

## Soya foods – 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 in the UK, advances in food technology and product development have resulted in soya foods becoming part of the mainstream diet (see Table 1). In Asia, both unfermented soya foods (soya milk alternatives, tofu, soya mince/meat replacements) as well as fermented soya foods (tempeh and miso) are eaten. In the UK unfermented soya foods are more commonly eaten.



**Table 1 Soya foods available in the UK**

<p><b>Soya alternatives to dairy – fresh and UHT varieties, the majority now fortified with calcium and vitamin D:</b></p> <ul style="list-style-type: none"> <li>• Soya milk alternative</li> <li>• Soya shakes</li> <li>• Soya yogurt alternatives – plain, vanilla and fruit varieties</li> <li>• Soya single cream</li> <li>• Soya cheese</li> </ul>	<p><b>Soya meat alternatives:</b></p> <ul style="list-style-type: none"> <li>• Soya mince, soya chunks, textured vegetable protein (TVP)</li> <li>• Soya or tofu burgers/ sausages</li> <li>• Soya ready meals – lasagne, cottage pies etc.</li> </ul>
<p><b>Soya beans</b></p> <ul style="list-style-type: none"> <li>• Whole young soya (Edamame) beans both fresh and frozen – easy and quick to prepare</li> <li>• Dried soya beans</li> </ul>	<p><b>Tofu</b></p> <ul style="list-style-type: none"> <li>• (bean curd made from fermented soya milk) – soft, hard, smoked and marinated varieties</li> </ul>
<p><b>Soya nuts</b> (roasted Edamame beans)</p>	<p><b>Soya desserts and custard</b></p>
<p><b>Fermented soya foods:</b></p> <ul style="list-style-type: none"> <li>• Tempeh (fermented soya bean cake)</li> <li>• Natto (fermented soya beans)</li> <li>• Miso (a soya bean paste made from fermented soya beans and salt).</li> </ul>	<p><b>Soya flour</b> and soya containing <b>breads</b></p>

**Table 2 Nutritional profile of soya beans**

<b>Protein</b>	A complete protein containing all essential amino acids which has a digestibility score similar to meat and dairy foods.
<b>Fat</b>	Naturally low in saturated fat and containing predominantly unsaturated fats, especially linoleic (omega-6) and alpha-linolenic acid (omega-3).
<b>Carbohydrate and fibre</b>	Low glycaemic index means soya carbohydrates are released slowly and steadily on digestion helping to keep blood sugar levels steady.  A source of dietary fibre, mainly of the soluble type. An 85g serving of cooked soya beans provides approximately a third (5.5g) of UK adults daily recommendation.
<b>Minerals</b>	A source of calcium, iron, magnesium, copper, potassium and manganese and is naturally low in sodium.  An 85g serving of cooked soya beans provides approximately the following amounts of adult daily recommendations*: <ul style="list-style-type: none"> <li>• 10% calcium</li> <li>• 12.5% iron</li> <li>• 18% magnesium</li> <li>• 23% copper</li> <li>• 12% potassium</li> </ul>
<b>Vitamins</b>	Vitamins B6, E, K and folate.  An 85g serving of cooked soya beans provides approximately the following amounts of adult daily recommendations*: <ul style="list-style-type: none"> <li>• 14% B6</li> <li>• 24% E</li> <li>• 23% folate</li> </ul>
<b>Other beneficial substances</b>	The main dietary source of isoflavones (genistein, daidzein and glycitein).



\*Reference Nutrient Intake (RNI)



## What do soya foods provide?

The soya bean contains a range of essential nutrients including high quality protein, fibre, unsaturated fats and a range of vitamins and minerals (see Table 2). The 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 Table 3).

Isoflavones belong to the family of plant phytoestrogens, and have a similar but not identical chemical structure to human hormone oestrogen (oestrodial). Although they have some similarities in the way they behave in the human body, their strength is over 10,000 times weaker than oestrodial and they perform very differently depending on which part of the body they are acting. Overall, isoflavones are thought to have beneficial effects on specific body organs such as the breast, heart, bone and prostate. Research also shows isoflavones possess antioxidant, anti-inflammatory and anti-coagulant effects. These properties have been associated with the maintenance of blood vessel flexibility and inhibition of rapid cell overgrowth which occurs in cancer development. There is little difference in the absorption of isoflavones between fermented and unfermented soya foods.

## The absorption of nutrients from soya foods

Some of the other plant chemicals found in soya beans such as oxalate and phytates have the potential to impair the absorption of minerals such as iron, zinc and calcium. However, recent studies show these minerals are usually well absorbed from soya foods when eaten as part of a mixed diet. 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.

**Table 3 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 alternative to milk	250	7.5	16.5-24.8
Soya alternatives to yogurt – plain, vanilla and fruit varieties	125	4.5-5	9.9-16.5
Fresh or frozen young soya (Edamame) beans***	80	9.3	20.5-31.4
Soya nuts (roasted Edamame beans)	28	15	35.8
Soya mince/ chunks – chilled/ frozen	100	16.4	36.1-54.1
Tofu – silken hard	75	11.5	25.3-37.9
Tofu – marinated	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 and growing conditions as well as production methods where up to 80% of isoflavones can be lost. The standard estimate value of 2.2mg – 3.3mg isoflavones per 1g soya protein has been used.

\*\*\* Average of the three current brands on the market.

## 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. Soya foods can also help us to achieve a more plant-based diet by reducing our intakes of animal protein with potential benefits not only for health, but also for the environment.

### Further information:

Food Fact Sheets on other topics including Soya and Health 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)