

FOOD ALLERGY

Food allergy can cause severe allergic reactions such as hives, throat swelling and severe upset stomach. There are a number of things about food allergy that make it difficult to understand.

1. **Food allergy is often confused with various kinds of intolerance.** The medical use of the term “allergy” usually implies an immune response associated with a certain kind of antibody (IgE). Exposure to the food will cause various manifestations of anaphylaxis which can be life threatening. The more severe reactions occur within a half hour.

Intolerance can be simply an upset stomach after eating certain foods. **Lactose intolerance** is an enzyme deficiency that prevents the digestion of milk products and leads to lower bowel symptoms usually after a delay of many hours. **Gluten sensitivity** is a complicated immune response to wheat products that leads to chronic bowel complaints and many other symptoms (but not anaphylaxis). **Food additives** such as MSG and sulfites can cause rapid development of respiratory and other symptoms but not anaphylaxis.

2. **The manifestations of food allergy can be highly variable.** At the milder end of the spectrum the only symptom can be itching of the mouth (this is seen often with fresh fruit allergy where the allergen is unstable and almost never produces more severe reactions). More severe reactions are associated with generalized hives (urticaria) and swelling in various parts of the body (angioedema) including swelling of the tongue and difficulty swallowing. A chronic inflammation of the esophagus can occasionally be a manifestation of food allergy (eosinophilic esophagitis) causing discomfort after swallowing food. A flare up of eczema can occur which is more frequent in children. There can be upper abdominal distress with nausea and vomiting and occasional diarrhea. Difficulty breathing and nasal congestion and sneezing can also occur. It is this variability that sometimes makes it difficult sometimes to distinguish allergy from intolerance. The most severe reactions occur within an hour of eating often within minutes.

3. **The severity of the food allergy varies greatly** with at least a thousand fold variation from individual to individual. The rare individual will react to trace amounts of food antigen in the environment (peanuts being eaten in a closed environment like an airplane or lobster being steamed in the vicinity). This has given rise to the establishment of public policy based on the worst-case scenario and also to warnings on food products about the possibility of trace contamination with peanut or tree nuts by litigation fearful food manufacturers.

In a given individual, there can be quite a bit of variation in severity when an allergenic food is consumed. The factors that account for this are often only partially understood and include the quantity consumed, the amount of cooking, the particular variety of the food, etc. Roasting can make peanuts more allergenic. Cooking of fruit almost always eliminates the allergenicity. In some individuals exercise within several hours of food consumption can bring out an allergy that would not be evident otherwise. This has been extensively studied and is called “**exercise induced food allergy**”.

4. **The diagnostic tools that we have are not perfect.** The skin test or test for IgE antibody in the blood usually has a **sensitivity** that varies from 80-90% (the number of truly allergic individuals that will react positively to the test). The diagnostic tests are not always completely **specific** (perhaps 10-20% of individuals that have a mildly positive reaction are completely tolerant to the food). Strongly positive tests however are more often seen if the person is truly allergic.

5. **The natural history of food allergy varies** but patterns are seen that are substantiated by prospective studies. Food allergy in the first years of life (often manifested by eczema or colic) tends to disappear in the later childhood years (this is particularly true of milk, egg and soy allergy and less true of peanut allergy). Allergy that starts in later life tends to be more persistent but can also improve over a number of years. A few studies have shown that if a child grows out of an allergy then regular consumption of a food tends to prevent recurrence of that particular allergy even if the skin test remains somewhat positive.

6. **Food allergy is a subject that has given rise to a myriad of false claims and dubious procedures.** It has been alleged that food allergy causes conditions like depression, insomnia, autism, ADHD, joint problems and the like. Tests that have no scientific validation are also widely used such as the IgG test for food allergy. This has actually done harm to some individuals by deferring more appropriate treatment and also subjecting some to ineffective and severely restrictive diets. It is understandable that many individuals will be drawn to those who make claims to treat some of these conditions as a food allergy when the more usual medical treatment is ineffective or not optimal.

The Nature of Food Allergens

Food allergens are always proteins. Almost all allergen sources produce many different allergens; allergic individuals react to one or of these to a variable extent. Some of these allergen proteins are very similar to those produced by related sources (i.e. different kinds vertebrate fish). Other proteins are very specific particular source. Within the plant kingdom are some proteins that are widely distributed among plants that are not closely related and are probably some similarities that just occur by chance. For example there is a fairly strong relation between sensitivity to certain pollens reactions to certain fruits. If a person is highly sensitive to pollens then at least small reactions often seen to a variety of foods; these reactions not always mean true allergy. The chemistry of allergens is so complex that medical science is beginning to understand them. There is a general cluster of sensitivity to various classes allergen among allergic individuals as summarized by the chart on the right. This allows us to predict the probability of cross-reactions across certain allergen sources.

If Allergic to:	Risk of Reaction to at Least One:	Risk:
A legume* peanut	Other legumes peas, lentils, beans	5%
A tree nut walnut	Other tree nuts cashew, brazil, hazelnut	37%
A fish* salmon	Other fish swordfish, sole	50%
A shellfish shrimp	Other shellfish crab, lobster	75%
A grain* wheat	Other grains barley, rye	20%
Cow's milk*	Beef hamburger	10%
Cow's milk*	Goat's milk goat	92%
Cow's milk*	Mare's milk horse	4%
Pollen birch, ragweed	Fruits/vegetables apple, peach, honeydew	55%
Peach*	Other Rosaceae plum, pear, cherry	55%
Melon* cantaloupe	Other fruits watermelon, banana, avocado	92%
Latex* latex glove	Fruits kiwi, banana, avocado	35%
Fruits banana, kiwi, avocado	Latex latex glove	11%

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Putting it all together

As can be seen from the above brief summary, the evaluation of food allergy is not an exact science. The task of the allergist is to evaluate the nature of the reactions that you have and the likely causes. Sometimes this is quite straightforward. In other situations this can be very difficult especially when the reactions are not consistent. The components of the evaluation are as follows:

- 1. Assessment of the risk of a severe reaction.** This will take into account the nature of the foods to which you are allergic and also whether these food proteins can be hidden other food products. If you are highly sensitive you may react to trace contaminants or to the oils derived from the foods. Highly refined oils (peanut, soy, etc.) are less likely to have allergen than those produced by low temperature extraction. Fresh fruits almost never produce severe reactions.
- 2. Establishment of dietary rules.** The above factors will be taken into account and you will be given some rules about what foods are safe to eat and what should be avoided.
- 3. Emergency treatment.** You may be advised to have emergency treatment available (EpiPen and rapidly acting Benadryl). The indications for the use of this treatment will be discussed.
- 4. Ongoing monitoring.** If reactions continue to occur it is essential that a food diary be kept of foods consumed prior to future reactions. As a general rule food allergy reactions occur within an hour or two of consumption of a food; the more severe reactions often start within minutes. Further testing may be necessary. A cautious oral challenge may be indicated if the test is only mildly or borderline positive. If you are not sure about a food, it is always wise to take a small amount in your mouth and leave it there for 5 minutes.