



# Decoding Food Labels: Tools for People with Food Allergies<sup>1</sup>

Elizabeth A. Gollub and Amy H. Simonne<sup>2</sup>

## Background

True food allergies are immune-mediated systemic allergic reactions to certain foods. According to the FDA, true food allergies affect less than 2% of the adult population and 2-8% of children. However, the impact of true allergies can be quite severe. Most childhood food allergies are found in young infants and children under 3 years old. Food allergies have a genetic component and may be more common among those with asthma.

Reactions to a food allergen can range from uncomfortable skin irritations to gastrointestinal distress to respiratory involvement to life threatening anaphylaxis—a systemic allergic reaction that generally involves several of these areas as well as the cardiovascular system. The number of people with food allergies appears to be increasing, especially among children. To keep pace with this trend, there is an increasing need for preemptive food selection strategies.

Currently, an individual with a food allergy must learn to read labels carefully and critically. This is because a food allergen may take on an unfamiliar name when used for processing

purposes. For example, if eggs, one of the most allergenic foods, are used as a binder to retain water in a food product, the term *binder* rather than egg will appear on the food label. Similarly, soy protein may be used for flavoring and listed on the label as *natural flavoring*.

New legislation, The Food Allergen Labeling and Consumer Protection Act (FALCPA), would require food manufacturers to use common names to identify major allergens. If approved by the House of Representatives, the FALCPA should provide consistent ingredient information, understandable at-a-glance to the average consumer, by January 2006. Until that time, understanding current labeling information is vital to allergic individuals.

The goal of this publication is to provide information to help consumers understand ingredient statements on food packages, so they can avoid foods and food-products that might contain specific allergens. It also differentiates between allergies and intolerances, and discusses the potential for cross-contamination of foods both in and away from the home.

1. This document is FCS8781, one of a series of the Department of Family, Youth and Community Sciences, Florida Cooperative Extension Service, IFAS, University of Florida, Gainesville, FL 32611. First published: November 2004. Reviewed by Brenda Marty-Jimenez, MHM, RD, LD/N, Extension Faculty/Family and Consumer Sciences, Broward County Extension. Please visit the EDIS Web site at <http://edis.ifas.ufl.edu>

2. Elizabeth A. Gollub, PhD, MPH., RD., OPS professional; Amy Simonne, PhD, assistant professor and extension specialist, Department of Family, Youth and Community Sciences, University of Florida, Gainesville, FL 32611.

## Food Allergy vs. Food Intolerances vs. Histamine Sensitivity

Most people experience an adverse reaction to some food at some point in their life. This does not necessarily mean that the individual is allergic to that food. Food intolerances, including sensitivity to elevated levels of histamine in foods, can produce a response similar to an allergic reaction. Adverse reactions and suspected allergens can be identified through a detailed history and specific allergy testing by a physician or qualified specialist, to exclude other causes.

The difference between food allergies and food intolerance is how the body handles the offending food. In the case of an allergy, the immune system recognizes a chemical in the food (usually a protein) as an allergen, and produces antibodies against it.

A response to an allergen may manifest as:

- Swelling of the lips
- Stomach cramps, vomiting, diarrhea
- Hives, rashes, eczema
- Wheezing or breathing problems
- Severely reduced blood pressure

Most common allergens are found in the following food groups:

1. Cow's milk (especially among children)
2. Wheat (especially among children)
3. Soy (especially among children)
4. Eggs
5. Peanuts
6. Tree nuts
7. Fish and/or shellfish
8. Food additives (not true allergens, but capable of causing reaction or illness specific to a given person)

In most cases, children will outgrow their allergies to milk, wheat, soy, and eggs, but not to peanuts. Adults do not usually grow out of or lose their allergies.

Food intolerance is more common than a true allergy and does not involve the immune system. Intolerance is a metabolic problem in which the body cannot adequately digest the offending food. This is usually because of a chemical deficiency (i.e. an enzyme deficiency).

An individual with food intolerance can generally consume a small amount of the offending food without becoming symptomatic. However, that specific amount may be different for each individual. Intolerances, unlike allergies, seem to intensify with age.

Histamine sensitivity may be considered a type of food intolerance. Because histamine is a primary mediator of an allergic response in the body, consumption of histamine can elicit a similar response. Histamine toxicity is most frequently associated with the consumption of spoiled fish, but has also been associated with aged cheeses and red wines. Elevated levels of histamine occur naturally in these foods.

## Decoding Allergens in Foods

### Eggs

If you are allergic to egg protein, you should avoid any product with the word *egg* on the label. You should also avoid products with the following terms on their label:

Albumin	Lysozyme
Binder	Ovalbumin
Coagulant	Ovamucin
Emulsifier	Ovamucoid
Globulin/ovaglobulin	Ovovitellin
Lecithin	Vitellin
Livetin	Simplese*

\* Simplese™ is a fat substitute made from egg white and milk protein

Types of foods that likely contain egg protein include:

Baked goods and packaged mixes	Marshmallows
Creamy fillings and sauces	Processed meat products
Breakfast cereals	Pastas/egg noodles
Malted drinks and mixes	Salad dressings/mayonnaise
Pancakes and waffles	Soups
Marzipan*	Meringue
Custard	Pudding

\* Marzipan might be made with egg whites

### Milk

Milk and milk proteins are also found in a variety of processed foods. Individuals with milk protein allergies should avoid all types of milk, ice cream, yogurt and cheese, including *vegetarian cheese*. Allergic individuals should avoid foods with the terms *butter*, *cream*, *casein*, *caseinate*, *whey*, or *emulsifier* on the label. Additional labeling terms indicating the presence of milk proteins in a food product include:

Caramel color or flavoring	Lactose
High protein flavor	Natural flavoring
Lactalbumin/lactalbumin phosphate	Solids
Lactoglobulin	Simplese*

\* Simplese™ is a fat substitute made from egg white and milk protein

Types of foods that likely contain milk protein include:

Battered foods	Custard, puddings, sherbet
Baked goods and mixes	Imitation sour cream
Breakfast cereals	Instant mashed potatoes
Chocolate	Margarine
Cream sauces, soups and mixes	Sausages
Gravies and mixes	Sweets/candies
Ghee*	
* Ghee is clarified butter frequently used in Indian Cuisine.	

## Wheat

Individuals who are allergic to wheat proteins should avoid any product that contains the term *wheat*, *bulgur*, *couscous*, *bran*, *gluten*, *bread crumbs*, or *hydrolyzed wheat proteins* on the label. Wheat has binding properties that are very useful in the food processing industry, and has been extended to use in the pharmaceutical industry. Individuals with wheat allergies should discuss the composition of prescription or over-the-counter medications with a pharmacist prior to use. The presence of wheat protein in a food product may be indicated by the following label terms:

Flour – bleached, unbleached, white, whole wheat, all-purpose, enriched, graham, durum, high gluten, high protein	MSG (monosodium glutamate)
Cornstarch	Vegetable starch/gum
Farina	Gelatinized starch
Semolina	Spelt*
Hydrolyzed vegetable protein	Kamut*
Modified food starch	Triticale*
Miso**	
*Spelt and Kamut are both relatives of wheat; Triticale is a wheat/rye hybrid. These grains are gaining popularity as wheat substitutes. Spelt, Kamut, and Triticale containing products are marketed primarily through health/natural food stores. ** Fermented soy product with up to 50% wheat	

Types of foods that likely contain wheat proteins include:

Ale/beer/wine/bourbon/whiskey	Gravy
Baked goods and mixes – including barely products	Ice cream and cones
Battered or breaded foods	Malts and flavorings
Breakfast cereals	Pasta/egg noodles
Candy/chocolate	Soup and soup mixes
Processed meats	Soy sauce
Coffee substitutes	Pretzels, chips, crackers

## Soy

Soy can be consumed as a whole bean, a nut, or a cow-milk alternative. Soy can be processed into foods such as tofu, soy curd, yuba (soy film), and soy flour. Soy can be fermented into products such as tempeh, natto, miso, and soy sauce. Soy has a variety of supportive uses in the food industry as well. It can be a *thickener*, *stabilizer*, *emulsifier*, and a *protein extender*. Allergic individuals should avoid products with these terms on the label in addition to products containing the terms *soy* and *soybean*.

Soybean oil should be protein free, but this is not always the case and some allergic individuals must avoid soybean oil and products made with soybean oil (margarine and products made with margarine, salad dressings, and baby foods). The presence of the following terms on the product label may also indicate the presence of soy protein:

Guar gum	Miso*
Bulking agent	Monosodium glutamate (MSG)
Carob	Protein
Gum Arabic	Starch
Hydrolyzed vegetable protein (HVP)/ Hydrolyzed soy protein	Textured vegetable protein (TVP)
Lecithin	Vegetable broth/gum/starch
* Miso is a paste made from fermented soybeans, used as a flavoring agent in Japanese Cuisine.	

Types of foods that likely contain soy protein include:

Baked goods	Oriental foods
Some breakfast cereals	Processed meats
Hamburger patties	Ice cream
Butter substitutes/shortening	Liquid/powdered meal replacers
Chocolates/candy	Seasoning sauces
Canned meat/fish in sauces	Seasoned salt
Canned/packaged soups	Snack bars
Canned tuna	Bouillon cubes
Crackers	TV dinners
Gravies/mixes	Tamari*
* Tamari is a dark sauce, similar to but thicker than soy sauce.	

## Peanuts and Tree Nuts

Peanuts are one of the most severely allergenic foods available in the market place. Peanuts are frequently used as a flavoring/seasoning agent in a variety of products. Peanuts and peanut oil are commonly used in oriental cooking. As with soy oil, peanut oil (occasionally referred to as arachic oil) may very well contain an amount of peanut protein sufficient to elicit an allergic reaction. The terms *peanut*, *peanut butter*, *ground-nut*, *flavoring*, *extract*, and *oriental sauce* on a product label generally indicates the presence of peanut protein.

Types of foods that may contain peanut protein include:

Baked goods/mixes	Chili
Battered foods	Soups
Some breakfast cereals	Marzipan**
Cereal-based products	Satay sauce***
Candy/candy bars/sweets (read label)	Milk formula
Ice cream	Chinese dishes/egg roll
Margarine/vegetable oil/vegetable fat	Asian dishes (e.g. Thai/Indonesian)
Some grain breads	African dishes
Snack foods	Energy bars
Barbecue/Worcestershire sauce	Meat substitutes
Sunflower seeds*	
<p>* Sunflower seeds may be processed on equipment shared with peanuts.</p> <p>** Marzipan is a paste made of almond and sugar, used on pastry or molded into candy. Marzipan might be made with egg white as well</p> <p>*** Satay sauce is made with peanuts or peanut butter and soy sauce. It might also be made with other allergenic ingredients such as shrimp paste or fish sauce.</p>	

Individuals with a peanut allergy may or may not be allergic to tree nuts (e.g. almonds, cashews, pecans, walnuts) as well. Individuals with tree-nut allergies should be cautious of the foods listed above as well as the following: *mixed nuts*, *artificial nuts*, *nut oils*, *nut pastes*, *nut butters*, *nut extracts*, *salad dressings*, and *amaretto products*.

## Fish and Seafood

Seafood refers to fish and shellfish. Fish is a potent allergen among children. Shellfish tends to be a more potent allergen among adults. Although seafood might be incorporated into a variety of foods during processing, the product's label generally states this clearly. Certain species of fish contain high levels of histidine (an amino acid), which can be converted into histamine by bacteria. Reactions to histamine can mimic allergic reactions, but are not indicative of a true allergy.

Types of foods that might contain fish/seafood proteins include:

Worcestershire/steak sauce	Surimi*
Caesar salad dressing	Caponata**
Hot dogs/bologna/ham	Marinara sauce
Pizza toppings	Vitamin supplements (read label)
Fish sauce	Curry paste
Fish stock	
<p>* Surimi is a fish protein (most commonly made from Pollack), marketed as imitation seafood. Surimi may contain artificial flavor, sweeteners, egg white, starch, and small amounts of real shellfish.</p> <p>** Caponata is an eggplant relish that can contain anchovies</p>	

## Food Additives

Food additives are frequently incorporated into food products during processing. They may be used as a product preservative, a flavor enhancer or sweetener, a coloring agent, a conditioner, or a stabilizer. Over the years, adverse reactions to certain food additives, casually referred to as allergies, have been reported. Most notably

- Sulfite induced asthma;
- Monosodium glutamate induced asthma or MSG Symptom Complex;
- Aspartame induced hives and/or migraines;
- FD&C Yellow No.5 (Tartrazine) induced hives and/or asthma.

Reactions to these additives are not immunologically mediated. Rather, reactions to these food additives are considered *idiosyncratic* (affecting different people in different ways) in that the mechanism of these reactions remains unknown.

### *Sulfites*

Sulfites are used as preservatives, to prevent browning reactions. Although sulfite-induced asthma is well documented, its mechanisms are not well understood by experts. So sulfite sensitive individuals should avoid foods with the following terms listed on their label: *sulfur dioxide, potassium metabisulfite, sodium metabisulfite, potassium bisulfite, sodium bisulfite, and sodium sulfite.*

### *Monosodium glutamate (MSG)*

Glutamate, an amino acid, occurs naturally in many foods, with particularly high levels in dairy products, meat, fish and some vegetables. Glutamate has a distinct flavor. Monosodium glutamate (MSG) is added to food as a flavor enhancer. MSG Symptom Complex includes headaches, nausea, rapid heartbeat, vomiting, a tingling/numbness/burning sensation along the back, neck, arms, face, and chest pains. These MSG induced symptoms tend to occur in sensitive individuals within 1 hour of consuming large amounts ( $\geq 3$  grams) of MSG or consuming MSG in a liquid (e.g. soup). Individuals with asthma may be predisposed to this syndrome as well as MSG induced asthma attacks. Food

products containing MSG will list it on the label. However, MSG may be used in restaurants, especially in oriental cooking.

### ***Aspartame***

Aspartame is an artificial sweetener made from two amino acids phenylalanine and aspartic acid. Aspartame is marketed as a low-calorie sweetener (NutraSweet and Equal are among its popular names). Associations have been reported between Aspartame and a list of adverse symptoms including: headaches or migraines; dizziness; rashes; swelling of the lips and/or eyelids; difficulty breathing; rapid heartbeat; and depression. Individuals with mood disorders may be particularly vulnerable to these reactions. Aspartame is listed on the label of food products, beverages, and in medications, where it may also be used as a sweetening agent.

### ***FD&C Yellow No.5 (Tartrazine)***

FD&C Yellow No.5 or Tartrazine is a dye used as a coloring agent in food processing. Among sensitive individuals, Tartrazine appears to be a trigger for asthma, runny nose, and hives. The presence of this dye in a food or drug should be clearly indicated by the terms *FD&C Yellow No.5*, *Tartrazine*, or possibly *E102* on the food product label or drug package insert. Individuals who are sensitive to aspirin may be sensitive to Tartrazine as well.

## **Cross-Contamination of Foods In and Away from Home**

If you are or live with an allergic individual, then cross-contamination becomes a daily issue. Cross-contamination refers to the situation through which a “safe” food comes in contact with an allergen—even a small amount. At home, this could occur by cutting a peanut butter sandwich on a cutting board. The board is effectively contaminated with enough peanut allergen to elicit a reaction from the next allergic user. In a bakery, this could occur when an employee removes a sugar cookie for an allergic customer, with the same tongs that were used to remove a peanut-butter cookie. In a restaurant, this could occur if the steak you ordered is grilled alongside the fish you are allergic to.

### **To avoid cross-contamination at home:**

- Separate allergenic foods from other foods by storing them in a plastic box or container in the refrigerator or on the pantry shelf.
- Clean all pots, pans, and utensils thoroughly with soap and hot water, immediately after use with an allergen.
- Wash plates and utensils used with allergenic foods, separately and with a separate set of washing and drying cloths.
- Do not use wooden bowls or utensils because they absorb contaminants.
- Wash hands after contact with an allergen or wear non-latex food gloves during food preparation.



## To avoid cross-contamination in restaurants:

- Avoid buffet-style dining.
- Avoid stores or cafes where food products are stored in bulk bins.
- Avoid sliced deli meats because slicers are used with a variety of products.
- Avoid seafood restaurants if you are allergic to any type of seafood.
- Avoid Asian restaurants (Thai, Indonesian) if you have a peanut or soy allergy.
- Tell your server about your allergy.
- Ask about possible hidden ingredients, especially in salad dressings and sauces.
- Ask about other foods being prepared in the kitchen simultaneously.
- Order simple dishes with sauces on the side.
- Carry a *Chef Card*—a personalized card with simple instructions to the chef and others, describing your allergy, related ingredients, and cross-contamination issues.
- Don't be afraid to leave a restaurant if you don't feel "safe".

**Disclaimer:** Not all foods and potential allergens have been included in this handout. Check with your physician or specialist to make sure you have a complete, individualized list. If you are in doubt regarding food label information or product ingredients, contact the food manufacturer.

## References

1. Food Allergen Labeling and Consumer Protection Act of 2003 (HR 3684 IH).
2. IFT – Scientific Status Summary: Seafood Allergy and Allergens- A review. October 1995.
3. Sicherer SH, Sampson HA. Prevalence of peanut and tree nut allergy in the United States determined by means of a random digit dial telephone survey: a five-year follow-up study. *Journal of Allergy and Clinical Immunology*. 2003;112(6):1203-7.
4. Steinman HA. Hidden allergens in foods. *Journal of Allergy and Clinical Immunology*. 1996;98(2):241-250.
5. Taylor SL, Hefle SL. Food allergies and other food sensitivities. *Food Technology*. 2001;55(9):68-83.
6. Taylor SL, Stratton JE, Nordlee JA. Histamine poisoning (scombroid fish poisoning): an allergy-like intoxication. *J Toxicol Clin Toxicol*. 1989;27(4-5):225-240.

7. U.S. Food and Drug Administration. FDA Medical Bulletin. Monosodium Glutamate. 1996; vol 26(1). <http://www.fda.gov/medbull/january96/msg.html>
8. U.S. Food and Drug Administration. Food allergies rare but risky. FDA Consumer May 1994. <http://vm.cfsan.fda.gov/~dms/wh-alrg1.html>
9. U.S. Food and Drug Administration. When food becomes the enemy. FDA Consumer July-August 2001 revised April 2004. [www.fda.gov/fdac/features/2001/401\\_food.html](http://www.fda.gov/fdac/features/2001/401_food.html).
10. Walton RG, Hudak R, Green-Waite RJ. Adverse reactions to aspartame: double-blind challenge in patients from a vulnerable population. Biol Psychiatry. 1993 Jul 1-15; (34(1-2): 13-7.
11. William, J., Jr. Food Allergens: Effectively managing processing risks. Food Protection Trends. 2004. Vol. 24(1):20-22.

## Additional Resources

Allergy and Asthma Network/Mothers of Asthmatics, Inc, 800-878-4403, [www.podi.com/health/aanma](http://www.podi.com/health/aanma)

Allergy, Asthma, and Immunology Online, <http://www.aaaai.org>

American Academy of Allergy, Asthma, and Immunology, 800-822-2762, <http://www.aaaai.org>

American Allergy Association, (415) 322-1663, <http://www.aafa.org>

American College of Allergy, Asthma, and Immunology, <http://allergy.mcg.edu>

American Lung Association /American Thoracic Society, 800-LUNG-USA

Asthma & Allergy foundation of America, 800-7-ASTHMA

Asthma Information, (301) 251-1222, <http://www.nhlbi.nih.gov/health/public/lung/index.htm>

Cosmetics, 800-270-8689, <http://www.fda.gov>

Extracts for Allergy Testing; (301) 295-8012

Food Allergy & Anaphylaxis Network, 800-929-4040, <http://www.foodallergy.org>

Hotline: Immunologic Diseases, 800-222-LUNG, <http://www.njc.org>

International Food Information Council Foundation, <http://www.ific.org/>

International Institute of Allergy and Infectious Diseases, NIH, <http://www.niaid.nih.gov>

MEDLINEplus, <http://www.nlm.nih.gov/medlineplus>

National Allergy Bureau, 800-9-POLLEN, <http://www.aaaai.org>

National Eczema Association for Science and Education, 800-818-7546, <http://www.nationaleczema.org/home.html>

National Institute of Environmental Health Sciences, Office of Communications, <http://www.niehs.nih.gov/airborne/home.htm>

National Jewish Medical and Research Center, <http://www.nationaljewish.org>

Parents of Asthmatic/Allergic Children, (303) 842-7395

<http://www.farrp.org>

<http://www.nal.usda.gov/fnic/etext/000004.html#xtocid238181>

Print material to order on food allergies

<http://www.foodallergy.org/>

Topics to search and explore

<http://www.allallergy.net/index.html>

FDA Information About Food Allergens

<http://www.cfsan.fda.gov/~dms/wh-alrgy.html>

IFT Scientific Status Summary

<http://members.ift.org/IFT/Pubs/default.htm>

GMA Documents related to food allergens

<http://www.gmabrands.com/news/docs/Testimony.cfm?DocID=816>

IFST-Food Allergens

<http://www.ifst.org/hottop19.htm>

Fear of Food-Food Product Design article;

<http://www.foodproductdesign.com/archive/1998/0198PR.html>