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The Soy Connection

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HEALTH AND NUTRITION NEWS ABOUT SOY

Soybean Oil Made Safe In Processing

The possibility of an allergic reaction to soy oil is a frequent question among soy-sensitive individuals. Awazuhara et al¹ concluded in their clinical study that the extremely low levels of proteins in soy oil provoke little immune response in a soy-allergic individual. In fact, the allergens in soybeans are found in the protein fraction which is typically removed in the processing of soybean oil. Thus, soybean oil, a common food ingredient, is considered safe for those with a food allergy, depending on the processing method.²

Most soybean oil is manufactured via the hot-solvent extraction process with bleaching and deodorizing in the United States, which removes virtually all of the oil's proteins. Such highly refined soybean oil is generally regarded as safe for soy-allergic individuals. Some soybean oil is made by cold-pressing (also known as expeller processing) where the soybeans are basically squeezed to produce the oil. This type of process does not fully remove the protein.³ In all cases, extruded, expelled or cold-pressed soybean oils are less processed and should be avoided if you are allergic to soy. These cold-pressed soybean oils are often found in gourmet sections or natural food sections in retail stores and are rarely, if ever, used as food ingredients in further processed products. ☺

Soyfoods And Allergies: Separating Fact From Fiction

By Jamie L. Kabourek, M.S., R.D. and Steve L. Taylor, Ph.D.

Individuals with various food allergies or sensitivities must avoid certain foods and ingredients and be scrupulous with every food choice.

Food allergies and sensitivities are individualistic adverse reactions to foods.¹ Adverse food reactions can include IgE and non-IgE-mediated sensitivities involving the immune system as well as non-immunological food intolerances. True food allergy is an abnormal response of the immune system to certain components, typically naturally occurring proteins in foods.^{2,3}

True food allergies are divided into two categories: immediate and delayed hypersensitivity reactions. Immediate hypersensitivity reactions occur within minutes to an hour after ingesting the offending food due to the binding of allergens (proteins) to specific preformed IgE antibodies that are affixed to specialized cells called mast cells and basophils. Binding results in the release of mediators such as histamine and cytokines from the cells which produces an acute inflammatory response.⁴ In delayed hypersensitivity reactions, symptoms do not appear until 24 hours or longer after ingesting the offending food and involve the development of sensitized T-cells.^{2,3}

Food intolerances are also abnormal reactions to food but do not involve the immune system. Several types of intolerances exist including metabolic food disorders, anaphylactoid reactions, and idiosyncratic reactions.¹ Food intolerances generally involve more mild symptoms and a

lesser degree of sensitivity than true food allergies.

Any food having protein has the potential to cause an allergic reaction among susceptible individuals. More than 160 foods have been documented as causing food allergies.⁵ However, eight food groups account for more than 90 percent of all IgE-mediated food allergies worldwide.^{6,7} These are milk, eggs, fish (all finfish species), crustacea (shrimp, crab, crayfish, lobster), peanuts, tree nuts (almonds, Brazil nuts, pecans, walnuts, cashews, pistachios, hazelnuts, pine nuts, macadamia nuts, chestnuts and hickory nuts), wheat and soybeans. This group of foods is commonly referred to as the "Big Eight."

Adverse reactions to soy may present as two types of disorders. IgE-mediated soy allergy involves abnormal responses of the immune system, which generally produce symptoms within minutes to an hour after ingestion.⁸ Symptoms may vary from mild to life-threatening and involve the gastrointestinal, cutaneous and respiratory systems. The nature and severity of symptoms may also vary from one episode to another. The most severe form of food allergy is anaphylaxis that can involve numerous symptoms and result in death due to cardiac or respiratory collapse.

Soy-induced enterocolitis is an immunologic syndrome resulting in adverse gastrointestinal reactions to soy protein, but not systemically mediated by IgE.⁹ Colitis usually presents in the first few months of life

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Soyfoods And Allergies: Separating Fact From Fiction *(Continued from Page 1)*

producing varying symptoms including fever, vomiting, chronic diarrhea, failure to thrive, bloody stools and leukocytosis. Eliminating soy protein from the diet commonly resolves symptoms. Soy-induced enterocolitis usually resolves after six months to two years of allergen avoidance.¹⁰

The wide range of symptoms in IgE-mediated food allergies may make it challenging to properly diagnose and identify offending food sources.¹¹ Methods of diagnosis include combinations of food diaries, elimination diets followed by challenge, double-blind, placebo-controlled food challenge, skin-prick tests using extracts of suspected foods or radioallergosorbent tests (RASTs) - blood tests measuring the presence of food-specific IgE antibodies in blood serum.¹²

Infants and children are generally more affected by food allergies than any other age group.⁸ The prevalence of food allergy for chil-

dren under age three is five to eight percent.¹³ Overall, IgE-mediated food allergy affects 2-2.5 percent of the total population. While the prevalence of soy allergy is not precisely known for the entire population, soy allergy is less frequently encountered in infants and young children in the U.S. than egg, milk, peanut and wheat allergies.¹⁴⁻¹⁵ In one study of prevalence in Australian infants, the prevalence of soy allergy was 0.1 percent compared to 3.2 percent for egg, 2.0 percent for milk, 1.9 percent for peanut, and 0.4 percent for sesame seed.¹⁶ Food allergies may vary among population groups based on eating habits and geographic location as well as differences in diagnostic criteria.^{8,17} Soy allergy is also known to be a transient allergy of infancy and childhood, often being outgrown by age three.¹⁷ The prevalence of soy allergy in adults is not known but is thought to be less than peanut, tree nuts, fish, and

shellfish in the U.S.

Soy allergy is generally not responsible for severe, life-threatening reactions. Certain food groups appear more likely to provoke severe or fatal anaphylaxis, although any food is capable. In Westernized countries, peanuts, tree nuts, fish and shellfish are most often implicated; whereas milk, eggs and soybeans are less frequently associated with life-threatening reactions.¹⁸

After proper diagnosis, the specific avoidance diet is the only prophylactic approach to treating food allergies.⁸ Strict elimination of the problem food must be adhered to and usually requires the aid of a physician or dietitian as well as careful planning by the individual or family. As noted earlier, soy allergy is often outgrown, so the length of time for soy avoidance

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Soyfoods CD-ROM / Web Site Available To Assist In Childhood Obesity Fight

Many health professionals believe that consumption of soyfoods is an important part of a healthy diet and potentially part of the solution to childhood obesity.

In April 2003, the United Soybean Board will join the fight against child obesity through the launch of an innovative CD-ROM. The project is designed to increase use of soy among younger audiences and create awareness of the many uses and benefits of soy among health and food service professionals. Primarily intended for easy use by food service directors and nutritionists within the school lunch program, the project will utilize a creative approach that is informative, exciting and fun. Everything contained on the CD-ROM will also be available on the project Internet site, providing unlimited public access.

Designed to help the user become self-sufficient in producing and serving soy-related foods, the project will identify problems, provide solutions and communicate how the proper utilization of soy protein and soy protein-enhanced foods can be a significant step in lowering the incidence of obesity in our nation's schools and households.

The project is scheduled for launch during National Soyfoods Month (April). Copies of the CD-ROM will be available at the American School Food Service Association's Major Cities Conference in Chicago (May 15-17, 2003).

For more information, see <http://www.solveobesity.com> 

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Elimination Diet, Food Challenge Tools For Patients With Allergies

By Barbara Schiltz, R.N., M.S., C.N.

Perhaps the most reliable method for identifying problem foods is to follow an elimination diet in combination with food challenge, that is, the foods that are most commonly eaten are eliminated for a period of two to three weeks and then each food is individually re-introduced in two to three day intervals.¹⁻³ Intolerance and/or IgG (delayed) reactions are experienced more commonly than IgE (immediate) reactions.³ The waiting period between food re-introductions allows the detection of foods with delayed reactions.

The standard elimination diet allows very few foods. Many nutritionists prefer to use a modified version of the elimination diet that avoids the most common allergic foods, while still allowing a wide variety of foods with low allergy potential. Some nutritionists will recommend elimination of one food at a time for better compliance, since patients often balk when much of their oft-eaten foods are taken away. However, this approach rarely pinpoints the problem foods since other allergenic foods may still be ingested, masking any potential improvement in symptoms.

Most often, the foods that patients are asked to eliminate from their diets are well-known IgE allergens, such as dairy, wheat, or egg.¹ However, it is advisable to also eliminate those foods known to cause intolerance reactions, such as corn or refined sugars. Often GI complaints, fatigue, headaches or joint pains are related to refined sugars. Some practitioners choose to eliminate all gluten grains, while others prefer removing the whole citrus family, or soy and/or tree nuts from the diet. A note of cau-

tion on soy: After eating soy-foods, patients may mistake symptoms of gas and bloating, a common reaction to the legume family, as an allergic reaction.

While nutritionists may not always agree about which foods to eliminate, the most commonly chosen are dairy, wheat, eggs, corn, oranges, peanuts, beef, shellfish, refined sugars, alcohol, and caffeinated beverages.¹ Any food eaten more than three times a week should also be avoided. If the patient is very young or very old, it may be impossible to remove all these foods. In this case, elimination of only dairy, wheat and refined sugars will often pinpoint the culprit(s), since these foods are commonly present in almost every American meal. Keep in mind that the foods that patients crave and are most reluctant to eliminate are often the ones that they are most allergic to.¹

Since adverse reactions often occur to foods eaten on a daily basis, ethnic considerations should play a role in choosing foods to be eliminated. While rice is a low allergy food for Americans, its allergy-potential is greater for those of Asian descent. Likewise, corn can be a problem for Native Americans.

Once started on the elimination diet, if a patient's symptoms are related to food, there may be an initial period of "withdrawal," during which symptoms may worsen. It is not unusual to experience bloating, food cravings, headaches, fatigue or general aches and pains for a few days, followed by a gradual improvement in symptoms. Upon reintroduction, an offending food should cause a return of symptoms, often worse than before. Patients may react to only one,

two, or many foods. Unclear reactions necessitate re-challenge of the food. After a period of two to three months, most non-IgE allergies will diminish and patients will find that their tolerance has improved.

ABOUT THE AUTHOR

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Complete references for articles in this issue can be found on the Internet

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Diagnosing and Managing Your Allergies

By Melinda Dennis, M.S., R.D., L.D.N.

A food allergy or food hypersensitivity is defined as an abnormal immunologic response to certain foods, characterized by a variety of symptoms. Food allergies are commonly confused with food intolerances because they share similar symptoms. Unlike food allergies, however, food intolerances (lactose intolerance, for example) do not involve the immune system, and the allergic individual can usually tolerate small amounts of the offending food without a reaction.

About 1.5 percent of adults and five to eight percent of children under three years old in the United States have a true food allergy.¹ In pediatrics, milk allergy is found in 0.3 to 7.5 percent of the population while soy allergy is found in 0.5 percent or less of the population.¹ Children usually present with a soy or milk allergy by three months of age and may experience diarrhea, vomiting, irritability, atopic dermatitis, rhinitis, asthma,¹ or poor growth.² Infants born to parents with a history of atopic disease are at an increased risk for developing food allergies.³ Children with soy, milk, and egg allergies frequently outgrow them,⁴ especially when strictly avoided for a period of time. A physician diagnoses a food allergy by reviewing the patient's food diary for foods and symptoms, from a physical exam, and through lab tests. The most common test methods are: the elimination diet and food challenge (*see article on page 3 of this issue*), skin test (involving pricking the skin with a needle containing a small amount of liquid extract from the potential allergen), and radioallergosorbent

(RAST) test or enzyme-linked immunosorbent (ELISA) blood test (tests that measure the presence of food-specific IgE antibodies in the blood). A fourth test, the double-blind, placebo-controlled food challenge (DBPCFC), is considered the gold standard for food allergy diagnosis but cannot be used on individuals with a history of anaphylactic reactions.⁵ Regular retesting by a physician is important to avoid unnecessary life-long restriction from an allergy that may have been outgrown.

The only treatment for a food allergy is strict avoidance of the allergen as even a minuscule amount of the offending food can be fatal to the particularly sensitive. Label reading is crucial because an allergen can be listed in different ways, such as its technical or scientific name (such as textured vegetable protein™). Ingredients on labels may change frequently. Contact the manufacturer with questions about a particular ingredient. The Food Allergy and Anaphylaxis Network (www.foodallergy.org) has recipes, and tips on label reading to help people with soy and other food allergies stay healthy.

Soy-allergic individuals can substitute rice milk, cow's milk, almond milk, or other nut milks in place of soy, provided they are well tolerated. Infants with soy allergies can be fed with formulas, such as Similac or Alimentum, which contain protein-free soy oil, fortified rice milk, or hypoallergenic specialty formulas, such as Nutramigen. Vegetarians who rely on soy as a protein source may consider dairy or eggs, if tolerated; vegans can choose from nuts,

seeds, peas/legumes and beans. Legumes and beans should be eaten in moderation; however, as they may cross-react (people sensitive to soy may develop sensitivity to members of the bean and legume families, and vice versa).⁴ Your doctor, dietitian and allergist can suggest healthy alternative foods and supplements to provide for overall nutritional adequacy.

When dining out, carefully question the wait staff and/or chef about ingredients before you order. Become aware of any substitutions that might be made in a dish if a particular soy-based ingredient runs short. Consider carrying a wallet-sized card that lists your food restrictions and safe substitutions. When in doubt about a food item, avoid it.

Learn about food processing, preparation and service to help reduce accidental exposure to allergens. Cross contamination can come from cutting boards, pots, pans and utensils used to prepare foods or from salad bar containers or bulk storage bins in grocery stores that previously held an allergen and have not been properly cleaned. With vigilant label reading skills and the confidence to ask questions when in doubt, one can dramatically reduce the risk of accidental exposure to an allergen.

ABOUT THE AUTHOR

Melinda Dennis, M.S., R.D., L.D.N., is an outpatient dietitian in the Medical Nutrition Therapy Clinic at Beth Israel Deaconess Medical Center in Boston, Massachusetts. She sees many patients with food allergies. Melinda received her master's degree in nutrition and health promotion from Simmons College, Boston. ☺

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1. To what degree do you believe allergenicity is a problem in regard to soyfoods?

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1	2	3	4	5	

2. To what degree are you concerned about the safety of biotechnology?

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1	2	3	4	5	

3. To your knowledge, soy is effective in the prevention and treatment of chronic diseases in which of the following areas?

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<input type="checkbox"/> Cognitive function	<input type="checkbox"/> Osteoporosis
<input type="checkbox"/> Diabetes	<input type="checkbox"/> Prostate cancer
<input type="checkbox"/> Cholesterol reduction	<input type="checkbox"/> Other

4. Rate your opinion of *The Soy Connection* in each of the following areas.

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Reliable	1	2	3	4	5
Timely	1	2	3	4	5
Useful	1	2	3	4	5

5. As a reader of *The Soy Connection*, do you find yourself more or less likely to recommend soyfoods to patients and clients?

Less Likely					More Likely
1	2	3	4	5	

6. How often do you recommend soyfoods to patients and clients? (Check one.)

<input type="checkbox"/> Daily	<input type="checkbox"/> Once a month
<input type="checkbox"/> More than twice a week	<input type="checkbox"/> Never
<input type="checkbox"/> Once or twice a week	

7. What type(s) of soyfoods do you recommend to patients and clients? (Check all that apply.)

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1	2	3	4	5	

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Soyfoods And Allergies: Separating Fact From Fiction *(Continued from Page 2)*

may vary from several months to a lifelong avoidance.

Soy products are used in the food industry in an almost unlimited capacity. Some ingredients derived from soy are a concern for individuals with IgE-mediated food allergy if they contain protein residues from soybeans.¹⁹ Highly refined oils (extracted with hot solvents, bleached, and deodorized) contain no detectable protein residues and are safe for the soy-allergic consumer. Double-blind placebo-controlled food challenges have demonstrated that ingestion of soy oil will not elicit allergic reaction to sensitive individuals.²⁰ However, protein residues may be in cold-pressed oils and such oils should be avoided. Lecithin, a naturally occurring phospholipid often obtained from soybean, serves as an emulsifier. Limited information exists on the allergenicity of lecithin although its avoidance is probably unnecessary for most soy-allergic individuals.¹⁹

Other foods associated with soy include miso, natto, tempeh, tofu, soy sauce and edamame. Miso, natto, tempeh and tofu are traditional products derived directly from soy and should be avoided by sensitive individuals.

Edamame are green soybeans served in the shells. Soy sauce has undergone fermentation and appears to be safe for sensitive individuals.²⁰

Soy protein hydrolysates are common ingredients used in the food industry. Partially hydrolyzed proteins contain sizeable protein residues that could elicit an allergic reaction. Extensively hydrolyzed proteins on the other hand pose little risk for sensitive individuals since proteins are broken down into amino acids.¹⁹ However, food labels do not provide any information on the degree of hydrolysis, thus sensitive individuals should avoid foods containing soy-derived hydrolysates.

Soy protein-based infant formulas have been used for centuries. Generally, soy formulas provide adequate growth and development to the term infant. Most infants with documented IgE allergy to cow's milk will do well on soy formula. However, soy formula should not be used as a substitute in children with cow milk protein-induced enteropathy or enterocolitis as adverse reaction to soy occurs in 8-47 percent of children sensitive to cow's milk.²¹⁻²⁴

Soybean is a major allergenic food but is rarely known to induce severe anaphylaxis. Health professionals can play a pivotal role in counseling allergic individuals in ways to manage soy allergy through identifying soy on food labels and creating viable strategies of avoiding problem foods.

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