



This Food Science Fact Sheet is one of a series compiled by Institute of Food Science and Technology, providing clear, concise and scientifically reliable information on key food science topics for consumers.

Food Allergy

What is a food allergy?

A reaction caused when the body's immune system reacts unusually to components in foods, usually specific proteins. Symptoms include tingling in the mouth, itchy skin rash, swelling of the face or mouth, shortness of breath, nausea, abdominal pain and diarrhoea. Some people may develop anaphylaxis which may lead to a severe or even life-threatening reaction, where symptoms may additionally include vomiting, breathing difficulties and a dramatic fall in blood pressure leading to unconsciousness.

Emergency treatment of anaphylaxis involves the use of adrenaline auto-injectors designed for self-administration, which those at risk should carry with them and be able to use. Diagnosis involves taking a detailed history and may also involve skin prick or blood tests and oral challenges to determine the cause of an allergic reaction.

What is food intolerance (as opposed to allergy)?

A reaction to a component in food, not necessarily a protein, for which a multi-organ immune response is not responsible. The most common food intolerances are to milk and cereals containing gluten, but a wide range of foods may be a cause. Proteins (e.g. casein) in milk may cause food allergy but milk sugar may cause lactose intolerance. A deficiency of the digestive enzyme lactase prevents breakdown of lactose causing stomach cramps, bloating or diarrhoea. Any of the proteins in wheat may cause allergy but the gluten protein family in wheat causes coeliac disease.

**'More than 170 different foods
have been reported to cause
allergies.'**

What are the major food allergens?

More than 170 different foods have been reported to cause allergies, including some fruit and vegetables, e.g. apple, kiwi fruit, banana, carrot, avocado. In Europe 14 foods (and their products) which cause 90% of allergic reactions, require labelling:



- **Cereals containing gluten:** e.g. wheat (and spelt, Khorasan), rye, barley, oats, kamut (or hybridised strains). Some trigger coeliac disease, a condition where the lining of the small intestine becomes damaged through an auto-immune response to gluten. Gluten-free foods are regulated (EU No.828/2014) and should contain no more than 20 parts per million (ppm) gluten
- **Crustaceans:** e.g. shrimp, lobster, crab, prawn, scampi
- **Egg:** allergens are primarily in the egg white although some can be present in the yolk. Generally, cooking reduces allergenic activity but not adequately for all those at risk
- **Fish**
- **Peanut:** the allergy affects about 1 in 50 children in UK
- **Soya:** includes flour derived from soya (soy) beans that can also be used to make textured vegetable protein (TVP) which is used as a meat replacer. The beans are also used to produce bean curd (tofu) and soy sauce
- **Milk:** mostly affects infants, although fatal reactions have occurred with adults in UK. Includes milk from cows, buffalo, sheep and goats. Milk can be present in yogurt, cheese, butter, whey and in powdered form
- **Nuts:** almonds, Brazil nuts, cashews, hazelnuts, macadamia, pecan, pistachio nuts and walnuts

Food Allergy

What are the major food allergens? (continued)

- **Celery:** e.g. celery sticks and celeriac which is the root of the plant and contains significant quantities of the allergen. Often an ingredient in savoury seasonings
- **Mustard:** including leaves, seeds and oil
- **Sesame seeds:** e.g. in tahini paste which is often used to make hummus
- **Sulphur dioxide and sulphites (E220 - E228):** if a prepacked food contains more than 10mg/kg (or 10mg/l), expressed as SO₂, they should be labelled with the full name e.g. 'Preservative: Sulphur dioxide'
- **Lupin:** flour used to make bread, pastry and pasta; beans (seeds) used in savoury snacks in parts of Europe, Middle East and South America
- **Molluscs:** e.g. mussel, scallop, oyster, clam, snail, octopus

N.B. some labelling exemptions in certain categories e.g. fish gelatine or Isinglass used as a fining agent in beer and wine (Annex II EU No. 1169/2011).

Different countries recognise different major allergens which needs to be taken into consideration when exporting and travelling. Labelling must meet the requirements for the country of intended marketing.

Allergen labelling

Mandatory requirements:

- **Packaged food** labelling regulations require that any of the above allergens, present as an ingredient, additive or processing aid, must be clearly emphasised in the ingredients list
- **Prepacked for direct sale (PPDS)** foods need to follow the similar rules as packaged food for listing ingredients (from 1 October 2021)
- **Food sold in hospitality and catering settings** require customers to have access to allergen information, in written or verbal form, with a notice informing them how to obtain such information
- **Loose foods** must be clearly identified e.g. shelf marker 'Celeriac'

Precautionary statements such as 'may also contain...' or 'prepared in a factory that handles...' relate to the possible unintentional presence of allergens because of cross contamination throughout the supply chain.

Advice

- Check food labels carefully every time when purchasing food, since recipes can change
- Don't be afraid to ask if you are unsure or require additional information
- When eating out and having meals delivered, inform caterers/restaurant staff of dietary requirements
- When travelling abroad, carry a translation card to help communication about an allergy
- Carry prescribed medicine and be ready to use it
- In cases where allergen avoidance may limit dietary nutrition, it is important to seek expert advice about alternative sources of key nutrients

References

1. [Allergen labelling for food manufacturers](#) | Food Standards Agency
2. [Food allergy guidance for businesses](#) | Food Standards Scotland | Food Standards Scotland
3. [Allergens | Food Information | Food Legislation | Legislation](#) | The Food Safety Authority of Ireland (fsai.ie)

Further resources available in the [IFST Food Allergens Knowledge Hub](#)

You can find more Food Science Fact Sheets here: <https://www.ifst.org/food-science-fact-sheets>

This fact sheet was updated in September 2021.

