Food Allergy
Basic facts and how to live with it

EuroPrevall has developed this copyright-free material for primary care professionals and food allergic persons or parents to allergic children. The material aim to help you understand what food allergy is about, how it is diagnosed and handled.

The material is available on http://www.eaaci.net/resources/what-is-food-allergy.html
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What is food hypersensitivity?

Some people react with hypersensitivity when eating certain foods or additives. Typically it is ordinary foods that cause the reactions.

To talk about food hypersensitivity it is a requirement that the symptoms:

- appear when you eat the food you do not tolerate
- disappear or diminish when you avoid the food you do not tolerate, and
- reappear when you reintroduce the food you do not tolerate.

Food hypersensitivity is divided into food allergy and non-allergic food hypersensitivity. In the figure below you can see examples of food allergy and of non-allergic food hypersensitivity.

### Nomenclatures for Allergy

The European Academy of Allergy and Clinical immunology has defined allergic disease. This is described in the paper by


and in

Food allergy

What is food allergy?

Our immune system protects our bodies from infections by producing molecules, called antibodies that specifically recognise the germs that cause infections. We produce a number of different types of antibodies (for example, IgE, IgG and IgM) that differ in their specific roles in the immune system. The antibody type, that may cause an allergic reaction, is called IgE. We produce IgE molecules to fight infections caused by parasites, like worms or those that cause malaria. We do not understand why, but the immune system of some people mistakenly produces IgE to harmless things like pollen or dust mites, giving rise to hay fever and asthma, and to some foods, giving rise to food allergies.

Food allergens (the specific components of food responsible for an allergic reaction) are usually proteins, and there are generally several kinds of allergens in each food. It is not yet clear what makes some food proteins allergenic, and not others.

The development of an allergy occurs in two stages:

- **Sensitisation**: when a person first eats the allergen and produces IgE, which arms the immune system.
- **Reaction**: when the person eats the allergen again, the allergen triggers the now armed immune system, which leads to the allergy symptoms.

Sensitisation

When a person eats a food, the food may trigger immune cells to produce large amounts of IgE that specifically recognises that food. Sometimes the immune cells can even be triggered to produce IgE when a person breathes in tiny food particles, for example, dust from sunflower seeds when feeding birds.

The IgE circulates in the blood and attaches to the surface of specialised inflammatory cells called **mast cells**. These cells occur in all body tissues but are especially common in areas of the body that are typical sites of allergic reactions such as the skin and linings of the nose, lungs and gut.

The person is then **sensitised** to the food and primed to produce an allergic reaction. However, it is possible to be sensitised to an allergen without developing symptoms.
**Reaction**

On any subsequent occasion when the person eats the same food, the food allergens interact with the specific IgE on the surface of the mast cells. In response, the activated mast cells rapidly release powerful inflammatory chemicals such as histamine (which is why anti-histamines are used to relieve allergy symptoms). Depending upon the tissue in which they are released, these chemicals will cause a person to have various symptoms of food allergy.

**Non-IgE-mediated food allergies**

Although IgE is normally involved in allergic reactions, the immune system is very complex and other immune pathways can sometimes be involved. Examples of non-IgE mediated food allergies are gluten intolerance (Coeliac disease) and systemic allergic contact dermatitis (described later).

**How common are food allergies?**

This is a question that is very difficult to answer because different studies give different results. Many studies do not discriminate between food allergy and non-allergic food hypersensitivity.

If people are randomly asked in surveys if they have food allergies, 3 - 35% answer that they do. If those people that suspect they have food allergy are challenged with the food that they think causes their allergy, only 1 - 11% have their food allergy confirmed. So, in some surveys, there is a large gap between the frequency of perceived allergy by the general public and the clinically proven prevalence.

It is also difficult to compare different studies because they use different ways to count how many people have a food allergy. Studies from different countries using the same design show a large variation in how many people suspect they have food allergies, which suggests that there are true regional differences.
Which foods may cause allergy?

More than 120 foods have been described as causing food allergies. However, the foods that most commonly cause serious allergic reactions on a worldwide basis are: Milk, egg, peanut, tree nuts followed by cereals mainly wheat, soybeans, fish, and shellfish.

Several studies indicate that most allergic reactions among children are due to a limited number of foods, namely egg, peanut, milk, and tree nuts. Egg and milk allergy are often outgrown during the first years of life. Fruits, vegetables, tree nuts and peanuts are responsible for most allergic reactions to foods among adults.

The foods that are common causes of allergic reactions are egg and milk but other foods probably differ between geographical areas probably due to different dietary preferences and differences in flora such as occurrence of birch trees (see also cross-reactions).

More information on allergenic foods, clinical reactions and food allergens in The InformAll Database.

The InformAll Database (which was developed with funding from the European Union) at the moment contains information about 84 foods that have been reported to cause allergy. The database has summaries about each food suitable for a wide readership. In addition it contains a more technical part with a section on the clinical characteristics of the allergy (such as symptoms, and diagnosis) and a section on biochemical information about the allergens (e.g. allergen stability towards different processes).

Available at: http://www.foodallergens.info/Allergenic_Foods/Allergy_Foods.html

Patient story: Milk and egg allergy.

The mother of a nine-year-old boy tells: My son is allergic to a lot of things, but the worst is the allergy to milk and egg. Just a tiny bit of milk in a chocolate pastille is enough to make him ill.

When he was three months old the problems with breathing started and the paediatrician diagnosed him having asthma. After that his milk allergy was diagnosed. He was very sensitive and small amounts of milk in the food got his nose running and gave him nettle rash.

When nine month of age he got scrambled eggs for the first time. A serious attack of nettle rash followed so the family assumed that he was also allergic to egg.

Once a year he is challenged with milk and egg to see if his allergy is still there or he has outgrown the allergy. It takes 8-10 days before he is back to his normal self after these provocations.
What are cross-reactions?

Sometimes the immune system does not differentiate between different proteins because they strongly resemble each other. For instance, individuals with pollen or latex allergy may often experience allergic symptoms when they eat certain fruits, vegetables or nuts. This “cross-reactivity” occurs because the body cannot distinguish between the allergens in pollen or latex and related proteins in food and may react to both. In fact, up to 70% of food allergies can be connected to sensitisation to pollen.

Examples of cross-reacting allergens

Birch -- hazelnut, almond, walnut, cashew, pistachio nut, Brazil nut, peanut, apple, kiwi, cherry, pear, peach, nectarines, apricot, plums, raw carrot, raw potatoes and celery
Mugwort - celery, raw carrot, fennel, parsley, mustard
Grass -- orange, melon, tomato, peanut, soy
Cow's milk -- goat's milk, sheep milk, beef (very seldom)
Peanut -- soybeans, green beans, peas, lentils, lupine
Latex -- banana, avocado, kiwi, chestnut

Allergy to melon:
Experience from a 32 year old male.

A couple of times a year he tries to eat melon because he simply loves melon. He always tries in the wintertime. Experience has taught him that if he eats melon during the summer, when there is grass pollen in the air, he immediately gets an allergic reaction -- the palate itches intensely and the mouth gets very dry. Until now the reaction has been confined to itching. This is why he has never been tested to verify the melon allergy. He has just learned to live with it.

All types of melon gives reaction with one exception -- he can eat watermelon.

The melon allergy is a cross reaction to grass pollen and fortunately melon is the only food that gives him problems. The grass pollen allergy is much worse and he has to take allergy medication all summer to avoid hay fever symptoms with runny nose, and itch of nose, palate and eyes. It has been like this since he was a teenager.
What are the symptoms of food allergies?

Symptoms of food allergies vary between different individuals, although an individual will tend to have the same reactions each time the allergenic food is consumed. The symptoms of food allergies range from mild discomfort to severe, life-threatening reactions that require immediate medical intervention.

Allergic reactions to foods generally occur within a few minutes to one hour after eating the offending food but reactions may be delayed for anything up to 48 hours. Symptoms can last for minutes through to days or in rare cases even for weeks. The symptoms generally arise every time the offending food is eaten. However, if you are allergic to a food that cross-reacts with pollen you may experience more symptoms during the pollen season.

The specific symptoms and severity of an allergic reaction are affected by the amount of the allergen consumed, by the preparation of the food, and by the sensitivity of the allergic person. Some people can, for instance, tolerate cooked fruit and vegetables better than raw.

After inadvertently eating an offending food, the first symptom is often itching and perhaps swelling of the mouth and throat followed by skin rashes including nettle rash and itching of the skin. Facial oedema including swelling of the moth and ears are common. Symptoms may arise in the eyes, nose, lungs, gut and skin. Neurological symptoms may occur like dizziness. Circulatory and respiratory symptoms can be life threatening.

Mouth

The most frequent symptoms of food allergies are itching and/or swelling of the mouth. Oral itching (known as Oral Allergy Syndrome) can be an initial symptom in any kind of food allergy. Oral itching is, however, a well known symptom in food allergy induced by cross-reaction with pollen, such as for instance by hazelnuts, walnuts, apple, kiwifruit, cherry, celery, carrot, tomato, and melon. Most of the allergens in cross-reacting foods will be destroyed by digestion in the gut. This explains why the symptoms are frequently mild and limited to the mouth. Most of the allergens in the cross-reactive foods will also be destroyed if the food is cooked. This explains, for example, why many birch pollen allergic people cannot eat raw apples without experiencing symptoms, but stewed apples and apple juice might not be a problem.

Eyes and nose

The eyes and nose may show hay fever-like symptoms. The conjunctiva of the eyes may swell dramatically and become itchy and red. Sneezing and an itchy and runny or stuffed nose may be experienced.

Facial oedema

Swelling under the skin usually affects lips, eye lids and ears. In some patients even cheeks. The symptoms are scary, but never life-threatening by themselves.

Lungs

Asthmatic symptoms such as wheezing, breathlessness and coughing may arise from the lungs.
Gut

Symptoms from the gut include pain, bloating, sickness (nausea), vomiting, and diarrhoea.

Skin

On the skin, acute urticaria (often called hives or nettle rash) with itchy, well-defined white or pale red swellings can appear. This rash is generally short-lived, disappearing within a few hours. Chronic nettle rash is rarely associated with food allergy.

Longer lasting, chronic skin reactions in the form of eczema are associated with food allergy, especially in children. However, there is no proof that food allergy induces eczema.

Anaphylaxis

Anaphylaxis is an uncommon, acute, potentially life-threatening and sometimes fatal allergic reaction involving the whole body.

A person who has this type of reaction will typically experience the following symptoms. First, itching of the skin or tingling in the mouth and throat followed quickly by feeling unwell and dizzy with an accelerated heart rate and nausea. At the same time, there may be a nettle rash or skin flushness, hay fever and asthma. Blood pressure may drop dangerously and the person may collapse. Untreated anaphylaxis can rapidly result in death.

An unusual form of this condition can be triggered by eating problem foods within 2-3 hours of vigorous exercising and is called „food dependent, exercise-induced“ anaphylaxis.

In Europe and the US, peanut and nuts are the foods most commonly reported to cause anaphylaxis. Prompt administration of the medicine adrenaline after eating suspected problem foods has helped minimise life-threatening episodes. Applicators to administer adrenaline (Epipen or Anapen) can be carried by people who are aware that they are at risk of anaphylaxis.

Patient story: Peanut allergy and anaphylaxis.

The mother of a five-year-old girl tells: My daughter has peanut allergy. She is so sensitive that just a very small amount of peanut is life threatening. She started getting asthma and nettle rash just before her 3 years birthday. Often, when I picked her up in kindergarten, part of her face and her ears, lips and around the eyes was swollen. The lung function was low and she got large amounts of asthma medicine. When she was tested for ordinary allergies the test was negative. Normally she would be fine at home but get symptoms in kindergarten.

At a birthday party she got a peanut for the first time. She did not chew it, but spat it out immediately, because she did not like the feeling in her mouth. A few moments later her tongue, lips and eyes swelled, the nose began to run and she began to cough and had difficulty breathing. She was ill to an extent we had not seen before. We ended up in the local emergency room.

A new allergy test showed that she was severely allergic to peanuts. We assume that the symptoms in kindergarten can be explained by her being exposed to peanut via the other children. There are peanuts in many foods such as breakfast cereals, biscuits, cakes, ice cream and candy.

We were overwhelmed when we realised that we had to be very careful with even traces of peanuts in food. We now have an ‘Epi-pen’ that contains adrenalin that my daughter shall have if she ingests peanut inadvertently. This is to prevent an anaphylactic reaction.
How is food allergy diagnosed?

The aim of diagnosing food allergy is to determine if food is causing the symptoms and, if so, to identify specific causal food(s). Once correctly diagnosed, an allergy sufferer must avoid the offending food(s). This may be more challenging than initially realised by the allergic patient, since some food allergens, such as egg, milk and wheat, are used widely in processed foods. However, equally as important, a proper clinical diagnosis can prevent unnecessary dietary restrictions by people who incorrectly assume that they have food allergies (a common occurrence).

The diagnosis of food allergy usually starts with a combination of an investigation into the patient's clinical history, a clinical examination and a test for the detection of food-specific IgE antibodies. **Skin prick testing and blood tests** are the main tests used for this purpose. However, the presence of specific IgE does not necessarily mean that a person will experience symptoms. This means that neither skin prick tests nor blood tests for specific IgE are definitive tests for food allergy. The test results therefore need to be interpreted in view of clinical history and examination.

The reliability of negative results of specific IgE tests is dependent on the quality and stability of the food allergens used for the test and correct performance of the actual skin prick test. In some cases the test result is negative, but a patient may still have symptoms when consuming a food. Generally, tests used by physicians are sensitive and efficient in ruling out allergy to a food when giving negative results. For optimal results it is important to use evaluated and well-documented tests.

Both skin prick- and blood tests are suitable at any age of the patients. Even babies under one year of age are tested.

Since neither specific IgE or skin prick test is 100% reliable (particularly in young children) sometimes the only way to accurately diagnose a food allergy is to remove the suspected food from the diet to see if symptoms improve and if they do, give the suspect food to see if symptoms reappear. This is called a **food challenge** as is described in detail in another section.

**Skin prick testing**

A tiny prick is made with a lancet through a drop of allergen placed on the skin, usually on the forearm. One prick is made for each allergen tested.

A weal will indicate a positive reaction. The site where the allergen was introduced then becomes red and swollen, with a raised weal in the centre that looks like a nettle sting. The weal enlarges and reaches its maximum size within 15-20 minutes, when the measurements of the weal are recorded. The reaction fades within an hour. The procedure and interpretation of results require experience.

**The prick-prick test**

This test is almost identical to the skin prick test, but instead of using a commercial allergen extract, the tester first pricks the lancet into a fresh food product and then, with the same lancet, pricks the skin.
Blood test for specific IgE

Several types of blood tests are available to test for food allergies. A blood sample has to be taken from the patient and analysed in a well-equipped laboratory. Therefore the results of the blood tests are not available immediately. Unlike for skin prick tests, antihistamines do not interfere with blood tests, which mean that the blood tests can be used in patients with severe allergic symptoms from e.g. the skin without stopping the intake of antihistamines. With one blood sample it is possible to measure sensitisation to several allergens.

If the patients are allergic to the suspected food they will have specific IgE antibodies in their blood that will bind to the food allergens that are available in the test system.

One advantage with most blood tests is that results are reported in quantitative values. There is a relationship between the amount of specific IgE and presence of symptoms. Strongly positive results are more associated with clinical reactivity than very low results. Completely negative results are more associated with clinical tolerance than low results. Thus, more information is obtained when using a test reporting quantitative values compared to test reporting only results as positive and negative.

Challenge testing

Once the range of possible allergens has been narrowed down with a test for the detection of food-specific IgE antibodies, challenge testing can be used to confirm or exclude allergy.

A challenge test involves giving the patient increasing doses of the suspected allergenic food, allowing ample time between doses for a response to occur. A medical specialist with a high degree of knowledge about food allergy must always supervise the performance of the challenge test. The challenge must be conducted within a medical facility with equipment and staff to deal with possible life-threatening reactions. A patient who has had a genuinely life-threatening allergic reaction, like anaphylaxis, should not be challenged with the food that caused it unless the challenge starts with an extremely low dose.

Before oral food challenges, patients must avoid the suspected food(s) for at least 2 weeks. Regular antihistamine medication is also withdrawn. When performing the test the doses should be increased very gradually until a normal serving of the foods has been eaten. A negative challenge is valid only if no symptoms are observed following exposure to the problem food in a dose equivalent to a normal serving. The medical team will observe the patient for symptoms for up to several hours after the challenge.

For older children and adults, challenges can be conducted in a double-blind manner with a placebo control (double-blind, placebo-controlled, food challenge, DBPCFC). In this test, neither the patient, nor the investigator knows whether the food preparation being given contains the specific allergen or a placebo. The suspected allergen or placebo will be hidden in a food matrix (recipe) consisting of foods normally tolerated by the patient.
Even though the DBPCFC test is the gold standard in food allergy diagnosis, the test may produce false negative results. The challenge procedure usually cannot reproduce the exact circumstances under which the patient experienced the adverse reaction.

When challenging infants and small children it is not necessary to hide the food. An open challenge is the standard procedure in these age groups.

**Unproven diagnostic methods**

Different Internet pages advertise many alternative diagnostic methods. Examples include measurement of food specific IgG antibodies, hair-analysis, cytotoxic tests, kinesiology, iridology, and electrodermal testing. The usefulness of these methods for food allergy diagnosis has not been proven by properly performed scientific studies. Hence, scientists and clinicians cannot recommend the use of these methods in the diagnosis of food allergy.

**Read more on unproven diagnostic methods**


How do you live with food allergy?

When treating a food allergy, the food product that causes reactions must be removed from the diet. This is often difficult and a risk remains that there will be accidental contact with the food allergen. For individuals at risk of severe allergic reactions, added measures such as the carrying of the medicine adrenaline may be necessary. For children with a mild food allergy and well-controlled eczema there are no scientific evidence that it is beneficial for the child to eliminate the sensitising allergen.

Avoiding accidental exposures to harmful foods

Information and education are the cornerstones in secondary prevention. It is important to learn how to avoid different food items, but still guarantee a well-composed diet with sufficient content of nutrients. To read the list of ingredients on foods cannot be emphasized strongly enough.

Diet

It is always necessary for individuals who have food allergy to follow an exclusion diet. This diet may need to be adapted over time because certain allergies can disappear, decrease and/or new allergies can occur. That is why food allergy sufferers (particularly children) need to be reviewed and their allergies reassessed. When an exclusion diet is necessary the sufferer or their carer needs to be educated on how to manage their exclusion diet to ensure it does not result in any nutritional deficiencies. Medical supervision is necessary and it is helpful to get advice from a dietician.

For young infants with food allergy, the most effective strategy to avoid reactions is to be breast-fed for four to six months. Quite seldom however, a child may react to food residues in the mother’s milk.

For older children and adults it is generally quite complicated to adhere to a diet. Supervision by a dietician is strongly advised to maintain as healthy and varied a diet as possible. Also adequate training to read food labels is essential in an effort to prevent reactions to processed and prepared foods.

If you have a child with food allergy it is also important that other persons cooking for the child such as the school canteen and grandparents are properly informed.

With food allergies, it is very important to avoid cross-contamination during food preparation, storage and serving. By this we mean “contamination” of food through spilling, spatters, crumbs, not separating the diet food well, and dirty hands, plates, or silverware. These can cause unintentional ingestion of the allergens and cause reactions.
Does cooking or food processing affect food allergy?

As a general rule processing does not alter the ability of a food to induce allergic symptoms. For example cooking cow’s milk or freezing fish does not alter the proteins responsible for provoking symptoms.

An exception from this general rule is food that cause symptoms because the person is allergic to birch or grass pollen. This means that most birch pollen allergic persons may safely eat cooked apple but not fresh apple.

However to make it complicated not all apple allergic persons can safely eat cooked apple. If the apple allergy is a cross reaction to peach allergy as seen in southern Europe cooked apple may also give reactions. There are several allergens in apple and the ones cross reacting with peach are heat stable whereas the ones cross reacting with birch pollen are not.

Food labelling

The European Commission and other jurisdictions have introduced labelling laws to help allergic consumers avoid consumption of allergens in pre-packed foods. In principle all ingredients in a product now have to be listed. There are still some minor exceptions but these will not apply to a list of allergenic ingredients. This means that the following allergenic foods or products made of these foods can never be „hidden“ in a product in Europe.

- Cereals containing gluten - i.e. wheat, rye, barley, oats and spelt
- Crustaceans such as shrimp and lobster
- Eggs, Fish, Peanuts, Soybeans
- Milk - including lactose
- Nuts - i.e. Almond, Hazelnut, Walnut, Cashew, Pecan nut, Brazil nut, Pistachio nut, Macadamia nut and Queensland nut
- Celery, Mustard, Sesame seeds
- Molluscs
- Lupine
- Sulphur dioxide and sulphites

‘May contain’ labelling

Some foods have the label „May contain peanuts“ or „May contain milk“ etc. This label is not regulated by the authorities and is used by food manufacturers on their own initiative. Different producers use different criteria for using the „may contain“. Therefore the „may contain“ label represents different levels of contamination and hence different levels of risk.
How to interpret EU food labelling

It is important always to read the list of ingredients as the manufacturer can change the recipe. In addition change of production site may modify the cross-contact labelling.

For the moment the below rules only apply to pre-packaged foods but the EU is now discussing to include foods that are not pre-packaged as well.

**All ingredients have to be listed**

In the EU labelling directive in principle all ingredients in a pre-packaged food have to be listed. The ingredients shall appear in the list of ingredients in falling order. This means that the ingredient that appears first on the list is the most abundant.

**Exception 1 – no full ingredient list**

There are a few exceptions from the general rule that all ingredients have to be listed. These exceptions do not apply to the list of allergenic ingredients and their derivatives in Annex IIIa of the directive (Table 1 below). The intention of the list of major allergenic food is that the presence of these foods must always be obvious. This means that they shall always appear in the list of ingredients if they are an ingredient or forms part of another ingredient.

<table>
<thead>
<tr>
<th>EU food labelling exception: no full ingredient list</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Foods that do not need a full list of ingredients [but always the major allergens]</strong></td>
</tr>
</tbody>
</table>

**Small packages**

If the food package is smaller than 10cm², it is not mandatory to have a list of ingredients. If the product contains one of the foods in table 1 this food should always be listed.

**Foods where the list of ingredients is not mandatory**

For some food products a list of ingredients is not mandatory. Examples of these foods are fresh fruit and vegetables, cheese, butter, and alcoholic beverages with an alcohol percent above 1.2. If the product contains one of the foods in table 1 this food should always be listed.

**Category names**

There are a number of ingredients where it is sufficient to write the defined category where the food belongs. An example of this is vegetable oil. In addition if a mixture of herbs and/or spices comprises less than 2% of the food their names need not be listed individually. If the product contains one of the foods in table 1 this food should always be listed.

**Food standards**

A few foods in the EU have their composition defined by standards e.g. chocolate and jam. If for example a cake contains less than 2 % jam the ingredients of the jam need not to be listed. If the jam contains one of the foods in table 1 this food should always be listed.

**‘Non-ingredients’**

Some components of foods are not considered to be ingredients and should therefore not be listed in the list of ingredients. These ‘non-ingredients’ are solvents and carriers of food additives and food additives used as processing aids. If the ‘non-ingredients’ is one of the foods in table 1 it should always be listed.
Exception 2 – traces of protein

Some of the products produced from the food in table 1 only contain traces of protein and are therefore not dangerous for food allergic persons. These products do not need to be declared with source. An example of this: Highly refined soy oil only contains traces of soy protein. The soy oil may appear on the list of ingredients as vegetable oil.

EU food labelling exception: traces of protein

Products with traces of protein that should not be declared with source

Some of the products produced from the food in table 1 only contain traces of protein and are therefore not dangerous for food allergic persons. These products do not need to be declared with source. In addition the Commission has allowed some allergenic ingredients used in the production of wine and spirits not to be labelled.

<table>
<thead>
<tr>
<th>Allergenic ingredient</th>
<th>Ingredients derived from allergenic ingredient in Column 1 that do not have to be labelled as allergens.</th>
</tr>
</thead>
</table>
| Cereals containing gluten | Wheat based glucose syrups including dextrose  
Wheat based maltodextrins  
Glucose syrups based on barley  
Cereals used in distillates for spirits |
| Fish | Fish gelatine used as a carrier for vitamin or carotenoid preparations and flavours  
Fish gelatine or Isinglass used as fining agent in beer, cider and wine |
| Soybean | Fully refined soybean oil and fat  
Natural mixed tocopherols (E306), natural D–alpha tocopherol, natural D–alpha tocopherol acetate, natural D–alpha tocopherol succinate from soybean sources  
Phytosterols and phytosterol esters derived from vegetable oils obtained from soybean sources  
Plant stanol ester produced from vegetable oil sterols from soybean sources |
| Milk | Whey used in distillates for spirits  
Lactitol |
| Nuts | Nuts used in distillates for spirits |

The list of exemptions is based on EFSA’s assessment of the individual dossiers submitted by manufacturers. Full details of the opinions on these may be obtained from the EFSA website at http://www.efsa.europa.eu/.

References

What this means in practice

Here are some examples of how this affects labelling of foods:

- Sulphite added above 10 mg/kg will always have to appear on an ingredient label, even if it does not have a function in the finished product. The labelling now also applies to alcoholic beverages and therefore the sulphite used in their production will have to be declared.
- If the food contains cheese it should appear on the label as cheese. It is assumed that the consumer knows that cheese is made from milk. If the product contains casein the word milk must also appear, as not all consumers know that casein is a milk protein.
- Ingredients used as processing aids, like lactose as a carrier substance for flavours has to be listed.
- Similarly if the source of a vegetable oil or a flavour is a food listed in Annex IIIa it must be specified on the label. As an example: peanut oil may not be declared as vegetable oil.
- In addition the categories “crystallised fruit” and “vegetables” may not be used anymore and instead the actual mixture of fruits or vegetables has to be specified in the listed in the ingredients.

<table>
<thead>
<tr>
<th>Table 1: Major Allergenic Foods Listed in Annex IIIa of the EU Directive on Labelling of foods</th>
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</thead>
<tbody>
<tr>
<td>Celery</td>
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<tr>
<td>Cereals containing gluten (namely, wheat, rye, barley, oats, spelt, kamut or their hybridised strains)</td>
</tr>
<tr>
<td>Crustaceans</td>
</tr>
<tr>
<td>Eggs</td>
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<td>Fish</td>
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<tr>
<td>Lupin</td>
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<tr>
<td>Milk</td>
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<tr>
<td>Molluscs</td>
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<tr>
<td>Mustard</td>
</tr>
<tr>
<td>Nuts (namely, almond, hazelnut, walnut, cashew, pecan nut, Brazil nut, pistachio nut, macadamia nut and Queensland nut)</td>
</tr>
<tr>
<td>Peanuts</td>
</tr>
<tr>
<td>Sesame seeds</td>
</tr>
<tr>
<td>Soybeans</td>
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<tr>
<td>Sulphur dioxide and sulphites at levels above 10mg/kg or 10mg/litre expressed as SO2</td>
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</tbody>
</table>
Reducing the risk of developing allergy

A baby is more likely to develop a food allergy if the parents or siblings have allergies. The following measures can help prevent food allergy in the child:

- Do not smoke during pregnancy, while breast-feeding and in the environment of the child.
- During pregnancy and while breastfeeding, a special diet is not necessary. Just eat as varied a diet as possible.
- Breast-feed for at least 4 months.
- If breast-feeding is not possible, get advice on the best baby formula to use.
- Introduction of solid foods:
  - To prevent gluten intolerance (coeliac disease) gluten containing cereals should not be used before 6 months of age.
  - There is no scientific knowledge on when or how other potential allergenic foods should be introduced.

Medication

Antihistamines reduce the symptoms that result from the release of histamines by mast cells. This medication can be used to suppress acute allergic symptoms during an allergic reaction. In general, antihistamines are only prescribed for patients over the age of one year.

Prevention of anaphylaxis: in cases of possibly life-threatening reactions (anaphylaxis), an auto-injector should be prescribed (Epipen® or Anapen®). This is an injector filled with adrenaline. The auto-injector is designed to be used by the medically untrained. People who know that they are at risk of anaphylaxis can carry this type of medication. At doctor’s office patients should get sufficient training and a written treatment plan, so they know how to use the auto injector if an emergency occurs. Always two should be carried, if a second injection is needed.

Adrenalin saves life!!!!!!
What is gluten intolerance (Coeliac disease)?

Non-IgE-mediated food allergy

Gluten intolerance also called coeliac disease is a non-IgE-mediated food allergy. It is a disease of the small intestine triggered by ingestion of gluten. Gluten is a type of protein found in wheat, barley and rye. When a person with coeliac disease ingests gluten an immunological reaction in the small intestine leads to flattening of the mucosa. Normally we absorb most nutrients, vitamins and minerals in the small intestine. A flattened mucosa is not able to absorb nutrients, vitamins, and minerals very well leading to many of the symptoms of coeliac disease.

It is estimated that about 1% of the population have antibodies connected to coeliac disease. Coeliac disease is thus an important public health issue. Because of the role of gluten in coeliac disease, the European Commission has listed wheat and other gluten-containing cereals on their list of the foods and ingredients that always must be labelled.

Wheat can also trigger IgE-mediated food allergy, though this is not as common as coeliac disease.

Symptoms

Coeliac disease was for many years mainly diagnosed in small children. Within months of starting a gluten-containing diet, susceptible children would present with chronic diarrhoea or loose stools, vomiting, a distended abdomen and failure to thrive. Similarly, diarrhoea, weight loss, and general weakness are the most common symptoms in adults.

Today we know that coeliac disease is a complex disorder with symptoms not only occurring in the gastrointestinal tract. Many symptoms and diseases are associated with celiac disease. For example, the flattened mucosa caused by coeliac disease leads to poor absorption of nutrients in the intestine. Poor absorption of iron can lead to anaemia, poor absorption of vitamin B12 can lead to dementia, and poor absorption of vitamin D and calcium can affect our bones and teeth. Coeliac disease is also often found in connection with other immunological diseases such as diabetes and rheumatoid arthritis.

Diagnosis

The accepted way to diagnose coeliac disease in Europe is to see the flattened mucosa in a biopsy from the small intestine, and to observe that the symptoms disappear on a gluten-free diet.

People with coeliac disease have an increased amount of certain antibodies when they eat gluten. These antibodies can be measured in a blood test. Measurement of antibodies cannot be used as positive proof for the disease. A blood test can, however, help decide whether to take a biopsy from the small intestine.

Treatment

A life-long gluten-free diet is the only treatment available for coeliac disease. Products with wheat, rye and barley must be avoided. Most patients tolerate products with oat as long as they are free from contamination with other cereals containing gluten. Once on a gluten-free diet the flattened mucosa in the small intestine of coeliac patients heals and the symptoms disappear.
Living with undiagnosed coeliac disease for most of his life, a 59-year-old man tells his story.

Coeliac disease may be difficult to diagnose because of seemingly mild or atypical symptoms. This is why many people live with a bad quality of life for many years before the disease is diagnosed.

This was the case for the present 59-year-old male. He was diagnosed with coeliac disease last year. He has probably had the disease for most of his life. Thanks to his wife he can now enjoy a good life. She had to drag him to the doctor because of a depression that had lasted for years.

The diagnosis

When the doctor saw me he asked if I had grown shorter. I had to admit he says – 7 cm since I was 18. The doctor was convinced that I had osteoporosis so he send me to the hospital for blood tests and a scan of the mineral content of my bones and I got the diagnose severe osteoporosis.

The hospital doctor wanted to know how I developed the osteoporosis. It is not very common in men. A new blood test showed I lacked all micro minerals, vitamin D and a hormone from the thyroid. Later a biopsy of the small intestine showed that I had coeliac disease.

It is strange that nobody discovered that earlier. I have been to the doctor with the same symptoms a number of times earlier. In my late thirties and again in my late forties I had blood tests and everything. I have actually been thin and pale and with ill-health all my life. As a child I was fed double cream to get thicker and have always had stomach problems and low blood haemoglobin since I was 30.

And I was always cold. We had to have 25 degrees Celsius in the living room and 22 in the bedroom. The coeliac disease has also had an impact on my energy and humour.

The diet

After I was diagnosed my weight has gained 15 kg and I feel well both physically and mentally. The treatment is a total change of diet. I cannot have any form of bread, spaghetti, breading or other things that can contain gluten. My wife is very creative and finds alternatives so now I eat rice biscuits and cakes made of maize and rice flour.

There may be gluten in many products we buy where it is difficult to guess. So we always read the ingredient list carefully. If I, by accident, get gluten I do not get a reaction right away. But the next day I will spend on the toilet with a severe stomach pain.

The osteoporosis is a consequence of the coeliac disease, the doctor says. I could not absorb calcium and vitamin D enough because the small intestine was ruined by the coeliac disease. My bone density is now increasing because of the gluten free diet and extra calcium.

I am grateful for feeling much better now, but would have liked it to happen much earlier in life.
The gluten-free diet

The only treatment for coeliac disease is avoiding gluten in the diet. Most patients with coeliac disease should ingest less than 50 mg gluten per day.

There is a variety of special foods produced to be gluten free. The foods must be produced to adhere to a standard set by international law (Codex). In the future there will be two standards for ‘gluten free’ food.

- ‘Gluten free’ products with less than 20 mg gluten/kg
- Products with ‘very low gluten content’ may contain from 20 mg gluten/kg to a maximum of 100 mg gluten/kg.

According to Codex gluten should be detected by a R5 ELISA method for gluten/gliadin. It is based on a monoclonal antibody reacting with the specific gliadin pentapeptide QQPFP. This method shows a sensitivity and limit of detection of 1.5 mg gliadin/kg.

Food labelling

The labelling aimed at protecting allergic consumers also covers gluten containing cereals.

More information can be found in:


Coeliac disease: Food allergy or autoimmune disease?

In the present text we have chosen to use the EAACI definition of coeliac disease as a non-IgE mediated food allergy. This definition is easy to communicate. Most people know about food allergy and the treatment for coeliac disease, avoidance diet, is the same as for food allergy. However, the idea of coeliac disease has changed in the last 10 years and coeliac disease may also be seen as a multi-organ autoimmune disease, primarily as a gastrointestinal disease, but also with effects on the skeletal system, the peripheral and central nervous system, the reproductive system and the cardiovascular system.

Non-IgE mediated allergy

Coeliac disease is triggered by gluten and there are antibodies (IgA) against the gluten fraction gliadin in serum of patients with untreated coeliac disease. These antibodies disappear on a gluten free diet.

Autoimmunity

But coeliac disease can also be considered an autoimmune disease partly because of the presence of autoantibodies in both serum and the intestinal mucosa. The autoantibodies are directed towards the enzyme tissue-transglutaminase and are induced on a gluten-containing diet and disappear on a gluten free diet. Coeliac disease is also associated with concomitant autoimmune disease, for example type 1 diabetes, and coeliac disease occurs approximately 5-10 times more often in patients with type 1 diabetes than in the general population.

Genetic factors

About 10% of first-degree relatives to patients with coeliac disease also develop coeliac disease. The principal known determinants of genetic susceptibility are the highly variable human leukocyte antigen (HLA) genes located in the major histocompatibility gene complex. It has been demonstrated that the HLA-DQ2 and –DQ8 class II protein molecule in a particular efficient way present gliadin peptides to T-cells in the gut. The HLA-DQ2 and –DQ8 antigens are present in more than 95% of persons with coeliac disease.

However, it is clear that additional factors are critical for the development of coeliac disease. Up to 30 percent of persons of North European ancestry, most of whom eat wheat, express HLA-DQ2, but coeliac disease develops in only a small proportion of these carriers. Altered processing of gluten by gut enzymes, and changes in permeability of the gut may also be important factors.

More information can be found in the review:

Contact allergy and food

Non-IgE-mediated food allergy

Allergy to nickel and perfume is caused by close contact with products containing nickel or perfume. In rare cases people with such allergies may get symptoms when they eat certain foods. The allergy is then called systemic allergic contact dermatitis.

Nickel

Persons with contact allergy to nickel may get skin symptoms if they eat food with high nickel content such as beans, buckwheat, chocolate, peanut and nuts. Electrical kettles with a heating element of copper plated with nickel or chromium may release amounts of nickel into the water high enough to induce symptoms. It is only a minority of nickel allergic persons that develop symptoms in this way.

Perfume

Although rare, persons with contact allergy to perfume may get skin symptoms when they eat spicy or aromatic foods.
Non-Allergic Food Hypersensitivity

What is non-allergic food hypersensitivity?

Non-allergic hypersensitivity (also known as intolerance) does not directly involve the immune system. Therefore, it cannot be measured by allergy tests. Lactose intolerance is a non-allergic hypersensitivity and reactions to food additives are mostly non-allergic.

At this point in time, there is no data on the number of people suffering from non-allergic hypersensitivity.

Symptoms

The symptoms of allergic and non-allergic hypersensitivity resemble each other. In general, the symptoms of non-allergic hypersensitivity are milder and there are rarely serious reactions.

The amount of food that causes complaints varies per person. Small amounts of a food can often be tolerated, while normal portions can cause symptoms. The body may, for example, tolerate one cookie, that contains milk but three cookies or a glass of milk may be too much causing a stomach ache.

What is lactose intolerance?

Lactose intolerance is a hypersensitivity to the lactic sugar (lactose) in milk. It is different from cow’s-milk allergy, which is a reaction to the proteins in milk. Lactose intolerance is caused by a deficiency of the digestive enzyme, lactase. This causes lactose to be insufficiently absorbed through the intestines. When the lactose is not absorbed in the small intestine bacteria break it down in the large bowel leading to stomach ache, gassiness, or (foaming) diarrhoea after ingestion of normal portions of dairy products. Small portions of lactose rarely cause symptoms. This means that persons with lactose intolerance can eat cheese and smaller amounts of other dairy products.

Lactose intolerance may be inborn (rare) but mostly appears during adolescence or early adulthood. It is the normal condition in 75% of the human population, but is relatively rare in northern Europeans probably occurring in 3-6%. Lactose intolerance may be transient in connection with intestinal infections.

Lactose in different dairy products:
1 glass of milk (2 dl): 9.4 g lactose
2 dl yoghurt: 5.0 g lactose
50 g feta cheese: 0.3 g lactose
1 slice of hard cheese (20 g): traces of lactose
What do we know about hypersensitivity to food additives?

Food additives are a large and varied group of substances added to food, for example, prevent growth of microorganisms, give colour or flavour, improve texture or prevent browning. There are few scientific investigations concerning food additives and hypersensitivity probably because it is a difficult subject to investigate. This is because there are many different food additives and relatively few people who react to any individual substance. This means that most descriptions of food additive hypersensitivity are based on very few patients.

The one exception is sulphites. Sulphites are used as preservatives and anti-browning agents. They may be present in many different foods such as wine, beer, dried fruit and vegetables, white vegetables (e.g. horse radish and sauerkraut), biscuits, crustaceans and mussels. Hypersensitivity to sulphites is relatively well described especially in people with asthma and may also trigger skin reactions such as hives (urticaria).

About this material

As part of the EuroPrevall project (see www.europrevall.org) patient organizations, clinical doctors with expertise in food allergy, dietitians and food scientists from across Europe have created the text for this material. This work was lead by Charlotte Madsen from the National Food Institute (see http://www.food.dtu.dk), Technical University of Denmark. The material is aimed at primary care professionals and food allergic persons or parents to allergic children. The material aim to help you understand what food allergy is about, how it is diagnosed and handled.

EuroPrevall was an EU-funded project about food allergy. The primary objective of EuroPrevall was to improve the quality of life for all food allergic consumers. To meet that objective EuroPrevall conducted research to obtain information that we lacked. EuroPrevall also developed the tools necessary to manage food allergies more effectively. Europrevall for instance created the website www.foodallergens.info aimed mainly at the food industry and national authorities. The 63 partners from 25 different countries included some of the leading allergy research organisations in Europe as well as clinical, patient, and industrial organisations.

Originally the information material was hosted by Ga2len (see www.ga2len.net), which is a Network of Excellence of the leading European clinical and research facilities in the field of allergology and asthma. In 2012 the text was updated and pictures added, and EAACI (European Academy of Allergy and Clinical Immunology) created a website with the information material – see http://www.eaaci.net/resources/what-is-food-allergy.html.

Most of the pictures in the material are from www.colourbox.com.