



The Anaphylaxis campaign
Helping people with severe allergies live their lives

Cross-reactivity: what industry needs to know

When a food company or caterer is accused of supplying a food that has caused an allergic reaction, there is often a tendency to jump to conclusions – the meal must have contained the person's known allergen, either through some mistake or through cross-contamination.

However, identifying the cause of a reaction is not always straightforward. Cross-reactivity has to be considered a possibility. Many foods that are classified in the same group share similar proteins and people may react to various foods within a group. A person reacting to peanut, for example, may also be allergic to another legume such as peas, soya or lupin.

Food company staff who are tasked with investigating the causes of allergic reactions suffered by their customers need to have some understanding of cross-reactivity so that they can explore all possibilities of what went wrong.

Case study

At the age of 53, a woman suffered anaphylaxis after eating a packet of nuts and seeds purchased from a health shop. She tested positive to sunflower, pumpkin and celery seeds, almonds, hazelnuts and peanuts.

One day the woman made a soup using Jerusalem artichoke. Soon after eating it she suffered symptoms of allergy. She saw an allergist, who performed a skin prick test for Jerusalem artichoke, and the result was strongly positive. She found out to her surprise – and the doctor's – that Jerusalem artichoke is a relative of the sunflower. This was a clear case of cross-reactivity.

Contamination with nuts or seeds might have been suspected. Who could have guessed at the link between sunflower and Jerusalem artichoke?

Reactions to curry

When reactions to curry occur, it is easy to point the finger at peanuts and indeed sometimes this may be justified. However, other possibilities may also be considered. A Norwegian allergy register recorded 15 peanut-allergic patients reacting to curry, which often contains fenugreek, a legume. Doctors studied cross-reactivity using serum from a peanut-allergic patient. The patient's serum was positive for fenugreek and two grains on the patient's lip caused an immediate reaction.

Conclusion: Allergy to fenugreek may be considered a possibility when someone with peanut allergy reacts to curry.

Reactions to baked goods

Research has confirmed the high frequency of cross-reactivity between lupin flour, which can be an ingredient of baked goods, and peanuts. French researchers investigated 24 people who were allergic to peanuts. They found that 44 per cent reacted positively to a skin prick test with lupin flour and seven out of eight who took challenge tests reacted positively. The principal allergen in lupin flour was also found in peanuts.

Lupin flour is used rarely in the UK but more frequently on the Continent. It may turn up in products such as pasta, pastry cases, pies, waffles, pancakes, crepes, galettes, products containing crumb, pizzas, and deep-coated vegetables such as onion rings and mushrooms.

Conclusion: Allergy to lupin should be considered as a possibility when someone with peanut allergy suffers an allergic reaction to baked goods, particularly those originating from the Continent.

Reactions to legumes

U.S. research showed that five per cent of selected population of legume reactive children had symptoms with multiple legumes. For example, a small proportion of people with peanut allergy react to green peas.

A study of life threatening and fatal allergic reactions in Sweden pointed very strongly to soy as the cause of a number of these reactions in people known to be allergic to peanuts.

Conclusion: A person with who reacts to one legume (such as peanuts, soybeans, lentils, chick peas and beans) might react to some others in the same group.

Reactions to apricot kernels

Confectionery companies have been known to consider using crushed apricot kernels as an almond substitute in the manufacturer of marzipan. But there could be pitfalls. At a UK allergy clinic, 12 nut-allergic children were tested for allergy to apricot kernel. Two out of the 12 had positive tests: one boy with peanut allergy, the other with almond allergy. Although oral challenge testing would have to be done to support the findings, there is clear evidence of cross-reactivity. Apricot and almond belong in the same family, along with peach, plum and cherry.

Conclusion: Any food company planning to use crushed apricot kernels as a substitute for almonds needs to consider the possibility that reactions may occur in people with nut allergy.

Latex-fruit syndrome

Some of the proteins present in latex also exist in certain fruits. If a person is allergic to the protein in latex that is also present in banana, for example, they may have a cross-reaction if

they eat a banana. Apart from banana, the foods that commonly cause problems for people with latex allergy are avocado, kiwi, chestnut and occasionally walnut.

Conclusion: Anyone reporting a reaction to any of the above foods may also be latex-allergic.

Pollen-fruit syndrome

Pollen-fruit syndrome – also known as oral allergy syndrome – describes an increasingly common sensitivity to certain raw fruits and vegetables, including apple, carrot, celery, melon, and cherry. The condition is explained by cross-reactivity to certain pollens (particularly birch pollen). Reactions to the same foods when cooked are less likely. Symptoms include redness, swelling and itching of lips, tongue and inside mouth. Occasionally there is itchy swelling of the throat. Most cases are mild.

Conclusion: Where allergic reactions to fruit or vegetables are reported, it is useful to know if the patient also suffers hay fever. This would support a diagnosis of pollen-fruit syndrome.

Who to turn to for further help

The allergies reported above need a proper diagnosis at the hands of an allergy specialist. The first port of call should be the Anaphylaxis Campaign helpline (01252 542029) so that the patient can be pointed in the right direction.

Phadia has produced a useful little booklet called “Cross-reactivity in plant food allergy”. The Anaphylaxis Campaign has a small number that we will send to corporate members on request. We would like postage and packing covered as well as a donation to the Campaign. Copies will be sent out on a “first come, first served” basis.