

CHEMICALS & ADDITIVES

The LEAP 170 profile tests a number of common chemicals found in the typical American diet. Some of these chemicals are added to foods as preservatives, flavor enhancers, or colorings; and some occur naturally. Some chemicals, in addition to causing an immune reaction, can have drug-like effects on our physiology, such as caffeine, tyramine, phenylethylamine, etc., that may be contributing to our symptoms in a different way. Reactivity to food chemicals can make dietary adjustments a bit more complicated (*see the question immediately below*), but must be appropriately addressed if you want to get the most out of your efforts.

Q. What if I test reactive to a chemical, but not the food that contains it?

A. It is possible to test reactive to a chemical, but not the food containing the natural chemical. This is most often due to the concentration of the item. The concentration of the pure chemical antigen is often greater than the concentration of chemical in the whole food antigen. So in some cases, reactions to the chemicals are noted, but not to the foods that contain the chemical. In fact, many chemical sensitivities are dose related. This means a small amount of the chemical won't trigger any noticeable reaction, but higher amounts will. Exactly how much is needed to trigger a reaction can vary from person to person.

If you are reactive to a chemical, but are not reactive to the food in which it's naturally found, there are two different approaches to consider,

1. The 'safest' approach: You can eliminate ALL foods that contain that chemical until Phase 3 or 4, and then try the food containing the chemical, in small amounts if it was not a test reactive food. If symptoms don't return, it may be safe, but you will want to limit quantities. For example, if you test reactive to solanine, but not to the foods that contain solanine, you may do fine with one serving of potato for example. However you may develop symptoms if you eat large servings or include several other foods that contain solanine, such as tomatoes and eggplant, at the same meal or in the same day.
2. Include foods that contain the chemical in normal/small amounts. If your symptoms do not subside within 7-10 days, then follow a more restrictive diet as mentioned above.

ACETAMINOPHEN:

Acetaminophen is a common pain reliever often used as an aspirin substitute. Tylenol is the most widely used acetaminophen-based product, but it may be found in many pain-reliever medications.

ASPARTAME:

Aspartame, found under the brand names **NutraSweet**® or **Equal**®, is a compound prepared from aspartic acid and phenylalanine, with about 200 times the sweetness of sugar. Sensitivity symptoms include headaches, hyperactivity in children, fatigue, and irritability. Individuals who have a genetic defect in which they do not metabolize phenylalanine properly should not use aspartame. Aspartame also lowers the acidity of urine and reportedly makes the urinary tract more susceptible to infection. Powdered diet sweeteners may also contain maltodextrin, from corn.

Food Sources of Aspartame: Any product containing NutraSweet®; Equal®. It is widely found in processed diet foods, sugar-free foods and low-calorie soft drinks.

BENZOIC ACID:

Also known as benzoin, gum benzoin, and various benzoates and related compounds. This chemical is found naturally, particularly in berries and fruits where it acts as a natural preserving agent. It was on this basis that manmade chemicals related to benzoic acid and similar compounds were introduced, both as flavoring agents and preservatives. The processing and concentrating of many natural foods greatly increases the level of these compounds, e.g. turning tomatoes into tomato ketchup. Whereas the natural tomato may not cause hyperactivity in children or headaches in adults, the more concentrated forms, ketchup, soups or purees can produce these effects.

Food Sources of Benzoic Acid: Benzoic Acid can be found naturally occurring in cherry bark, raspberries, tea, anise, and cassia/cinnamon bark. As a food additive it is used in butterscotch, chocolate, lemon, orange, cherry, fruit, nut, tobacco flavorings, ice cream, ices, candy, baked goods, icings, and chewing gum. Also used in margarine and pickles. Sodium benzoate is often used as a preservative in liquid vitamin/mineral preparations and medicines.

CAFFEINE:

Also is known as guaranine, methyltheobromine, theine, and trimethylxanthine. Caffeine is the number one psychoactive drug in the world. It is a central nervous system, heart, and respiratory system stimulant. Caffeine can alter blood sugar release and cross the placental barrier. It can cause nervousness, headache, insomnia, irregular heartbeat, noises in the ear, and in high doses, convulsions. It has been linked to spontaneous panic attacks in persons sensitive to caffeine.

Food Sources of Caffeine: Caffeine occurs naturally in coffee, chocolate, cocoa, guarana paste, kola nuts, and tea. Caffeine is an additive in many kinds of beverages and soft drinks. It is also found in OTC diet pills and appetite suppressants, pain relievers like Excedrin, supplements, and "alert" pills.

CANDIDA ALBICANS:

The common yeast, candida albicans, normally lives on the mucous membranes of the digestive and genitourinary tracts. The intake of antibiotics (especially prolonged use), birth control pills, the cortisone group of drugs, and diets high in refined carbohydrates may lead to abnormally high concentrations of this yeast. Symptoms that stem from candida overgrowth include yeast infections, thrush, bloating, constipation, diarrhea, and abdominal pain. Yeast overgrowth in the gut may also play a role in causing food allergies and nutritional deficiencies. A possible course of action, for those who test reactive, is a diet avoiding certain foods that contribute to the growth of candida in the body, particularly foods containing yeasts, starches, and sugars. An anti-fungal treatment may also be used in conjunction with diet modifications.

CAPSAICIN:

Capsaicin is the component of chili peppers and other spicy peppers from the capsicum family that make it "hot." Capsaicin can cause a "burning" pain in the mouth which is normal, but strong reactions such as intense long-lasting burning in the mouth or other areas of the GI tract, as well as severe reactions such as nausea and vomiting may indicate a sensitivity or intolerance.

Food Sources of Capsaicin: Capsaicin is found naturally in spicy peppers from the capsicum family, such as jalapeno, habañero, banana peppers, chili peppers, etc. Note that capsaicin is not found in some spicy peppers such as black pepper and Sichuan pepper. In addition, mild non-spicy varieties of peppers from the family capsicum have no capsaicin within them and can often be consumed safely when capsaicin is reactive.

FOOD COLORINGS:

Dr. Benjamin Feingold postulated and publicized that food coloring sensitivity could be a cause of hyperactivity in children. Studies have confirmed this notion and have shown additional adverse effects of artificial colorings: asthma, eczema, urticaria, angioedema, perennial rhinitis, and gastrointestinal disorders, migraines, and itching. Many colorings are found in medications and supplements, toothpastes, mouthwashes, cosmetics, and other personal care items. Check your labels.

Name/Common Name:	Common Food Uses:
FD&C Blue No.1: (Brilliant Blue)	Beverages, dairy products, powders, jellies, confections, marshmallows, condiments, icings, syrups, extracts, gelatins.
FD&C Blue No.2: (Indigo blue; idigotine)	Baked goods, cereals, snack foods, ice cream, confections, cherries, and many others.
FD&C Green No.3: (Fast Green FCF)	Beverages, puddings, ice cream, sherbet, cherries, confections, baked goods, dairy products, gelatins.
FD&C Red No. 4: (Carminic Acid, carmine)	Beverages, puddings, ice cream, sherbet, cherries, confections, baked goods, dairy products, gelatins, and some pharmaceuticals.

FD&C Red No.40: (Allura Red AC)	Gelatins, puddings, dairy products, confections, beverages, condiments.
FD&C Red No.3: (Erythrosine)	Cherries in fruit cocktail and in canned fruits for salads, confections, baked goods, dairy products, snack foods, sherbets, cereals, garlic sausage and salami.
FD&C Yellow No.5: (Tartrazine)	Custards, beverages, ice cream, confections, preserves, cereals, artificial cream, coffee whiteners, canned and instant soups, snacks, jellies, gelatin, orange drinks, cake mixes, macaroni & cheese mix.
FD&C Yellow No.6: (Sunset Yellow)	Custards, baked goods, snack foods, ice cream, beverages, dessert powders, confections.

HIGH FRUCTOSE CORN SYRUP (HFCS):

HFCS is a common sweetener used in sodas and fruit-flavored drinks. HFCS is chemically similar to table sugar. However, there is debate about whether or not the body processes HFCS differently than regular sugar. In addition, research suggests a correlation between increased consumption of HFCS, increased obesity and increased body fat.

Food Sources of High-Fructose Corn Syrup: It is used as a sweetening additive in a wide range of processed foods, candies, soft drinks, juices, ice creams, baked goods, and dessert goods.

IBUPROFEN:

Ibuprofen is a common over-the-counter pain reliever and anti-inflammatory agent. Most commonly found as Advil®, Motrin®, or Nuprin®.

LECITHIN:

Also known as hydroxylated lecithin, lecithin is a food additive used as an emulsifier (smoothing agent), spreading agent, and defoaming agent in a wide number of foods and food products. Lecithin has a high natural choline content, and in sensitive individuals can cause symptoms ranging from sore muscles, headaches, stiff neck, and sore throat. It may be a dose related response; however, if you are reactive to lecithin, you may also need to eliminate all egg, soybeans and corn from phases one through three, adding them back in phase four.

Food Sources of Lecithin: Lecithin occurs naturally in egg yolk, soybeans, and corn. It is an additive in prepared breakfast cereals, candy, sweet chocolate, baked goods, margarines, frozen desserts, vegetable and animal fats, salad dressings, and non-stick cooking sprays. It may be found in Diprivan®, albuterol products, Atrovent®, most inhalant medications, other medications, and supplements.

MONOSODIUM GLUTAMATE:

Also known as MSG, glutamic acid, free glutamate, monopotassium glutamate, Accent®, or Zest®. Monosodium glutamate occurs naturally in seaweed, sea tangles, soybeans, and sugar beets, but is also used as a flavor-enhancing food additive. It is used to intensify the flavors of meat and spices in a number of different products. It is also commonly used in Oriental cooking and is the cause of the "Chinese Restaurant Syndrome" causing dehydration, thirst, headaches, depression, irritability and other undesirable effects. MSG can cause anaphylactic shock in susceptible individuals. Some foods that claim to be MSG free actually contain large amounts of free glutamate and should also be avoided by sensitive individuals.

Food Sources of MSG: Oriental foods, snack foods, seaweed, sea tangles, mixed nuts, salted or flavored peanuts, soybeans, sugar beets, hydrolyzed proteins, gelatins, plant protein extracts, sodium caseinate, calcium caseinate, yeast extract, textured protein, autolyzed yeast, malt extract, malt flavoring, barley malt, bouillon, stock, carrageenan, maltodextrin, whey protein, "natural flavors", meats, condiments, pickles, soups, baked goods, candies, processed foods, anything ultra-pasteurized and anything protein fortified, enzyme modified, or fermented.

PHENYLETHYLAMINE:

Phenylethylamine (as well as tyramine) is a naturally occurring compound known as a pressor amine and is capable of stimulating the arterial system causing migraine headaches. It may have an effect on the central

nervous system causing sleepiness, fatigue, and hyperactivity; and is also capable of causing effects on the airways resulting in wheezing. Reactions to phenylethylamine and tyramine are usually dose dependent. Unless there is an overload or you are very sensitive, the body has powerful mechanisms capable of neutralizing their effects.

Food Sources of Phenylethylamine: Chocolate, wines, aged cheeses.

POLYSORBATE 80:

Also sorbitan monooleate, polysorbate 60, sorbitol, and sorbitan derivatives. These chemicals are sorbitan derivatives that are used in foods and in flavor compositions as an emulsifier, stabilizer, wetting and dispersing agent in powdered processed foods, and a foaming agent for beverages. polysorbate 60 and polysorbate 80 have been linked to the cancer causing agent dioxane.

Food Sources of polysorbate 80: Cake mixes, candies, chocolate, frozen desserts, doughnuts, baked goods, shortenings, ice creams, non dairy whiteners, artificial creams, toppings, beverages, processed meats, fish, and salad dressings. It is also found in the medications Nexium[®] and Prevacid[®], personal wipes, cosmetics, and many personal care items. Check your labels.

POTASSIUM NITRATES AND NITRITES:

These compounds are commonly used in food processing or found naturally in some vegetables, both as a result of using nitrate fertilizers and because some vegetables have a tendency to accumulate nitrates. They are used as a color fixative and to cure hams, bacon, corn beef, and some fish products providing a longer shelf life. Nitrates change into nitrites upon exposure to air. They can, in sensitive individuals, cause headache, drowsiness and fatigue. Research has proven that nitrates and nitrites when combined with stomach saliva and food components produce nitrosamines, powerful cancer producing substances.

It has been a recent development to encourage a block on this conversion by the use of antioxidants such as vitamin C and E to such a degree that the US food and drug administration has advised food manufacturers to add these vitamins where this chemical process has been used.

Food Sources of Potassium Nitrate: Naturally occurring in high amounts in spinach, beets, radishes, eggplant, celery, lettuce, collards, and turnip greens. Used as a curative in processed meats. Private wells should be tested for nitrates regularly, as they can be a source of excess nitrate.

Food Sources of Potassium Nitrite: Cured meats, bacon, bologna, frankfurters, hotdogs, deviled ham, meat spreads, potted meats, spiced ham, Vienna sausages, smoke-cured tuna, smoke-cured shad, and smoke-cured salmon.

SACCHARIN:

Saccharin is a non-nutritive, non-caloric synthetic sweetener that is 300 - 500 times sweeter than sugar. Saccharin has been found to cause cancer in laboratory rats.

Food Sources of Saccharin: Mouthwash, toothpaste, diet soda, low-calorie beverages, sugar-free candies.

SALICYLIC ACID:

Also amyl salicylate, phenyl salicylate, methyl salicylate, glyceryl salicylate, benzyl salicylate, dipropylene glycol esters (often with benzoates), salts of salicylic acid. Aspirin is a salicylate and it is known that many people are sensitive to this chemical. What is not well known (or well understood) is that it exists naturally in many foods and becomes concentrated as those foods are processed. Extensive work from Australia highlights its importance, and diets eliminating it have been beneficial in a wide group of people previously thought to be food sensitive. Absorption of large amounts of salicylates can cause vomiting, abdominal pain, increased respiration, acidosis, headaches, asthma, muscle aches, mental disturbances, and skin rashes in sensitive individuals. Some individuals may be reactive to processed/artificial salicylates, but do fine with naturally occurring salicylates.

Food Sources of Salicylates: Salicylates are found naturally in almonds, apples, apricots, blackberries, boysenberries, cherries, cloves, cucumbers, currants, gooseberries, grapes, nectarines, oil of wintergreen, oranges, peaches, pickles, peanuts, plums, prunes, olives, raisins, raspberries, strawberries, and tomatoes.

Foods with Added Salicylates: Include ice cream, baked goods (except bread), candy, chewing gum, soft drinks, gelatins, jams, cake mixes, and mint flavored foods. Also may be found in cosmetics, sunscreens, certain herbals, and most toothpaste.

SODIUM METABISULFITE:

Sodium metabisulfite is used as a bacterial inhibitor, anti-fermentative, anti-browning agent and preservative in a wide range of prepared food products. Particularly in sensitive people such as asthmatics, it can cause wheezing, congestion, anaphylaxis and shortness of breath. In normal individuals an excess can cause nausea, diarrhea, gas and headache.

Food Sources of Sodium Metabisulfite: Wine, ale, beer, soft drinks, processed fruit and vegetable juices, frozen fruits, dried fruits, sugar, syrups, maraschino cherries, fresh non-organic grapes; commercially peeled (processed), dehydrated; or commercially prepared potatoes.

SODIUM SULFITE:

This is a chemical used in food processing as a preservative and sanitizing agent. It prevents bacterial growth and the browning of exposed foods. It also prevents the growth of undesirable microorganisms during fermentation and food processing. Reactions can include headaches, diarrhea, nausea, skin rash, swelling, and wheezing.

Food Sources of Sodium Sulfite: Sugars, syrups, frozen apples, dried fruit, peeled potatoes, maraschino cherries, condiments, frozen vegetables, wine, fresh non-organic grapes.

SOLANINE:

Solanine is a naturally-occurring toxicant of the nightshade family. When potatoes are green or sprouting they contain higher than normal levels of solanine so it is advisable not to eat them when they are in this state. It is interesting to note that tobacco is a solinacious plant, so traces of solanine appear in tobacco products. Symptoms include nausea, vomiting, muscle aches, joint pain, and gastric disturbances.

Food Sources of Solanine: Potatoes (particularly green or sprouting), cayenne, bell peppers, chili peppers, eggplant, paprika, tomato, Cape gooseberry.

SORBIC ACID:

Also known as hexadienic acid, potassium sorbate, sorbistat. Sorbic acid is used as a preservative and antimicrobial food additive particularly effective against yeast and molds.

Food Sources of Sorbic Acid: Baked goods, cheeses, jellies, wines, dried fruits, chocolate syrup, fresh fruit cocktail, pickles, salads (potato, macaroni, coleslaw, gelatin), cheesecake, and pie fillings, cured meats, sausages, soft drinks.

TYRAMINE:

Tyramine (as well as phenylethylamine) is a naturally occurring compound known as a pressor amine and is capable of stimulating the arterial system causing migraine headaches. Tyramine is a natural substance formed from the breakdown of protein as food ages. It is found in aged, fermented, or spoiled foods. It may have an effect on the central nervous system causing sleepiness, fatigue, and hyperactivity; and is also capable of causing effects on the airways resulting in wheezing. Reactions to tyramine and phenylethylamine are usually dose dependent. Unless there is an overload or you are very sensitive, the body has powerful mechanisms capable of neutralizing their effects. All foods develop increasing amounts of tyramine as they deteriorate. Therefore, it's important to be sure that your foods have not deteriorated. Be cautious about refrigerated leftovers. If it will be more than a day or two, then freeze the foods until you are ready to eat them. All people on MAO inhibitor drugs should avoid all foods with high levels of tyramine, as serious drug interactions can occur.

Food Sources of Tyramine: Beer, Chianti wine, other wines and wine vinegars, fava or broad beans, aged cheeses, beef liver, chicken liver, orange pulp, smoked or pickled meats, smoked or pickled poultry or smoked or pickled fish, packaged soups, yeast vitamin supplements, meat extracts, summer sausage, soy sauce, eggplant, avocados, tomatoes, banana peel, prunes, raisins. Must limit with the medications tranlycypromine (Parnate®) and Nardil®.

WHEY:

Whey is one of the main proteins in cow's milk. It is a very common ingredient in many processed and packaged foods, particularly diet products, bodybuilding products, and protein bars and shakes. In sensitive individuals whey can cause a variety of symptoms.

Food Sources of Whey:

Cow's milk, whey protein, bodybuilding products, diet shakes and drinks, protein bars, baked goods, puddings, desert items.