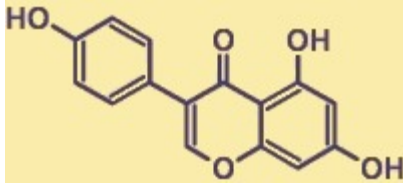


## Isoflavones

The consumption of soy products has many health benefits, including protection against breast cancer, prostate cancer, menopausal symptoms, heart disease and osteoporosis. Many of the health benefits of soy are derived from its isoflavones. However some critics claim that isoflavones can increase the incidence of epithelial hyperplasia and cause goitre and hyperthyroidism. Isoflavones remain the subject of many scientific studies, as illustrated by the more than 1700 scientific publications mentioning isoflavones in their title or abstract. Most of these studies show that isoflavones may have some health benefit.



The chemical structure of isoflavones is very similar to that of our own estrogen. Because of this similarity in structure, they can interfere with the action of our own estrogen. Depending on the type of estrogen receptor on the cells, isoflavones may reduce or activate the activity of estrogen. Isoflavones can compete with estrogen for the same receptor sites thereby decreasing the health risks of excess estrogen. They can also increase the estrogen activity. If during menopause the

body's natural level of estrogen drops, isoflavones can compensate this by binding to the same receptor, thereby easing menopause symptoms as a result. The best way to consume isoflavones is in the form soy or soyfoods, so you can benefit from other healthy components of soy. Soy contains many types of isoflavones, but the most beneficial are genistein (see picture) and daidzein. The highest amounts of soy isoflavones can be found in soy nuts and tempeh. Another natural source of isoflavones is red clover.

### Health benefits of isoflavones

Research in several areas of healthcare has shown that consumption of isoflavones may play a role in lowering risk for disease. They can fight disease on several fronts. The following potential health benefits are attributed to isoflavones:

- **Ease menopause symptoms** - The benefits of soy go beyond reducing long-term cancer risk. Recent studies have found that soy isoflavones can reduce menopause symptoms such as hot flushes and increase bone density in women. Indeed, many menopausal and post-menopausal health problems may result from a lack of isoflavones in the typical Western diet. Although study results are not entirely consistent, isoflavones from soy or red clover may be helpful for symptoms of menopause. A study carried out by "Health Test" in 2004 investigated the prescription behaviour of 27 doctors for women with menopause symptoms. It showed that isoflavones were recommended twice (44%) as often as hormonal treatment (22%). The prescribed supplements were mainly based on the following plants: soy, black cohosh and hops.
- **Reduce heart disease risk** - Soy isoflavones also appear to reduce cardiovascular disease risk via several distinct mechanisms. Isoflavones inhibit the growth of cells that form artery clogging plaque. These arteries usually form blood clots which can lead to a heart attack. A review of 38 controlled studies on soy and heart disease concluded that soy is definitely effective for improving cholesterol profile. There is some evidence that isoflavones are the active ingredients in soy responsible for improving cholesterol profile.
- **Protect against prostate problems** - Isoflavones may be beneficial for men's health because they may protect against enlargement of the male prostate gland. Studies show isoflavones slowed prostate cancer growth and caused prostate cancer cells to die. Isoflavones act against cancer cells in a way similar to many common cancer-treating drugs.
- **Isoflavones improve bone health** - Soy Isoflavones help in the preservation of the bone substance and fight osteoporosis. This is the reason why people in China and Japan very rarely have osteoporosis, despite their low consumption of dairy products, whereas in Europe and North America the contrary happens. Unlike estrogen, which helps prevent the destruction of bone, evidence suggests that isoflavones may also assist in creating new bone. Other studies are not entirely consistent, but evidence suggests that genistein and other soy isoflavones can help prevent osteoporosis.

- **Reduce cancer risk** - Isoflavones seem to be protect against tumors because they act against cancer cells in a way similar to many common cancer-treating drugs. Population-based studies show a strong association between consumption of isoflavones and a reduced risk of breast and endometrial cancer. Women who ate the most soy products and other foods rich in isoflavones reduced their risk of endometrial cancer by 54%.

### Isoflavones are natural plant hormones

Isoflavones can be found in many foods but the best known source is the soy bean (*Glycine max*). The soy isoflavones are responsible for most of the soy health benefits. The Soy bean is a plant cultivated as foodstuff whose health properties have recently been discovered. Thorough studies have revealed that the consumption of the soy beans have favourable effects on people's health. Another source of isoflavones is red clover. As opposed to soy beans, red clover is normally not eaten but the isoflavones are extracted in industrial processes and used to make isoflavones supplements.

### Isoflavones are natural antioxidants

A recent study has demonstrated that isoflavones have potent antioxidant properties, comparable to that of the well known antioxidant vitamin E. The antioxidant powers of isoflavones can reduce the long-term risk of cancer by preventing free radical damage to DNA. Genistein is the most potent antioxidant among the soy isoflavones, followed by daidzein.

## Women's health



Women's health is much influenced by the female hormone estrogen. When estrogen levels drop during menopause, many women resort to hormone therapy. Hormone therapy can help women with hot flashes, mood swings, vaginal dryness and osteoporosis, but it also has some risks. Hormone therapy may increase their chance of heart attack, stroke, breast cancer and dementia. Isoflavones do not seem to have these risks. Isoflavones have an influence on the women's health during menopause but also before and during the reproductive years, or pre-menopause period. A study showed that of the 1172 women participating in a six year study, the hysterectomy rate was lowest

among the women whose diets contained the most soy foods. This study suggests that consuming soy foods, which contain isoflavones, seems to reduce the risk of fibroids and endometriosis.

### Isoflavones and girls

The consumption of isoflavones during the puberty, when the female breast develops, appears to protect the woman later in life against cancer. Studies show that women who ate weekly more than 3 portions of soy during adolescence showed a 40% reduced risk of breast cancer compared to those who did not consume soy. That's why it's important for girls to consume soy products or isoflavones supplements.

### Isoflavones and menstrual cycle

Isoflavones could increase the length of the menstrual cycle and moderate alter steroid hormone levels. A British study found that women who were given 60 grams of soy a day had longer menstrual cycles. Asian women, who ingest more soy on a daily basis, generally have longer menstrual cycles than Western women. Research suggests that the low Japanese breast cancer mortality rate may, in part, be due to consumption

of food containing soy isoflavones. Levels of steroid hormones and menstrual cycle duration are known risk factors for breast cancer. An increased menstrual cycle is beneficial because this results in less time that the breast cells are exposed to higher estrogen levels.

## Isoflavones and menopause

During menopause the level of estrogen drops and causes common symptoms of menopause: hot flushes, insomnia, heavy sweating, mood swings, vaginal dryness and headaches.

>> Problems with Menopause

## More literature about women's health and isoflavones

*Soy, isoflavones, and breast cancer risk in Japan.* Journal of the National Cancer Institute, Vol. 95, No. 12, 906-913, June 18, 2003

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## Menopause symptoms



Menopause symptoms are as different and individual as women themselves. Some experience menopause problems that their friends never do. The duration and severity of the symptoms is variable. Menopause is a natural part of life that all women go through, some with more difficulty than others. But one thing all women have in common is the ability to make choices how to deal with their menopause symptoms. In the western world about 12% of woman don't experience menopause symptoms and about 14% experience intense physical or emotional problems. Below you can find some information about the most common symptoms of menopause. Here you can find a complete list.

### Psychological symptoms of menopause

Anxieties, difficulty in concentrating, overreacting to minor upsets, quickly being irritated, forgetfulness and mood swings are typical psychological problems. But studies indicate that many cases of depression relate more to circumstances than to menopause itself. Other events, such as worries about elderly relatives, retirement, divorce or widowhood, children growing up and moving out of the house occur around the period of menopause. Also some problems may be caused indirectly because of sleep problems. To deal with emotional symptoms you should exercise regularly. This will help maintain your hormonal balance and preserve bone strength. Talking to other women, who experience menopause problems, can help with emotional symptoms. Women approaching menopause often complain about memory loss and inability to concentrate.

### Hot flushes and other vasomotor symptoms

Hot flushes is the most typical and best known symptom of menopause. Hot flushes may begin 4 years before menstruation stop, but they usually continue a year or two after menopause. Hot flushes are sudden waves of body heat, usually in the face or chest. These problems may be accompanied by flushing, palpitations, perspiration, chills or night sweats. Hot flushes are caused changes in the control of the temperature of the body.

### Sleep problems

During menopause, insomnia or disturbed sleep may be experienced. It can take many forms, including

difficulty to fall asleep or awakening during the night. Menopause can lead to tiredness during the day.

### Intercourse problems

Vaginal dryness and less elastic tissues are common symptoms, because of the effect of a decreased estrogen level. Vaginal dryness can cause pain and irritation during intercourse. Interest in intercourse may decline and a requirement for more stimulation to reach orgasm is also very common. Vaginal lubricants can make intercourse less painful.

### Urinary problems

The chance of incontinence increases with age and there is evidence that estrogen loss plays a role. During menopause, the tissues in the urinary tract also change, sometimes leaving women more susceptible to involuntary loss of urine, particularly if certain chronic illnesses or urinary infections are also present. Exercise, coughing, laughing, lifting heavy objects, or similar movements that put pressure on the bladder, may cause small amounts of urine to leak. Lack of regular exercise during menopause may contribute to this condition. It's important to know that bladder training is a simple and effective treatment for these symptoms.

## Scientific literature about menopause symptoms

Seidl MM, Stewart DE. Alternative treatments for menopause symptoms. Systematic review of scientific and lay literature. *Can Fam Physician*. 1998 Jun;44:1299-308.

*Soy intake related to menopausal symptoms, serum lipids, and bone mineral density in postmenopausal Japanese women.* *Obstet Gynecol*. 2001 Jan;97(1):109-15

## Sources of isoflavones

There are several natural sources of isoflavones but the most important ones are soy and red clover.

### Red clover



Red clover is a perennial plant with trifoliate leaves and pink to red flowers. The plant derives its name in part from its flowers, which are fragrant and can range in color from white to a dark red. Red clover is a member of the legume family and has been used worldwide as a source of hay for cattle, horses and sheep and by humans as a source of protein in the leaves and young sprouts. Red clover is also medicinal plant for human use.

The beneficial effect of red clover isoflavones are very similar to that found with soy isoflavones. Isoflavones from red clover will reduce menopausal symptoms. Red clover isoflavones help maintain the density of the bones in both menopausal and peri-menopausal women. Red clover isoflavones have not shown a cholesterol reducing effect, probably because soy proteins take an important role for the cholesterol reducing effect.

>> [Red clover](#)

### Soy isoflavones

Isoflavones are present in relatively large amounts in virtually all soy products, with the exception of soy-protein concentrate. Whole soy contain about 200 mg isoflavones per 100g. Soybeans contain three types of isoflavones in four chemical structures.

>> [Soy isoflavones](#)

### Isoflavones supplements

There are a lot of isoflavones supplements on the market. Most of these supplements contain isoflavones which are extracted from soy beans or red clover. They can be considered as natural products.

Some supplements and medicines contain a synthetic form of isoflavones, called ipriflavone. It was chemically designed to have only the bone-stimulating effect of isoflavones but lack other estrogen-like

effects. Ipriflavone is not used for the treatment of menopausal symptoms, but is not believed to adversely affect estrogen receptor-positive breast cancer.

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