

## Soya and health – the basics

Soya foods are made from the soya bean plant, part of the pea family

Soya foods are a staple part of the Asian diet and have become part of the mainstream UK diet. In Asia, both unfermented soya foods (soya milk alternatives, tofu, soya meat replacements) and fermented soya foods (tempeh and miso) are eaten. In the UK unfermented soya foods are more commonly eaten.

### What do soya foods provide?

The soya bean contains a range of essential nutrients including high quality plant protein, fibre, essential fatty acids and a range of vitamins and minerals. Soya foods are readily available in formats that make them easy to incorporate into the British diet. Most commonly consumed soya foods include soya meat replacements and related products such as burgers and sausages, tofu, dairy alternatives to yogurts, milk and desserts, which are in the main fortified with calcium as well as vitamins B12 and D, and ice-cream. The plant protein of both fermented and unfermented soya foods is high in a range of essential amino acids and similar to animal protein. Soya is also the main dietary source of isoflavones (see below).

Table 1: Nutritional Profile of Commonly Consumed Soya Foods

<b>Soya mince / chunks (textured vegetable protein)</b>	<ul style="list-style-type: none"> <li>• High quality plant protein.</li> <li>• Low in saturated fats.</li> <li>• Source of fibre.</li> </ul>
<b>Milk alternatives: unsweetened, sweetened and flavoured</b>	<ul style="list-style-type: none"> <li>• Low in saturated fat.</li> <li>• Source of essential fatty acids – omega 6 and omega 3.</li> <li>• Source of high quality plant protein ~ 3g / 100ml.</li> <li>• Usually fortified with calcium and vitamins B12 &amp; D.</li> </ul>
<b>Yogurt alternatives: plain, vanilla and fruit flavours.</b>	<ul style="list-style-type: none"> <li>• Low in saturated fats.</li> <li>• Some are a source of fibre.</li> <li>• Some versions are now high in plant protein providing 5-6g plant protein per 100g.</li> <li>• Usually fortified with calcium and vitamins B12 &amp; D.</li> </ul>
<b>Desserts and custards: in a variety of flavours</b>	<ul style="list-style-type: none"> <li>• Low in saturated fat.</li> <li>• Source of high quality plant protein.</li> <li>• Often fortified with calcium and vitamins B12&amp; D</li> </ul>
<b>Tofu</b>	<ul style="list-style-type: none"> <li>• Low in saturated fat.</li> <li>• Source of essential fatty acids omega-6 &amp; omega-3.</li> <li>• High in high quality plant protein.</li> <li>• Source of calcium.</li> </ul>



### Isoflavones

Soya beans are the main dietary source of isoflavones. A large glass of soya drink (250ml) will provide approximately 25mg isoflavones, but not all soya foods contain isoflavones with some processing methods removing 80-90% of the isoflavones such as the case for isolated soya protein. Isoflavones are often termed as phytoestrogens as they have a chemical structure similar to the human hormone oestrogen. However, it is now well established that in the human body, isoflavones do not behave like the human hormone oestrogen: they are weaker, they only have effects on some body tissues and in some situations they can have opposite effect to oestrogen. Isoflavones may help reduce the symptoms of menopause.

There is now scientific agreement that the controversy around isoflavones' potential to have bad side effects in humans is fuelled only by findings from laboratory or animal studies using pure isoflavones or high doses. It is well established that animals metabolise isoflavones in a different and much more efficient way to humans and results from such studies cannot be compared to any human outcomes. Additionally, using high doses of pure isoflavones cannot be compared to consuming isoflavones from whole soya foods as they provide lower quantities and are a combination of many biologically active molecules. Comprehensive reviews by the European Food Safety Authority, World Cancer Research Fund and the World Health Organisation all conclude that soya foods as part of a healthy balanced diet are safe.

### Absorption of nutrients from soya foods

Some of the other plant chemicals found in soya beans like oxalate and phytates have potential to impair the absorption of minerals such as iron, zinc and calcium.

However, studies show these minerals are usually well absorbed from soya foods when eaten as part of a mixed diet, and the human body adapts to absorb more of these minerals when reserves are low. In addition, the phytate content can be significantly reduced during the processing of soya foods and many soya foods in the UK are fortified with additional calcium and vitamin D meaning calcium content and absorption compares favourably with dairy foods.

## Soya and plant-proteins for a more sustainable planet and better health

The government's new dietary recommendations, the Eatwell Guide (2016), clearly recommends a significant shift towards more plant-based eating both for the nation's health as well as a more sustainable planet. Over 75% of the Eatwell Guide is dominated by plant foods with the most notable change to the protein section, where plant-based proteins are recommended over animal proteins. As soya provides a high quality protein source, this is an ideal option for the nation.

## Soya and heart disease

A major risk factor of heart disease is having too much 'bad' low density lipoprotein (LDL) cholesterol by 4-6%. Soya foods are naturally low in saturated fats and often displace high saturated foods in the diet and it is also thought that the soya protein itself helps to lower the body's natural LDL cholesterol producing capacity in the liver.

## Soya and menopausal symptoms

Many women undergoing the menopause experience 'hot flushes'. Consuming 40mg of isoflavones daily, equivalent to 2 glasses of soya milk or 100g soya mince, may help to reduce hot flush frequency by 20.6% and severity by 26.2%. Additionally, during the menopause, women's risk of heart disease is doubled, and consuming soya foods can also help lower the risk. Read more in the BDA Menopause Food Fact Sheet.

## Soya and cancer

A review by the American Institute for Cancer Research, the American Cancer Society and the World Cancer Research Fund all indicate that soya foods as part of healthy balanced diet are perfectly safe for women with and without cancer diagnosis and there is a potential for soya food consumption to reduce breast cancer recurrence. Additionally, the protective effect of soya against breast cancer seems to be related to consuming soya foods as a child or teenager.

## Soya and bone health

Some studies have shown that people who regularly eat soya appear to have higher bone density and lower rates of fracture than those with low intakes. However, more evidence is needed.

## 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. Controversy around this has been fueled by animal and laboratory studies which as stated cannot be compared to any human outcomes and just two case studies where the men consumed high doses of soya foods and followed an unbalanced diet.

## Phytoestrogens and thyroid function

A 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. Soya foods do not interfere with thyroid function but they can interfere with the absorption of thyroid medication levothyroxine like many herbs, drugs, fibres and calcium supplements. For this reason, thyroxine medication is always advised to be taken on an empty stomach and soya should not be excluded by those with an underactive thyroid gland as their medication dose can easily be modified.

## Soya milk on a dairy free diet

Soya alternatives to milk are dairy and lactose free and therefore suitable for children over six months of age and adults with lactose intolerance and with other adverse reactions to cow's milk. Choose soya products that are fortified with calcium to replace dairy foods from the diet.

## Summary

Research on soya foods is ongoing, but it is clear that soya is a nutritious, safe and palatable part of the diet which fits well with healthy eating guidelines and may have multiple health benefits.

### Further information:

Food Fact Sheets on other topics are available at

[www.bda.uk.com/foodfacts](http://www.bda.uk.com/foodfacts)

### Useful links:

#### NHS Choices

[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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