

FOOD ALLERGENS

1. WHAT IS THE ISSUE?

A small percentage of the population may develop allergic reactions or be sensitive to specific food ingredients. The consequences of allergic reactions may be very serious, in rare cases even fatal. Although many foods may provoke reactions, over 90% of food-allergic reactions are limited to a small number of so-called critical allergens: cow's milk, crustacea, eggs, fish, peanuts, soy, treenuts, wheat. The prevention of food allergy is based on the avoidance of the specific food.

2. THE BASICS

Many people suffer from adverse reactions to foods. However, only a small part of the population suffers from true food allergy. Food allergies are well-defined adverse reactions to substances present in food involving the immune system, most often they are mediated by immunoglobulin E (IgE). Food allergens are usually proteins or protein fragments to which allergic individuals have previously been sensitised and which are often resistant to heat and digestion.

In addition to true food allergies, individuals may suffer from a variety of other food hypersensitivity such as coeliac disease (adverse reaction to gluten) or metabolic food reactions, in which ingested substances provoke adverse reactions due to deficiencies in the digestive or metabolic systems (e.g. lactose intolerance).

3. KEY INFORMATION

Although more than 160 foods are reported to have caused an allergic reaction, worldwide the most common allergenic foods which cause more than 90% of allergic reactions, including the most severe ones, are limited to eight foods, as agreed on by Codex Alimentarius (international food standards agency).

> Critical Food Allergens

- > Peanuts
- > Treenuts (almonds, walnuts, pecans, hazelnuts, Brazil nuts, cashews, pistachios, pine nuts, macadamia nuts, chestnuts)
- > Soybeans
- > Milk
- > Egg
- > Crustacean (shrimp, prawns, crab, lobster, crayfish)
- > Fish
- > Wheat

All these foods have to be clearly mentioned on the label of a product, even when present in very small amounts.

The Codex list also contains sulphite (in concentrations above 10 mg/kg) and lactose so that consumers suffering from sulphite hypersensitivity or lactose



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intolerance will be informed. In addition, the list contains all the gluten containing cereals (to which persons suffering from celiac disease are intolerant).

Foods associated less commonly with severe food allergy include some of the seeds, such as sesame, poppy, sunflower, cottonseed and mustard seed. Although they can also cause severe allergic reactions, few people are affected in the population and the seeds are therefore not yet considered in the Codex list of critical allergens; however they may be added in the future.



OTHER FOOD ALLERGENS

- > Celery root (celeriac) is considered a severe allergen in several countries where it is frequently consumed (e.g. Germany, Austria, Switzerland)
- > Coconuts are also tree nuts, but are rarely allergenic and are not included in the list of commonly allergenic foods, nor are other unusual nuts, such as Kola and shea nuts
- > Refined vegetable oils, even from one of the eight foods listed above (e.g. peanut, soya) are generally considered not allergenic, due to the extremely low amounts of proteins present. However, at this moment no common agreement could be found and Codex Alimentarius has not excluded refined peanut and soya oil from the list of products to be labeled
- > Strawberries are often perceived as “allergens”. Although strawberries are known to cause adverse reactions (mainly urticaria) in some individuals, there is no evidence for strawberry allergens and the mechanism for the reaction is not yet known. Strawberry hypersensitivity is generally not life threatening, but the symptoms are very similar to those occurring in IgE-mediated food allergies (e.g. via histamine release)

Allergic reactions can already be triggered by very small quantities of allergen. Their onset is often extremely rapid after or during ingestion. Reactions may be slight (e.g. oral allergy syndrome) or severe (anaphylaxis) and may lead to anaphylactic shock, which can lead to death.

Food allergy is dependent on culture and eating habits. Allergies to fish, for example, are more common in Japan and Norway than in other countries where traditionally less fish is consumed. The above list of the 8 critical allergens may be increased in the future by allergens that are emerging or are specifically critical in certain regions of the world.

Any evaluation of the relevance of specific food allergens should always consider both the severity AND the prevalence of allergic reactions.

PREVALENCE OF FOOD ALLERGIES

The prevalence of true food allergy is far less than generally perceived by the public. Although one out of 4 adults believes to have suffered from allergic reactions after ingestion or handling of food, it is estimated that 1-2% of the adult population and 4-6 % of the paediatric population suffer from allergic reaction to food.

Prevalence of allergy is highest in infancy and early childhood, and diminishes with increasing age. Infants often outgrow their allergy to cow's milk and eggs; symptoms can diminish or disappear by age 5-7. Many food allergies, e.g. to nuts, peanuts, fish and crustacea, tend to remain a problem for a lifetime.

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BIOLOGICAL MECHANISM AND SYMPTOMS

True food allergy is an adverse reaction involving the immune system. Food allergies are initiated by production of specific antibodies, immunoglobulin E (IgE), in reaction to food proteins. IgE-antibodies then become fixed to the cell surface of specific immune cells (mast cells and basophils), a process called 'sensitisation'. Ingested allergens can come in contact with these sensitised cells leading to the release of powerful cellular chemicals, such as histamine, which cause the actual symptoms of food allergy. Sensitisation is a prerequisite for an allergic response.

Gut permeability, allowing a easier circulation of proteins in the body, is an important factor and this explains in part why infants are more susceptible. Genetic factors seem also to play a role. Studies in children have shown that the risk to develop an allergy in general, not only food allergy, is significantly higher if one or even both parents are allergic.

The most common manifestations of food allergy are gastrointestinal (vomiting, diarrhoea, nausea), dermal (urticaria, dermatitis, angioedema) and respiratory (rhinitis, asthma) symptoms. Gastrointestinal symptoms are common, especially in infants and young children. Skin reactions can include local reactions such as itching and swelling of the lips, tongue, gums, oral mucosa and pharynx, or systemic reactions such as hives and rashes of the skin.

A severe manifestation of a food-allergic response with rapid, acute onset is called anaphylaxis. It can lead to a so-called anaphylactic shock, involving a dramatic drop in blood pressure. Even if treated, this can lead to death in certain cases.

The amount of allergen necessary to cause an adverse reaction varies individually. In general, sensitive people can already react to trace amounts of the offending protein. Peanut allergy is associated with most of the very severe and potentially fatal reactions.

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