

## Soya, food and health

This Food Fact Sheet will look at the potential health benefits of eating soya foods.

### Soya and heart disease

Coronary heart disease (CHD) is the UK's number one killer. A major risk factor of CHD is having too much 'bad' low density lipoprotein (LDL) cholesterol in the blood; eating soya foods as part of a healthy low-saturated fat diet can help lower this LDL cholesterol.

Soya is thought to lower cholesterol in two ways:

1. Reducing the body's natural cholesterol-producing capacity in the liver.
2. Soya foods are normally eaten in place of other higher saturated fat foods such as fatty meat and full fat dairy products. Most soya foods are naturally low in saturated fat and contribute to unsaturated fat intake which helps reduce LDL cholesterol.

These combined benefits can lower LDL cholesterol by as much as 10% if you eat 15-25g soya protein per day – approximately two glasses of soya alternative to milk (see Table 1).

Research has also highlighted the benefits of combining soya protein with other plant foods such as nuts, plant sterols/stanols and oats or barley rich in the soluble fibre – beta-glucan. Depending on the types and amounts of these foods consumed, cholesterol levels can be reduced by as much as 12-24%.

Some small studies show how soya isoflavones may help improve the flexibility and function of the lining of key blood vessels. This in turn inhibits the development of both atherosclerosis and thrombosis, two key processes in the development of heart disease. More research is currently being undertaken in this area.



**Table 1 Soya protein and isoflavone content of commonly available soya foods in the UK**

Food	Average serving size (g)	Soya protein per serving (g)	Isoflavones per serving (mg) *
Soya milk alternative	250	7.5	16.5-24.8
Soya yoghurt alternatives – <i>plain, vanilla, fruit and pouring</i>	125	4.5-5	9.9-16.5
Young soya/ edamame beans – <i>fresh or frozen**</i>	80	9.3	20.5-31.4
Soya nuts (roasted edamame beans)	28	15	35.8
Soya mince/ chunks – <i>chilled/ frozen</i>	100	16.4	36.1-54.1
Tofu – <i>silken hard</i>	75	11.5	25.3-37.9
Tofu – <i>marinated</i>	50	14	30.8-46.2
Soya desserts or custard	125	3.8	8.4-12.5
Soya shakes	200	6.6	14.5-21.8
Dried soya beans	85 (cooked weight)	14	46.8

\* Isoflavone content varies depending on soil/growing conditions and production methods where up to 80% of isoflavones can be lost. Table uses standard estimated value of 2.2mg-3.3mg isoflavones per 1g soya protein.  
 \*\* Average of the three current brands on the market.

### Soya and menopausal symptoms

Many women undergoing the menopause experience 'hot flashes', which are believed to result from fluctuations in the brain's temperature-regulating system as a consequence of the decline in the production of oestrogen.

Up to 75% of Western women experience hot flashes, which contrasts strongly with only around 20% of Japanese and Chinese women who consume a 'traditional' diet based on soya foods. The latter group, typically consumes 15-40mg isoflavones per day, around 10-20 times higher than Western women.

Hormone Replacement Therapy (HRT) remains the most effective treatment of menopausal symptoms. However, several studies show that consuming around 50-80mg soya isoflavones daily for 8-12 weeks can help lower hot flush frequency and severity by 25%. The benefit seems to be gained by women who experience at least five severe hot flushes daily. In practical terms, 50mg isoflavones can be achieved by consuming around two to three servings of soya foods daily (Table 1).

A loss of oestrogen raises the risk of heart disease with cholesterol levels increasing by as much as 25%. Having two servings of soya foods daily can help with both cholesterol-lowering and reductions in the severity of hot flushes.

## Soya and cancer

Many countries with high soya intakes also have a low rate of certain cancers including breast and prostate. In 2012, the American Institute for Cancer Research (AICR) reported no indication that eating soya places anyone at increased risk of breast cancer, or that soya foods were unsuitable for those either at risk of breast cancer, breast cancer patients or for survivors of breast cancer. The AICR latest review also mentions that in some cases, research indicates that soya isoflavones may in fact lower the risk of cancer. Some studies suggest that lifelong soya consumption and exposure to isoflavones – especially before and during puberty – may protect against the development of breast cancer and other studies suggest that soya isoflavones may lower the risk of recurrence in breast cancer survivors.

## Soya and bone health

Some studies have shown a link between improved bone health and soya intake, especially in Asian women. People who regularly eat soya appear to have higher bone density and lower rates of fracture than those with low intakes. Research in this area is ongoing and dietary interventions are not considered a replacement for anti-osteoporotic medication.

## The soya controversies

Soya foods have a long safety record in traditional Asian populations where soya has been regularly consumed for thousands of years. Indications of any potentially harmful effects from isoflavones have been noted only in laboratory and rodent studies when high levels of isoflavones have been used – these effects have not been shown in humans. The safety of soya has been thoroughly reviewed and soya foods are permitted for use in the UK under the Food Safety Act.

**Phytoestrogens and men's health:** Studies consistently show that eating soya foods does not raise oestrogen levels, upset hormonal balance or reduce testosterone concentrations in men; no adverse effects on fertility or sexual health have been reported.

**Phytoestrogens and thyroid function:** The latest review of 14 studies has confirmed that there is no harmful effect of soya food consumption in healthy humans with a normal functioning thyroid gland. People with an already underactive thyroid gland (hypothyroidism) can continue to consume soya foods, but should discuss this with their doctor and have their thyroid levels monitored. This is because soya isoflavones can interfere with the absorption of synthetic thyroid hormones. A recent study has indicated that soya isoflavones may worsen the condition for individuals with a mildly underactive thyroid.

## Soya milk on a dairy-free diet

Soya alternatives to milk and dairy are dairy and lactose free and therefore suitable for children over six months of age and adults with lactose intolerance (around 5% of the UK adult population) and with other adverse reactions to cows milk. Choose soya products that are fortified with calcium when replacing dairy foods in the diet.

## Summary

Research on soya foods is ongoing, but it is clear that soya is nutritious, safe and healthy. Potential health benefits include lowering cholesterol and reducing the severity of hot flushes. Evidence shows that soya foods can be consumed by all members of the population including men and women with breast cancer. Soya foods can also help us to achieve an increasingly plant-based diet by reducing our intakes of animal protein which can also benefit the environment and food sustainability.

**Further information:** Food Fact Sheets on other topics including Soya Foods – The Basics, Suitable Milk for Children with a Milk Allergy, Cholesterol Plant Stanols/ Sterols, Menopause, Osteoporosis, and Vegetarian Diets are available at [www.bda.uk.com/foodfacts](http://www.bda.uk.com/foodfacts)

### Useful links include:

[www.nhs.uk/conditions/vitamins-minerals/Pages/vitamins-minerals.aspx](http://www.nhs.uk/conditions/vitamins-minerals/Pages/vitamins-minerals.aspx)

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Written by Sue Baic, Dietitian.

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