone.

Other foods with phytoestrogens

You can also include other foods that contain phytoestrogens in your diet. For example:

- **Wholegrain cereals** - like oats, wheat, corn, barley, rye and buckwheat.
- **Seeds** - for example linseed, sunflower, pumpkin, sesame and tahini (sesame paste).
- **Nuts** - for example almonds.
- **Sprouts** - alfalfa.
- **Oils** - extra virgin olive oil.
- **Other legumes** - chickpeas, lentils and kidney beans.

Where to get help

- Your doctor
- An accredited practising dietitian, contact the Dietitians Association of Australia
- Food Standards Australia New Zealand Tel. (02) 6271 2222

Things to remember

- The soybean may be a possible 'superfood' that can reduce the risk of a range of health problems, including coronary heart disease.
- Soybeans contain hormone-like substances called phytoestrogens that mimic the action of the female hormone oestrogen.
- About one or two daily serves of soy products can offer health benefits.

This page has been produced in consultation with, and approved by:

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