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Common Allergies

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Horse Allergy

Patients often overlook and mistake allergy to horses, for allergy to pollens or molds. These patients are usually allergic to horse hair and dander. Treatment for this allergy would include medications, horse avoidance and/or allergy immunization to decrease the sensitivity to horse allergen.

Rabbit Allergy

Patients become allergic to rabbits due to exposure to these animals in their daily work. The most common people at risk are veterinarians, laboratory technicians, and pet owners . The rabbit's saliva and fur are the common allergen.

Cat Allergy

Patients allergic to cats, are allergic to the cat's saliva. However, typical allergic symptoms are not as a result of coming in direct contact with the cat's saliva. Instead, when the cat grooms itself by licking its fur and skin it deposits its saliva. The saliva dries, leaving behind the protein antigen that are the source of allergy to cats. These allergens (cat saliva antigens) are very light-weight and are easily aerosolized. Once air-borne the antigen can spread to clothes, furniture, carpeting, or any other household item.

Once cat allergy is confirmed, the best way to decrease allergy symptoms is to remove the cat from the home. However, relatively high concentrations of cat antigen can remain, even months after the cat is removed. Therefore it is important to clean or replace the carpeting, furniture, and all other material that may harbor the cat saliva antigen. Also, there are less dramatic means to improve or eliminate cat allergy symptoms, this includes the use of medications and allergy immunization.

Dog Allergy

Patients allergic to dogs, are allergic to the dog's saliva. However, typical allergic symptoms are not as a result of coming in direct contact with the dog's saliva. Instead, when the dog grooms itself by licking its fur and skin it deposits its saliva. The saliva dries, leaving behind the protein antigen that are the source of allergy to dogs. These allergens (dog saliva antigens) are very light-weight and are easily aerosolized. Once air-borne the antigen can spread to clothes, furniture, carpeting, or any other household item. Allergy to dogs is not as problematic as allergy to cats, primarily because:

- * Dogs are usually kept outside
- * Dogs are kept outside of bedrooms
- * Dogs are washed regularly

Once dog allergy is confirmed, the best way to decrease allergy symptoms is to remove the dog from the

home. Also, there are less dramatic means to improve or eliminate dog allergy symptoms, this includes the use of medications and allergy immunization.

Rodent Allergy

Patients become allergic to rodents due to exposure to these animals in their daily work. The most common people at risk are veterinarians, laboratory technicians, and people who live in close quarters with rodents (such as pet owners and those who live in rodent-infested homes).

Some example of common rodent that humans come in contact with include mice, rats, and guinea pigs. The rodent's urine has a high concentration of protein, which is the primary allergen to humans. The urine is often sprayed rather than deposited, thereby increasing human exposure. After the urine dries, the urinary proteins become air-borne and are inhaled, leading to allergic symptoms.

Dust Mite Allergy

Dust mites are approximately 0.3 mm in length, too small to be seen with the naked eye. They are eight-legged and sightless, and live on skin scales and other debris. Mites excrete partially digested food and digestive enzymes as a fecal particle, which release allergens very rapidly. Most patients allergic to dust mites are actually allergic to the dust mite feces. The mite fecal pellets are similar to pollen grains in three major ways:

- * The fecal particles size
- * The quantity of allergen carried
- * The rate of proteins release

By being so similar to pollen grains, they are just the right size to cause allergies. Dust mites become a part of our environment and lifestyle because of their natural adaptations. Since they are entirely dependent on ambient humidity for hydration, and they are unable to search for environmental water-supplies, they tend to live in places that "store" water. This may include carpets, sofas, mattresses and clothing. As humidity falls, mites withdraw from the surface and migrate to where there is more humidity; e.g., deeper in the mattress. Even in very dry conditions it may take months for mites to die and for their allergen levels to fall. Avoid and protecting yourself and your family from dust mite allergies can be summarized as one important rule - Keep dust mites away from coming in contact with you!

Allergy to Stinging Insects

When a person is stung by a bee, wasp, hornet, yellow jacket or fire ants, the insect injects venom into its victim. This venom can cause severe life threatening reactions in certain people who are allergic to it. In a typically normal reaction the sting site will be painful, reddened, may swell and itch, but this will last only few hours. Enlarged local reactions might be seen with a painful swelling of several inches surrounding the area of the sting. This reaction might last for days. In a severe allergic reaction the person might feel dizzy, nauseated and weak. Stomach cramps and diarrhea may occur. Generalized hives and itching,

wheezing and difficulty breathing, and potentially an anaphylactic reaction with a sudden drop in blood pressure, loss of consciousness which may lead to death if no immediate medical care is provided. There is clear evidence that venom immunotherapy in the majority of patients is protective for any future life threatening reactions. Patients with known allergic sensitivities to insect venom should be evaluated by the allergist and placed on protective desensitization therapy.

Cockroach Allergy

Roaches, especially the German Cockroach, are a very common pest in crowded cities worldwide. Recent studies have shown exposure to roach droppings as a major risk factor for the development of allergies and asthma in the inner-city. Avoidance consists of roach baits and traps, extermination and cleanliness. This includes, not leaving food out in open containers, washing dishes after each meal, and keeping cupboards free of food debris. Unfortunately, one can't encourage cleanliness in their neighbors! Patients who are not responsive can be treated with medications and allergy immunization.

Food Allergies

Milk

Patients with very sensitive milk allergy can react to a very small quantity of milk protein, including minor contamination and even inhalation of milk powder.

Milk may be found in a large variety of processed foods (some obvious and others not), including confections, margarine, cheese, and pies (Table III) . Cheese and cream contain milk protein and should be avoided. Milk contamination of a product is possible if the same manufacturing equipment is used for various products. There is also a carryover effect when one product is used in the manufacture of another. In addition, patients should be careful when ordering sliced products from outlets that use the same slicers for cutting a variety of foods (e.g., cheese and cold meat). Lactose, which may contain residual milk protein, may be found in foods and as a filler in the manufacture of medicines such as Benadryl capsules (United States).

TABLE III -- Foods that may contain milk protein

Batter-fried foods
Biscuits
Bread
Breakfast cereals
Cakes
Chocolate
Cookies
Cream sauces

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Cream soups
Custard
Fish in batter
Gravies and gravy mixes
Ice cream (and "non-milk" fat)
Imitation sour cream
Instant mashed potatoes Margarine
Muesli
Muffins
Other baked goods
Packaged soups
Pies
Puddings
Rusks
Sausages
Sherbet
Soy cheese
Soup mixes
Sweets
Canned soups
Vegetarian cheese

Hypoallergenic milk formulas have been used as a milk replacement for children with milk hypersensitivity. However, hypoallergenic milk formulas are not nonallergenic, and many children react to these, depending on the particular formula.

Common descriptions on ingredient panels are milk, pasteurized milk, full cream milk powder, dried milk, and skim milk powder" (Table IV) . Extracted milk proteins added to foods retain their antigenicity and may be described as casein, caseinate, whey, or whey powder. In our community, many individuals consider skim milk and skim milk powder not to be milk and substitute these for milk. In some instances milk is used in emulsions and can be described as caseinate, emulsifier, or protein.

TABLE IV -- Labels that may indicate the presence of milk protein

Artificial butter flavor
Butter
Butter fat
Buttermilk solids
Caramel color
Caramel flavoring
Casein
Caseinate
Cheese
Cream
Curds
De-lactosed whey
Demineralized whey

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Dried milk
Dry milk solids
Fully cream milk powder
High protein flavor
Lactalbumin Lactalbumin phosphate
Lactose
Milk
Milk derivate
Milk protein
Milk solids
Natural flavoring
Pasteurized milk
Rennet casein
Skim milk powder
Solids
Sour cream (or solids)
Sour milk solids
Whey
Whey powder
Whey protein concentrate Yogurt

Allergy to Eggs

Egg is one of the most allergenic of all foods, and minute amounts of egg can result in symptoms within minutes, including life-threatening anaphylaxis. This is also seen after contact with egg through non-oral routes. Reactions may occur the first time a child is given egg.

Although ovalbumin, ovomucoid, and ovotransferrin have been identified as the major allergens in egg white, 10 other unnamed allergens of lesser importance have been identified. These allergens are also present in egg yolk but in lesser quantities. This is important because components of egg may be individually used for specific actions in food preparation. For example, hen's egg lysozyme is used as a preservative in food; and in some countries, notably Japan and Switzerland, lysozyme is used in medications. Individuals sensitive to hen's egg have been shown to be allergic to lysozyme produced from hen's egg.

A variety of descriptions may indicate the presence of egg protein in a product. The function that egg performs in a product may be named on the ingredient panel (e.g., binder, emulsifier, or coagulant). Because legislation may permit a manufacturer not to list an ingredient constituting less than a specific percentage of the total product, noodles containing egg may not have egg listed on the ingredient panel. A similar situation may occur when egg white is used to give pretzels, bagels, and other baked goods their shiny appearance. In most products, lecithin is derived from soy, but sometimes it may be egg-derived. Provitamin A (extracted from egg) may be used and described as a colorant, but its antigenic properties are unknown.

In addition to food products that may be dangerous to egg-sensitive individuals, egg proteins are also found in cosmetics, shampoos, and pharmaceuticals, such as the laxative Agarol. A patient allergic to egg should avoid buying fried foods from vendors who use the same frying surface for preparing multiple

types of food. Recent evidence suggests that egg-sensitive children can receive measles immunization safely.

Although rare, avian proteins can induce egg allergy in susceptible individuals. It has been suggested that duck egg be substituted for hen's egg in egg-sensitive individuals. These individuals are able to tolerate cooked chicken.

Allergy to Nuts (not peanuts)

Tree nuts are generally cross reactive. If one is allergic to one, one should try to avoid all of them. The list of common tree nuts include almonds, Brazil nuts, cashews, hazelnuts (filberts), macadamia nuts, pecans, pine nuts, pistachios, and walnuts. Peanuts are not included in this group, because they are legumes. Anyone with nut allergy, however, should be cautious, because they may be processed together.

Allergy to Peanuts

Peanuts

Peanuts are one of the most allergenic foods, and peanut allergy is one of the most common food allergies. Peanuts are probably the most common cause of death by food anaphylaxis in the United States, and about one third of peanut-sensitive patients have severe reactions to peanuts.

Peanuts are added to a large variety of processed foods (Table XI) . These include ice cream (as a flavoring), marinades, snack foods, and biscuits. Peanuts can be used as a flavoring or a seasoning agent and may be labeled as such (Table XII) . Nuts may be used in the manufacture of vegetable burger patties. A fatal reaction to peanut antigen in almond icing has been recorded. Peanut butter may also be used to glue down the ends of egg rolls to keep them from coming apart. Some individuals do not know that peanut butter is commonly used in Oriental cooking. Peanuts can be deflavored, reflavored, and pressed into other shapes such as almonds and walnuts. These products retain the allergenicity of the peanut. Some patients with peanut allergy also react to sweet lupine seed flour, which may be used, for example, to fortify a spaghetti-like pasta.

TABLE XI -- Foods that may contain peanut or peanut oil

Baked goods
Baking mixes
Battered foods
Biscuits
Breakfast cereals
Candy
Cereal-based products
Chili
Chinese dishes
Cookies
Egg rolls
Ice cream Margarine

Marzipan
Milk formula
Pastry
Peanut butter
Satay sauce and dishes
Soups
Sweets
Thai dishes
Vegetable fat
Vegetable oil

Although uncommon, a peanut protein hydrolyzate may also be used in soft drinks as a foaming agent or in confections as a whipping agent.

Peanut oil has been considered to be devoid of allergenicity, and this was initially confirmed by double-blind crossover studies. However, peanut oil allergenicity is clearly process-related, because cold-pressed peanut oils may contain peanut allergen. Moneret-Vautrin et al. confirmed the allergenicity of peanut oil in milk formulas, and 11 of 45 brands of milk formulas in France contained variable amounts of peanut oil. Residual peanut proteins are believed to become more allergenic with heating.

The oil is frequently used in the preparation of so-called health foods. The oil can be used for many nonfood products, which may, on contact, affect sensitive individuals. Like peanut oil, other vegetable oils such as soy, maize, sesame, and sunflower oils contain very low quantities of protein.

Individuals who are allergic to peanuts are said to not be allergic to nuts such as almonds, pecans, or walnuts; and these nuts can be substituted for peanuts. This is contradicted by a recent study, which showed that 50% of individuals allergic to peanuts reported allergic reactions to other nuts as well. These findings were not validated by further clinical investigation.

TABLE XII -- Labels that may indicate the presence of peanut protein

Peanut
Peanut butter
Emulsifier (uncommon) Flavoring
Oriental sauce

Allergy to Wheat Products

Wheat is the most allergenic of all cereals. IgE antibodies have been demonstrated to many components of wheat kernels, including albumin, globulin, gliadin, wheat germ agglutinin, a concanavalin A-purified glycoprotein, and a trypsin inhibitor. Wheat is most rich in gluten, with the other grains containing a lesser mixture of gluten and gliadin.

In addition to being present in all wheat-based food products, wheat gluten is frequently added to baked products made from other grains, including those made from soy flour. Wheat-sensitive individuals should

avoid a product that includes other flours, because it is likely that at least some wheat flour or a derivative will also be present. Even gluten-free bread may contain small amounts of gluten (0.4 mg per 30 gm slice). Bread wheat, durum wheat, triticale, rye, and barley, to a lesser extent, are the main gluten-containing cereals. Others include semolina, spelt, and kamut. Cereal products, such as couscous and graham flour, are also prepared from wheat. Spelt has occasionally been marketed as a wheat alternative but is part of the wheat family. Spelt may better be described as nonhybridized wheat. No data have indicated differences in the allergenic profiles of the various wheat varieties, and they should all be viewed as potential allergens.

TABLE IX -- Labels that may indicate the presence of wheat protein

All-purpose flour
Bleached flour
Bulgur (cracked wheat)
Bran
Cornstarch
Couscous
Durum wheat
Enriched flour
Farina
Gelatinized starch * (or pre-gelatinized)
Gluten
Graham flour
Hard durum flour
High gluten flour
High protein flour
Hydrolyzed vegetable protein
Kamut
Miller's bran
Modified food starch*
 Modified starch *
MSG (monosodium glutamate)
Protein
Semolina
Spelt
Starch*
Unbleached flour
Vegetable gum *
Vegetable starch*
Vital gluten
Wheat bran
Wheat flour
Wheat germ
Wheat gluten
Wheat starch
White flour
Whole wheat

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Whole wheat flour

* May indicate the presence of soy protein or may be manufactured from cassava (tapioca), maize, or rice.

May be soy.

Sometimes produced from soy or wheat but now mostly by synthetic means

Hydrolyzed wheat proteins can be used in processed foods for flavoring purposes (e.g., in meat flavorings) or as a binder in vegetarian burgers. In the United States legislation dictates that this form of wheat must be labeled as wheat-derived, but this is not always the case in other countries. Wheat can appear under various names on ingredient panels (Table IX) and can be found in many food products (Table X). Gluten finds its way into a few pharmaceutical products (e.g., Dimetapp LA, Nulacin, and Fybranta).

Buckwheat is not a member of the grass family and is thus not a true cereal. The grain may be used for human food in various forms from pancake flour to buckwheat noodles and baby foods.

For the wheat-hypersensitive individual, products made from oats, rice, rye, barley, or corn or speciality foods made for gluten-sensitive individuals generally may be used instead of wheat. However, cross-reactions, although unusual, may occur between wheat, barley, rye, maize, and rice.

TABLE X -- Foods that may contain wheat

Alcoholic beverages (made from grain alcohol)

Ale

Beer

Wine

Bourbon

Whiskey

Baked goods

Biscuits

Breads (including rye bread)

Cakes

Cookies

Crackers, etc.

Baking mixes

Barley bread and drinks

Battered foods

Bouillon cubes

Breaded meats

Breaded vegetables

Breakfast cereals

Candy or chocolate candy

Canned processed meat

Cereal grains

Cousous Gravy

Hot dogs

Ice cream

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Ice cream cones
Luncheon meats
Licorice
Macaroni
Malt
Malted milks (e.g., Horlicks)
Milk shakes
Noodle products
Pasta (noodles, spaghetti, macaroni)
Pepper (compound or powdered flour filler)
Pies
Processed meats
Sausage
Semolina
Snack foods
Spaghetti
Soup mixes
Soups
Soy sauce
Tablets

Allergy to Fish

Fish are one of the most common causes of food allergy, particularly in adults and in Scandinavian countries. Fish may find their way into processed foods in raw, powder, or oil form. In the majority of instances, this substance is clearly labeled as "fish" or with another obvious descriptor. However, fish allergens may be found unlisted if added as part of an oil. Fish products are not usually hidden ingredients but may be hidden in Caesar salad dressing or in Worcestershire sauce if it contains anchovies.

Some seafood flavors (e.g., shrimp) are added to food in the form of a powder manufactured from the seafood's shell. Shrimp antigen II is heat stable. A variety of antigens are shared by several crustaceans including shrimp, prawns, crabs, lobsters, and crayfish (crawfish).

At present, some manufacturers are researching the possibility of adding fish meal (flour) to bread as a source of omega-3-fatty acids (personal communication, M. M. Melnychuk). Skin prick tests and RASTs indicate extensive cross-reactivity among fish species, but recent research suggests that patients may be able to consume some species of fish despite positive test responses to one or two. However, it is generally recommended that patients allergic to fish avoid all fish species.

Allergy to Shellfish

Shellfish, or crustaceans are generally cross reactive. If one is allergic to one, one should try to avoid all of them. The list of common crustaceans include:

Crab

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crayfish
lobster
shrimp Shellfish:
clams
Mussels
oysters
scallops

Fish are not included in this group. Anyone with shellfish allergy, however, should be cautious, because fish and shellfish may be processed together.

Allergy to Soy Products

Because of the almost unlimited uses of soy, it is a particularly insidious hidden allergen. As with many other allergens, reactions may occur to very small quantities of soy protein, and anaphylaxis to soybean protein has been reported. Soybean lectin is also an important allergen and has been associated with allergic reactions.

Soybeans may be ingested as whole beans, as flour, or as oil. In addition, soy can be used in the manufacture of food in a great variety of ways, including as a texturizer, emulsifier, and protein filler. Soy may thus be listed on the ingredient panel according to its use (e.g., hydrolyzed protein or lecithin) (Table V).

TABLE V -- Labels that may indicate the presence of soy protein

Gum arabic
Bulking agent
Carob
Emulsifier
Guar gum
Hydrolyzed vegetable protein (HVP)
Lecithin*
Miso

MSG (Monosodium glutamate)
Protein
Protein extender
Soy flour
Soy nuts
Soy panthenol Soy protein
Soy protein isolate or concentrate
Soy sauce
Soybean
Soybean oil
Stabilizer
Starch

Textured vegetable protein (TVP)
Thickener

Tofu

Vegetable broth

Vegetable gum

Vegetable starch

*Mostly produced from soy but may be manufactured from egg.

Sometimes produced from soy or wheat but now mostly by synthetic means.

Soybean flour is often added to cereal flour and is used extensively in the baking industry. The majority of breads contain some soy flour. Pastries, cakes, biscuits, and baby foods may contain soy flour. It is also used in the manufacture of sausages, processed meats, hamburgers, and other meat products (Table VI). Fermented soybean may be used in the preparation of soy sauce or Worcestershire sauce. Fermented soy is in wide use as a food in the Far East.

Soy is so widely distributed in processed foods that avoidance of soy in the diet is very difficult. Soy may find its way into a food product when added as a compound ingredient. For example, if margarine is added to a food product it will be listed as such, but soy present in the margarine itself will not be listed on the ingredients panel.

Soy protein isolate or concentrate may be used to emulsify fat in food products and may thus be used in the manufacture of ice cream, mayonnaise, and a variety of other liquid fat- or oil-containing foods. The concentrate or isolate may also be used in soymilk and as a protein concentrate added to health foods and high-protein biscuits. Other foods that may contain soy include pureed and cereal baby foods, margarine, and white and brown bread (Table VI).

TABLE VI -- Foods that may contain soy protein

Baby foods

Bakery goods*

Black pudding

Bread (esp. high-protein bread)*

Breakfast cereals (some)

Burger patties

Butter substitutes

Cakes

Candy

Canned meat or fish in sauces*

Canned or packaged soups*

Canned tuna

Cheese (artificial) made from soybeans*

Chinese food

Chocolates (cream centers)

Cookies Cooking oils

Crackers

Desserts

Gravy (sauce) powders

Hamburger patties

Hot dogs

Hydrolyzed vegetable protein (may be wheat)

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Ice cream
Infant formula (including cow's milk formula)
Liquid meal replacers
Margarine
Meat products (e.g., sausages, pastes, Vienna sausages [wieners])
Muesli
Pies (meat or other)*
Powdered meal replacers
Salad dressings Sauces (e.g., Worcestershire, sweet and sour, HP, Teriyaki)
Seasoned salt
Shortenings
Snack bars
Soups
Soy pasta products
Soy sauce
Soy sprouts (Chinese restaurants)
Soybeans
Stews (commercial)
Stock cubes (bouillon cubes)
Tofu
Tofutti
TV dinners

Other uses for soy include the manufacture of tofu (soybean curd), which may in turn be used for the manufacture of soy-based ice cream. Soy may be converted into products having a meat-like texture. This textured vegetable protein is used in simulated meat products or may be added to meat as an extender. These products are often used as meat substitutes in vegetarian products and in catering establishments, including hospital and army food services, and feeding programs.

The seeds of soybeans are widely used as a source of oil. The oil has many uses (e.g., in salad dressings, margarine, baby foods, industrial components, linoleum, paint, plastics, soap, and glue for plywood) (Table VII). Although soybean oil was initially thought to be safe for soy-sensitive individuals, it is now evident that soy protein may occur in soybean oil. Thus the allergenicity of soybean oil would depend on its purity, which in turn depends on the extraction process. Recent evidence has demonstrated that although oxidized soybean oil may not show allergenicity, proteins in soybeans are capable of interacting with oxidized lipid to form products that are allergenic to soybean-sensitive patients. Indeed, Hiyama et al. report a case of urticaria associated with parenteral nutrition with an intravenous 10% lipid emulsion containing a soybean oil base. Such reactions, however, appear to be uncommon, and there are very few reports of this nature in the literature.

TABLE VII -- Other sources of contact with soy

Adhesives
Blankets
Body lotions and creams
Dog food
Enamel paints
Fabric finishes

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Fabrics Fertilizers
Flooring materials
Lubricants
Nitroglycerine
Paper
Printing inks
Soaps

Soy products are often purchased by those specifically avoiding cow's milk, often with the assumption that a soy-based product is free of cow's milk protein. This may not always be true, and caution is required. Again, labels should be read carefully, and they should, of course, contain the correct declaration.

Thickeners, stabilizers, emulsifiers, and bulking agents may be manufactured from a variety of other members of the legume family in addition to soybeans. On the basis of in vitro studies, Barnett et al. suggested that there may be cross-reactions between soy and other members of the legume family (Table VIII). Further evidence for broad cross-reactivity has been provided by RAST and skin prick tests; however, it is rare to have symptomatic reactivity to more than one member, and clinical hypersensitivity to one legume does not require elimination of the entire legume family. Carob, derived from the carob bean, is used commonly as a chocolate substitute, and one should possibly guard against cross-reactivity to this legume. Peanut sensitivity is discussed below. Sorghum, as well as between the pollens of cereals and cereal flours.

TABLE VIII -- Members of legume family

Beans:

Aduki beans
Broad bean
Black turtle bean
Black-eyed bean
Chick pea
Cowpea
Fava bean
Garbanzo bean
Great Northern bean
Green bean
Kidney bean
Lima bean
Mung bean
Navy bean
Pinto bean
Snap bean
String bean
Wax bean Other Members
Alfalfa (sprouts)
Acacia (gum)
Carob (chocolate substitute)

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Cassia or senna (in laxatives, curry, cinnamon)
Fenugreek (used in curries, cinnamon, primary flavoring in imitation maple syrup)
Lentils
Masur bean
Licorice
Pea
Green pea
Purple-hull pea
Peanut
Senna or cassia (in laxatives and Epsom salts)
Soybean
Tamarind
Tragacanth (gum)

Allergy to Chocolate

Chocolate is commonly seen as an allergenic food but very few actual 'allergies' to chocolate have been documented. Yet, chocolate has been blamed for a range of 'allergic' reactions including abdominal cramps, angioedema, coughs, hypotension, itching, migraines, and urticaria.

A true intolerance or allergy to chocolate or cocoa would have to be to either the cocoa mass or the cocoa butter. Yet, when assessing problems with chocolate, these are rarely checked independently of other ingredients.

Eating a chocolate bar or drinking hot chocolate is NOT the way to test for a 'chocolate' intolerance.

Intolerance problems with chocolate can be caused by any ingredient or naturally occurring chemical.

The ingredients that can cause problems include flavorings, milk and emulsifiers. The chemicals include caffeine and theobromine, phenylethylamine, and tyramine.

Pollen & Environmental Allergies

Allergy to Tree Pollen

Airborne pollen is one of the most annoying and common allergens, and it causes 35 million people to suffer from upper respiratory allergy symptoms each year. A little over 5 million (fifteen percent) of these people suffer from spring seasonal tree pollen allergies.

Pollen allergy is one of the most common chronic diseases in the United States. The seasonal variety of pollen allergies is commonly referred to as hay fever (which has nothing to do at all with hay or with fever), but many doctors reserve this term for the specific allergy to ragweed which pollinates in the fall. Allergies that occur in the spring are usually a result of either grasses (85%) or tree pollen (15%) and spring allergies are sometimes referred to as rose fever (again nothing to do with roses or fever.)

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Of the more than 50,000 species of trees worldwide, there are 600-700 native to North America; only pollen from about 65 of these has been shown to cause allergies. Most people are aware of their seasonal sensitivity, but may not know what the specific cause is (i.e. tree pollen, grass pollen, or molds). Accurate diagnosis should always include on detailed patient history and testing by your allergist.

Each spring microscopic oval and circular tree pollen particles are released to hitch a ride on currents of air. Their mission is to fertilize other trees of the same species. Insects do this for some trees but for most the wind is relied on. Small, dry and light, pollen granules have been known to travel as far out as 400 miles out to sea and up to two miles high in the air. Because the airborne pollens can travel so far, it does little good to remove the offending tree, pollen can drift in from miles away.

These lightweight windcarried pollens enter noses and throats to trigger allergic reactions characterized by irritation of the eyes, nose and throat. In more severe reactions lungs become affected as well.

Occasionally those with allergic reactions to tree pollens may also cross react to certain raw fruits such as apples, plums and pears (though these foods may be less allergenic when cooked). Food cross reactions are usually felt as itchiness in the mouth and throat.

Tree pollens generally show little cross reactivity among themselves. You must develop an allergy to each specific tree pollen in order for it to cause symptoms. If you are sensitive to oak, you are not necessarily allergic to cedar. There are two families of trees that are an exception to this; the family that contains oaks, beeches, and birches and the family belonging to the cedars and junipers. If you are allergic to the pollen of one of these trees, you will probably experience symptoms from one or more members of the same family.

In the southeast Texas region the tree allergy season begins in February and lasts sometimes until late June. Pollens from ash, box elder, cedar, elm, hickory, juniper, oak, maple, and pecan are the primary allergy culprits.

Pine trees are one of the most noticeable producers of large amounts of pollen, however pine trees are less of a culprit than you would think. Pine pollen, the common yellow powdery dust is heavy and falls to the ground immediately so these trees are bothersome only if you live beneath them. (Citrus trees have heavy pollen as well.)

A little horticultural engineering can cut down offenders in the immediate environs. Asking your nursery for hybrid varieties that produce no pollen reduces the exposure but basically there is no real easy way to avoid windborne pollen.

Tree pollen counts tend to be higher on warm, dry and breezy days than during chilly, wet periods. Remain indoors when pollen counts are at their highest, particularly the early morning, late afternoon and early evening. Because of the microscopic size of tree pollens, most inexpensive masks sold at drug stores do not prevent pollen from sneaking in around the edges.

Often common, over-the-counter antihistamines are how many people find relief from tree pollen allergies. Newer antihistamines which do not cause drowsiness are available by prescription. Topical corticosteroids are valuable in the form of nasal sprays such as Beconase, Nasacort, Rhinocort and Flonase. If used consistently during the hay fever season they are very effective relieving nasal symptoms, with no major side effects.

Topical (local) nasal decongestant sprays can be used only occasionally, but never regularly because they cause rebound congestion. In the long run, decongestant nasal sprays can exacerbate rather than reduce tree pollen symptoms and should only be used according to the directions and with caution.

Antihistamines work well to relieve symptoms, but remember that some induce drowsiness and can interfere with driving, work and other activities. Recently approved prescription antihistamines such as Claritin can be very effective and not cause drowsiness.

Immunotherapy, or a series of allergy shots, is the best therapy for long-term relief. Most patients will have a significant reduction in their allergy symptoms within 9-12 months of starting their immunotherapy. As better allergens for immunotherapy have been produced in recent years, this technique has become an even more effective treatment.

Knowing when pollen counts are the greatest, paying attention to the instructions on your medication and carefully following the advice and treatment of your allergist should help see that the next allergy season is a breeze, not a sneeze.

Allergy to Flowering Plants

People are generally not allergic to flowering plants, because they are bee pollinated, not wind pollinated. This is why they have bright colors, in order to attract bees. If you sneeze around flowers, it may be that you happen to be allergic to what may be pollinating nearby or that the smell of the flowers, much like perfume, is bothering your nose.

Allergy to Grass Pollen

When "spring is in the air," grasses and flowers begin to revive, releasing copious amounts of pollen into the air in an annual ritual of survival.

But survival for these plants means misery for many allergy and asthma sufferers. Seasonal allergies keep many people indoors in hopes of avoiding pollens. Indeed, staying indoors does reduce one's exposure, particularly if electrostatic air intake filters are used to keep the indoor environment clean.

When going outdoors, remember that pollen levels are highest in the morning, and gradually subside as the day goes on.

For those who are not willing or able to stay indoors, there is still relief available. Prescription antihistamines, decongestants, and anti-inflammatory medications act to reduce symptoms. Immunotherapy (allergy shots) act to head allergies off at the pass by reducing the body's sensitivity to allergens over a period of time.

The first step is accurate diagnosis. During the spring months, there are many grass pollens in the air, and the trees have still not finished their pollen performance.

Allergy to Ragweed Pollen

Ragweed and hayfever have become synonymous in people's minds, especially during the cool Fall months. Ambrosia is the scientific name given to ragweed, and is from the Latin term for "immortal." This certainly seems true, because attempts to eradicate this hearty plant have met with little success.

The ragweed is a hairy, coarse looking plant that has no pretty flowers, an unpleasant smell, and no redeeming qualities. Its name was derived from the ragged appearance of its leaves. Short ragweed can bloom and spew pollen into the air when only a few inches tall, while the giant ragweed reaches twelve feet in height. Both thrive in soil that has been eroded or otherwise disturbed. The 1960 area's proximity to Cypress Creek and many construction projects make this a 'high risk' area for allergic individuals.

Another characteristic of ragweed is that the more hostile the growing environment, the more pollen a ragweed plant will produce. Stressful conditions and lack of rain shift the ragweed into a "procreation" mode; the plant then skimps on foliage and directs its resources into the bloom.

Allergy sufferers can run, but they can't hide from ragweed, as the pollen can travel for miles on the breeze. For those with the runny nose, congestion, itching eyes, headaches and cough associated with hayfever, Dr. Bethea recommends surviving ragweed allergy by limiting exposure. She offers the following tips:

- * Remain indoors as much as possible during ragweed season. Pollen levels are highest in the morning hours.
- * Take a brief shower after outdoor activities to remove pollen from the skin and hair.
- * Keep windows up during automobile travel.
- * It may be helpful to install electrostatic filters in place of the standard fiberglass air-intake filters.

There are options available other than 'shutting out the world.' New prescription antihistamines, decongestants, and anti-inflammatory medications can alleviate the severity of allergic rhinitis symptoms while having fewer side effects than medications of years past.

And finally, there is desensitization through immunotherapy (allergy shots). This method of treatment is effective in most individuals who suffer from severe allergies, and offers a lasting remedy to this seasonal problem. (See the front page story on "Prevention.")

Ragweed pollen levels begin to decline in late October, and by late November are at a very low level... only to reprise their performance the next year!

Seasonal Allergies

Each spring, summer, and fall, tiny particles are released from trees, weeds, and grasses. These particles, known as pollen, hitch rides on currents of air. Although their mission is to fertilize parts of other plants, many never reach their targets. Instead, they enter human noses and throats, triggering a type of seasonal allergic rhinitis called pollen allergy, which many people know as hay fever or rose fever

(depending on the season in which the symptoms occur). Of all the things that can cause an allergy, pollen is one of the most widespread. Many of the foods, drugs, or animals that cause allergies can be avoided to a great extent; even insects and household dust are escapable. Short of staying indoors when the pollen count is high--and even that may not help--there is no easy way to evade windborne pollen.

People with pollen allergies often develop sensitivities to other troublemakers that are present all year, such as dust mites. For these allergy sufferers, the "sneezin' season" has no limit. Year-round airborne allergens cause perennial allergic rhinitis, as distinguished from seasonal allergic rhinitis.

What is pollen?

Plants produce microscopic round or oval pollen grains to reproduce. In some species, the plant uses the pollen from its own flowers to fertilize itself. Other types must be cross-pollinated; that is, in order for fertilization to take place and seeds to form, pollen must be transferred from the flower of one plant to that of another plant of the same species. Insects do this job for certain flowering plants, while other plants rely on wind transport.

The types of pollen that most commonly cause allergic reactions are produced by the plain-looking plants (trees, grasses, and weeds) that do not have showy flowers. These plants manufacture small, light, dry pollen granules that are custom-made for wind transport. Samples of ragweed pollen have been collected 400 miles out at sea and 2 miles high in the air. Because airborne pollen is carried for long distances, it does little good to rid an area of an offending plant--the pollen can drift in from many miles away. In addition, most allergenic pollen comes from plants that produce it in huge quantities. A single ragweed plant can generate a million grains of pollen a day.

The chemical makeup of pollen is the basic factor that determines whether it is likely to cause hay fever. For example, pine tree pollen is produced in large amounts by a common tree, which would make it a good candidate for causing allergy. The chemical composition of pine pollen, however, appears to make it less allergenic than other types. Because pine pollen is heavy, it tends to fall straight down and does not scatter. Therefore, it rarely reaches human noses.

Among North American plants, weeds are the most prolific producers of allergenic pollen. Ragweed is the major culprit, but others of importance are sagebrush, redroot pigweed, lamb's quarters, Russian thistle (tumbleweed), and English plantain.

Grasses and trees, too, are important sources of allergenic pollens. Although more than 1,000 species of grass grow in North America, only a few produce highly allergenic pollen. These include timothy grass, Kentucky bluegrass, Johnson grass, Bermuda grass, redtop grass, orchard grass, and sweet vernal grass. Trees that produce allergenic pollen include oak, ash, elm, hickory, pecan, box elder, and mountain cedar.

It is common to hear people say that they are allergic to colorful or scented flowers like roses. In fact, only florists, gardeners, and others who have prolonged, close contact with flowers are likely to become sensitized to pollen from these plants. Most people have little contact with the large, heavy, waxy pollen grains of many flowering plants because this type of pollen is not carried by wind but by insects such as butterflies and bees.

When do plants make pollen?

One of the most obvious features of pollen allergy is its seasonal nature--people experience its symptoms only when the pollen grains to which they are allergic are in the air. Each plant has a pollinating period that is more or less the same from year to year. Exactly when a plant starts to pollinate seems to depend on the relative length of night and day--and therefore on geographical location--rather than on the weather. (On the other hand, weather conditions during pollination can affect the amount of pollen produced and distributed in a specific year.) Thus, the farther north you go, the later the pollinating period and the later the allergy season.

A pollen count, which is familiar to many people from local weather reports, is a measure of how much pollen is in the air. This count represents the concentration of all the pollen (or of one particular type, like ragweed) in the air in a certain area at a specific time. It is expressed in grains of pollen per square meter of air collected over 24 hours. Pollen counts tend to be highest early in the morning on warm, dry, breezy days and lowest during chilly, wet periods. Although a pollen count is an approximate and fluctuating measure, it is useful as a general guide for when it is advisable to stay indoors and avoid contact with the pollen.

Allergy to Molds

Along with pollens from trees, grasses, and weeds, molds are an important cause of seasonal allergic rhinitis. People allergic to molds may have symptoms from spring to late fall. The mold season often peaks from July to late summer. Unlike pollens, molds may persist after the first killing frost. Some can grow at subfreezing temperatures, but most become dormant. Snow cover lowers the outdoor mold count dramatically but does not kill molds. After the spring thaw, molds thrive on the vegetation that has been killed by the winter cold.

In the warmest areas of the United States, however, molds thrive all year and can cause year-round (perennial) allergic problems. In addition, molds growing indoors can cause perennial allergic rhinitis even in the coldest climates.

What is mold?

There are thousands of types of molds and yeast, the two groups of plants in the fungus family. Yeasts are single cells that divide to form clusters. Molds consist of many cells that grow as branching threads called hyphae. Although both groups can probably cause allergic reactions, only a small number of molds are widely recognized offenders.

The seeds or reproductive particles of fungi are called spores. They differ in size, shape, and color among species. Each spore that germinates can give rise to new mold growth, which in turn can produce millions of spores.

What is mold allergy?

When inhaled, microscopic fungal spores or, sometimes, fragments of fungi may cause allergic rhinitis.

Because they are so small, mold spores may evade the protective mechanisms of the nose and upper respiratory tract to reach the lungs.

In a small number of people, symptoms of mold allergy may be brought on or worsened by eating certain foods, such as cheeses, processed with fungi. Occasionally, mushrooms, dried fruits, and foods containing yeast, soy sauce, or vinegar will produce allergic symptoms. There is no known relationship, however, between a respiratory allergy to the mold *Penicillium* and an allergy to the drug penicillin, made from the mold.

Where do molds grow?

Molds can be found wherever there is moisture, oxygen, and a source of the few other chemicals they need. In the fall they grow on rotting logs and fallen leaves, especially in moist, shady areas. In gardens, they can be found in compost piles and on certain grasses and weeds. Some molds attach to grains such as wheat, oats, barley, and corn, making farms, grain bins, and silos likely places to find mold.

Hot spots of mold growth in the home include damp basements and closets, bathrooms (especially shower stalls), places where fresh food is stored, refrigerator drip trays, house plants, air conditioners, humidifiers, garbage pails, mattresses, upholstered furniture, and old foam rubber pillows.

Bakeries, breweries, barns, dairies, and greenhouses are favorite places for molds to grow. Loggers, mill workers, carpenters, furniture repairers, and upholsterers often work in moldy environments.

Which molds are allergenic?

Like pollens, mold spores are important airborne allergens only if they are abundant, easily carried by air currents, and allergenic in their chemical makeup. Found almost everywhere, mold spores in some areas are so numerous they often outnumber the pollens in the air. Fortunately, however, only a few dozen different types are significant allergens.

In general, *Alternaria* and *Cladosporium* (*Hormodendrum*) are the molds most commonly found both indoors and outdoors throughout the United States. *Aspergillus*, *Penicillium*, *Helminthosporium*, *Epicoccum*, *Fusarium*, *Mucor*, *Rhizopus*, and *Aureobasidium* (*Pullularia*) are also common.

Are mold counts helpful?

Similar to pollen counts, mold counts may suggest the types and relative quantities of fungi present at a certain time and place. For several reasons, however, these counts probably cannot be used as a constant guide for daily activities. One reason is that the number and types of spores actually present in the mold count may have changed considerably in 24 hours because weather and spore dispersal are directly related. Many of the common allergenic molds are of the dry spore type--they release their spores during dry, windy weather. Other fungi need high humidity, fog, or dew to release their spores. Although rain washes many larger spores out of the air, it also causes some smaller spores to be shot into the air.

In addition to the effect of day-to-day weather changes on mold counts, spore populations may also differ between day and night. Day favors dispersal by dry spore types and night favors wet spore types.

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Are there other mold-related disorders?

Fungi or microorganisms related to them may cause other health problems similar to allergic diseases. Some kinds of *Aspergillus* may cause several different illnesses, including both infections and allergy. These fungi may lodge in the airways or a distant part of the lung and grow until they form a compact sphere known as a "fungus ball." In people with lung damage or serious underlying illnesses, *Aspergillus* may grasp the opportunity to invade the lungs or the whole body. In some individuals, exposure to these fungi also can lead to asthma or to a lung disease resembling severe inflammatory asthma called allergic bronchopulmonary aspergillosis. This latter condition, which occurs only in a minority of people with asthma, is characterized by wheezing, low-grade fever, and coughing up of brown-flecked masses or mucus plugs. Skin testing, blood tests, X-rays, and examination of the sputum for fungi can help establish the diagnosis. Corticosteroid drugs are usually effective in treating this reaction; immunotherapy (allergy shots) is not helpful.

Cigarette Smoke

Cigarette smoke is a major source of indoor pollution. Active and secondary smoke increases the risk of developing asthma. Children of mothers who smoke have a higher incidence of wheezing illnesses. This effect worsens with more years of exposure.

Perfume

Perfume is an indoor pollutant that can irritate already inflamed airways in patients with allergies or asthma and should be avoided whenever possible.