

# Current Thinking on Soya Protein Allergy

## Key propositions

- Approximately 2 to 4% of the adult population suffer from a food allergy.
- Food allergies appear to be increasing worldwide, although the reasons for this are unknown.
- A food allergy occurs when the body's immune system abnormally reacts to certain substances in a food known as allergens.
- Food allergies can result in a variety of symptoms ranging from mild to severe.
- The most common food allergens in children are milk and eggs and in adults shellfish, peanuts, tree nuts and fish.
- Allergy to soya is less common and symptoms are often milder.
- Soya is a good alternative for children with cow's milk allergy, the most common allergy in childhood, if they are not allergic to soya.

## Introduction

As soya foods have become more popular in recent years there are concerns that allergic reactions to soya may become more common. However in reality, although soya protein, like any protein, may cause an allergic reaction in sensitive individuals, relatively few people are actually allergic to soya.

## What is a Food Allergy?

Food allergies occur when the body's immune system abnormally reacts to certain substances in a food. These substances are generally proteins and are known as allergens.

The immune system of a person suffering with a food allergy believes these allergens to be harmful and so produces antibodies (usually IgE) to try and attack them. This then results in a complex chain of events which releases further chemicals that together result in various symptoms from mild to life threatening. These may include one or more of the following - itchy throat and tongue; swelling of the lips and throat; diarrhoea and/ or vomiting; itchy skin or rash; sore, red and itchy eyes; runny or blocked nose; sneezing; asthma; in severe cases anaphylaxis – a potentially life threatening reaction where more than one part of the body is affected.

The presence of IgE in the blood in response to a food is known as 'sensitization', whereas the term 'food allergy' is used when clinical symptoms also occur.

Often the term food allergy gets confused with food intolerance. These are not the same. Food intolerance doesn't involve the immune system; rather it's an adverse reaction to a food e.g. lactose intolerance.

## How common are Food Allergies?

Estimates of the percentage of people who have a food allergy vary considerably. For example, one analysis that included 51 studies found that the self-reported prevalence varied between 3 to 35%.

It is generally assumed that self-reporting vastly overestimates the true numbers because individuals often cannot distinguish between a true allergy that involves the immune system versus other food reactions.

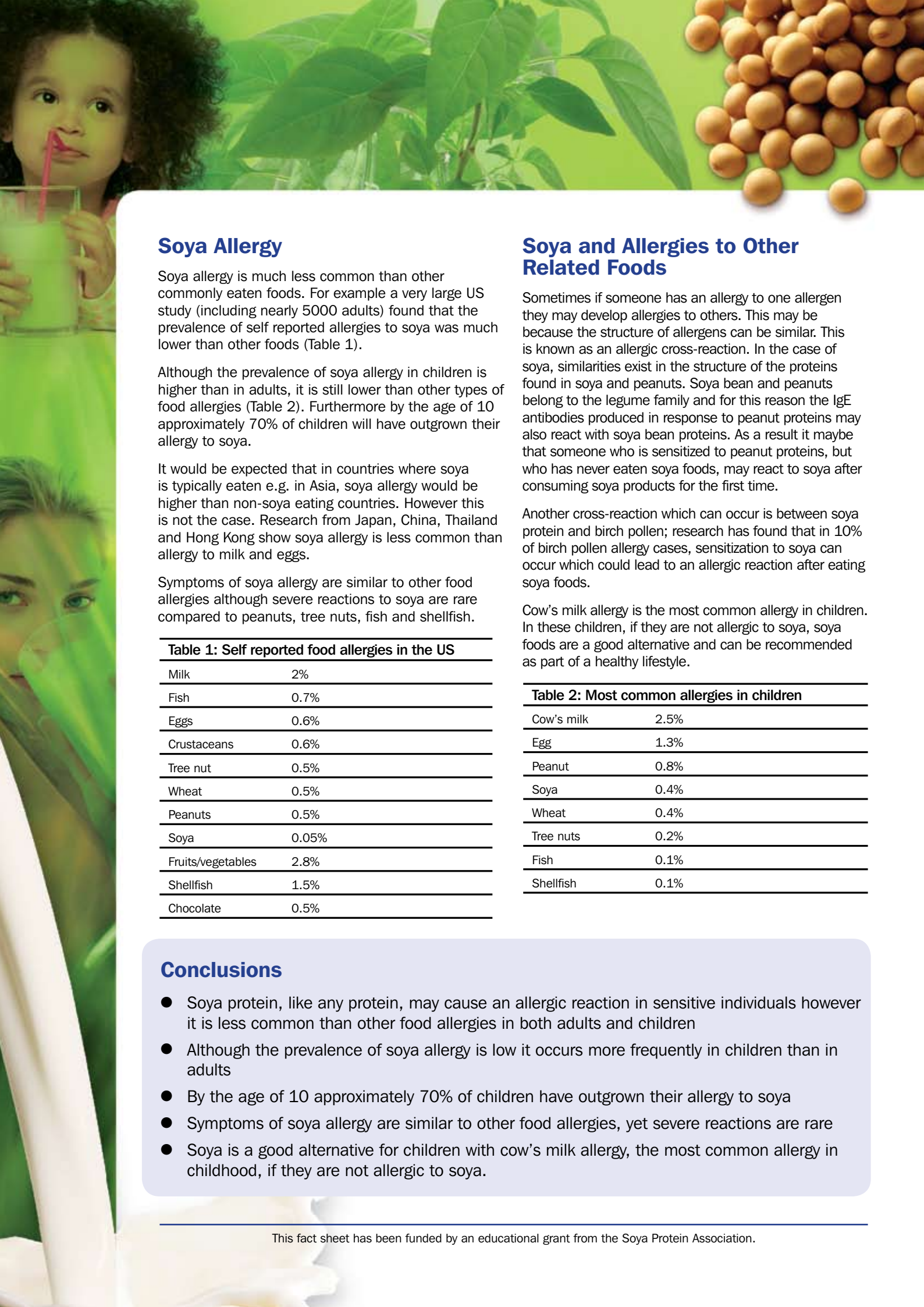
Studies examining populations over the last 10 to 15 years suggest that approximately 2 to 4% of the population in most countries suffer from a true food allergy, with higher rates among children – 5 to 8%. Recent reports indicate that food allergy may be on the increase among children in certain parts of the world. The reason for this is yet unknown.

Although many food allergies start in childhood, as the immune system matures, these allergies disappear as they get older. By about the age of 5, approximately 80% of allergic children will lose their food allergy.

## Different Types of Food Allergies

Worldwide the most common food allergens in children are milk and eggs and in adults shellfish, peanuts, tree nuts and fish.

To help identify food allergens in food, European law now requires all pre-packaged foods sold within the EU to be labelled with 14 of the most common food allergens including cow's milk, egg, peanuts, tree nuts (including walnuts, pecans, almonds, hazelnuts, cashew nuts, Brazil nuts, pistachios, Macadamia and Queensland nuts), fish, shellfish, cereals containing gluten (wheat, barley, rye and oats), lupin, molluscs, soya, sesame seed, mustard, celery, products containing Sulphur Dioxide and Sulphites at levels above 10mg per kg.



## Soya Allergy

Soya allergy is much less common than other commonly eaten foods. For example a very large US study (including nearly 5000 adults) found that the prevalence of self reported allergies to soya was much lower than other foods (Table 1).

Although the prevalence of soya allergy in children is higher than in adults, it is still lower than other types of food allergies (Table 2). Furthermore by the age of 10 approximately 70% of children will have outgrown their allergy to soya.

It would be expected that in countries where soya is typically eaten e.g. in Asia, soya allergy would be higher than non-soya eating countries. However this is not the case. Research from Japan, China, Thailand and Hong Kong show soya allergy is less common than allergy to milk and eggs.

Symptoms of soya allergy are similar to other food allergies although severe reactions to soya are rare compared to peanuts, tree nuts, fish and shellfish.

**Table 1: Self reported food allergies in the US**

Milk	2%
Fish	0.7%
Eggs	0.6%
Crustaceans	0.6%
Tree nut	0.5%
Wheat	0.5%
Peanuts	0.5%
Soya	0.05%
Fruits/vegetables	2.8%
Shellfish	1.5%
Chocolate	0.5%

## Soya and Allergies to Other Related Foods

Sometimes if someone has an allergy to one allergen they may develop allergies to others. This may be because the structure of allergens can be similar. This is known as an allergic cross-reaction. In the case of soya, similarities exist in the structure of the proteins found in soya and peanuts. Soya bean and peanuts belong to the legume family and for this reason the IgE antibodies produced in response to peanut proteins may also react with soya bean proteins. As a result it maybe that someone who is sensitized to peanut proteins, but who has never eaten soya foods, may react to soya after consuming soya products for the first time.

Another cross-reaction which can occur is between soya protein and birch pollen; research has found that in 10% of birch pollen allergy cases, sensitization to soya can occur which could lead to an allergic reaction after eating soya foods.

Cow's milk allergy is the most common allergy in children. In these children, if they are not allergic to soya, soya foods are a good alternative and can be recommended as part of a healthy lifestyle.

**Table 2: Most common allergies in children**

Cow's milk	2.5%
Egg	1.3%
Peanut	0.8%
Soya	0.4%
Wheat	0.4%
Tree nuts	0.2%
Fish	0.1%
Shellfish	0.1%

## Conclusions

- Soya protein, like any protein, may cause an allergic reaction in sensitive individuals however it is less common than other food allergies in both adults and children
- Although the prevalence of soya allergy is low it occurs more frequently in children than in adults
- By the age of 10 approximately 70% of children have outgrown their allergy to soya
- Symptoms of soya allergy are similar to other food allergies, yet severe reactions are rare
- Soya is a good alternative for children with cow's milk allergy, the most common allergy in childhood, if they are not allergic to soya.