PRECISION POINT
DIAGNOSTICS

P88 Dietary Antigen Test

HEALTHCARE GUIDE

Phone: 678-736-6374
Fax: 770-624-1701

9 Dunwoody Park, Suite 122
Dunwoody, GA 30338

Info@PrecisionPointDiagnostics.com
www.PrecisionPointDiagnostics.com

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The information in this guide will help you to understand the P88 Dietary Antigen Test, your patient's results, and help advise treatment.

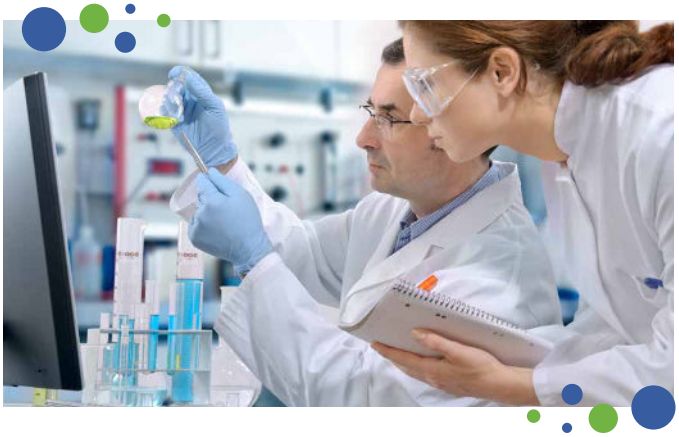
Why Food Testing Matters:

Many people realize that they are having issues with food and can tell something in their diet is affecting them. They are often recommended a skin-prick allergy panel or perhaps a conventional blood test and may find some answers but not the entire solution. This type of allergy testing is useful but only looks at one way we react to foods. Common allergy testing measures an immune response known as IgE. Our bodies can be inflamed in different ways, not only from IgE, but also total IgG, IgG4, and complement. A diet that minimizes foods that provoke these responses will decrease many types of inflammation and symptoms and is foundational to wellness. When we eat the least inflammatory diet, individualized to our body, we are optimizing our chances for health.

Improving wellness is the key to being able to manifest our passions and stay engaged with the world around us. Inflammation, which can originate from food response, is at the heart of many conditions that are detrimental to health and quality of life. Considering that our gut would cover much of a tennis court if stretched from end-to-end, controlling even a small amount of inflammation in something this size provides huge benefits to our health. Research continues to emerge regarding the consequences of inflammation in our gut and how foods trigger an inflammatory process throughout the body. As inflammation decreases, the intestinal lining or "gut" begins to heal. Rebuilding the gut results in stronger protection for the body from irritating foods. The gut contributes heavily to our "immune tolerance". A tolerant immune system is a healthy immune system, prepared to fight infection when nessary, but not in a state of hyperactivity. An out-of-balance immune system creates inflammation that can set off a cascade of events, ultimately resulting in many symptoms and conditions or worsening already existing conditions.

If the gut barrier breaks down, this is a condition often referred to as "leaky gut." When gaps in the lining are present, larger molecules of under-digested food(s) enter the bloodstream. The body begins to attack these foods. This compromises the immune system's reserves to fight bacteria, viruses and parasites. Consequently, the body is inflamed for no productive reason.

This results in immune confusion and causes many symptoms throughout the body. Damage to the gut also decreases the number of enzymes, such as amylase and lipase, that are available to help us absorb nutrients from our food. Enzyme depletion means poor absorption of nutrients, which compromises every cell in the body.



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What are we testing for?

Precision Points Diagnostics P88 Food Allergy & Sensitivity Test (FAST) looks at four (4) different immune responses to 88 different food antigens. Our test evaluates both allergies and sensitivities, specifically:

1. IgE (immunoglobulin E) allergies are the immediate responses to a foreign substance that has entered the body via food or inhalation. IgE allergies can cause very serious symptoms like difficulty in breathing, swelling, and hives. In more serious cases, IgE reactions can lead to anaphylactic shock. Our test measures the blood level of IgE, one of the five subclasses of antibodies. Antibodies are proteins made by the immune system that attack antigens such as bacteria, viruses, and allergens. They can become confused or cross-reactive and begin attacking foods instead. High titers of IgE are associated with allergic reactions, which is when the immune system overreacts to environmental antigens such as pollen, pet dander, and/or parasitic infections.

2. IgG (immunoglobulin G, total) are antibodies that provide long-term resistance to infections and have a much longer half-life than IgE antibodies. These food sensitivities can be more subtle and many people live with them for years, if not for their entire lives. Sensitivity symptoms include fatigue, headache, nausea, seizures, hyperactivity, bloating, mood changes, and dark circles under the eyes. IgG symptoms typically occur within 3-72 hours after the offending food was ingested and they will create ongoing inflammation that can make many conditions worse.

The degree and severity of symptoms vary greatly from person to person because of genetic makeup. The complete elimination of IgG-positive foods may bring about important improvements in symptoms of irritable bowel syndrome, autism, ADHD, cystic fibrosis, rheumatoid arthritis, and epilepsy, as demonstrated in numerous clinical studies. It's important to test for food sensitivities to learn what foods the patient can tolerate. If you are only looking at allergies (IgE), then you would miss the IgG-mediated symptoms, creating an incomplete patient picture.

3. C3D (Complement) is a protein of the innate immune system that is activated by microorganisms in the absence of an antibody. When C3d is activated in response to an antigen, the C3 portion attaches to the antigen. This activation, even though it is independent of antigenic reactions will amplify the reaction that occurs with total IgG, greatly increasing inflammation and symptoms of sensitivity. This same reaction which was designed to amplify inflammation in response to microorganisms can be triggered in response to foods. If complement is present, it will amplify an IgG reaction as much as 1000 to 10,000-fold. Therefore, tests that only measure IgG without complement may miss the reactions that are most clinically relevant. If complement is known to have a high level of reactivity in the condition you are treating, then foods that confuse and stimulate a response by this part of the immune system should be given special attention. See the below table for conditions driven by complement.

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Other Conditions Associated with Complement (C3d)

Lupus	Crohn's Disease	Rheumatoid Arthritis	Ulcerative Colitis
Psoriasis	Cystic Fibrosis	Epilepsy	Gout
Scleroderma	Thyroiditis	Reiter Syndrome	Dermatomyositis
Depression	Food Reactions	Increased CRP	Acute Rheumatic Fever
Typhoid Fever	Sarcoidosis	Traumatic Spinal Cord Injuries	Polyarteritis nodosa
Dermatomyositis	Scleroderma	Acute Myocardial Infarction	Ankylosing Spondylitis

4. IgG4 (immunoglobulin G subtype 4) is another antibody produced in the body to fight infection. IgG4 is used in allergy therapies to help neutralize the reaction of IgE. This is because of its potential to decrease histamine responses by blocking IgE from attaching to receptors. Too little IgG4 response to a particular food may mean that an IgE reaction cannot be mediated by IgG4. Too much IgG4 causes immune-mediated conditions, known as IgG4-RD that typically affect multiple organ systems in the body. For these reasons, it's important to know the levels of IgG4 in the body to be able to maintain a correct balance. An example of a tissue that is susceptible to higher levels of IgG4 is the esophagus, resulting in Eosinophilic Esophagitis. High levels of IgG4 also interferes with the thyroid, contributing to autoimmune thyroiditis, and can also cause IgG4- Related Diseases (IgG4-RD) of the ovaries and prostate.

What is Blocking Potential?

Blocking potential is a type of immune tolerance created when immune cells switch from making IgE to IgG4, and in general when IgG4 production is greater than IgE production.

When IgG4 levels are greater than IgE levels to an antigen, the IgG4 will bind to the antigen (food or another environmental trigger) and prevent binding to IgE. This blocks the ability of IgE to cause degranulation, decreasing the production of histamine. Higher levels of IgG4 block the anaphylactic action of IgE and is part of how we develop immunotolerance to foods and environmental triggers. Certain cell signaling mechanisms, like IL-10, can increase the ability of B cells to class switch to producing IgG4 antibodies, away from IgE antibodies. The predominant anatomical location for this is in the lymph nodes. This demonstrates why therapies like probiotics and some immunoglobulins

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can help to reduce an allergic or atopic response, because they increase production of IL-10, increasing production of IgG4.

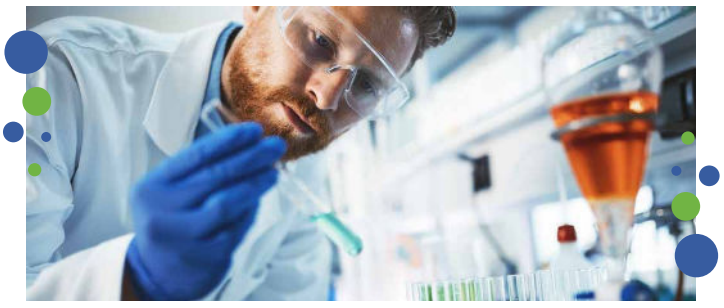
Desensitization therapies are based on this concept in that constant low-level exposure to an antigen increases IgG4, which in turn blocks IgE. In serum, IgG4 is the least abundant subclass of IgG, accounting for approximately 4% of total IgG, whereas its levels can reach up to 75% of total IgG after chronic exposure to an antigen, such as in allergen immunotherapy. IgG4 has a low affinity for the classical activating complement receptors, minimizing its role in creating an inflammatory response. IgG4 has only one heavy and one light chain in its structure, whereas other IgG antibodies have two. These "half-molecules" lack the ability to cross-link allergens and do not form immune complexes, further contributing to a lack of inflammatory potential. However, If IgG4 gets high enough, it too can cause issues, despite its inability to create an inflammatory response. There is a class of conditions referred to as IgG4-RD or IgG4-related diseases. IgG4 is unique, because IgG4 lacks the ability to bind complement like other IgG antibodies, but higher levels can cause it to lodge in tissue, and create autoimmunity. This is often observed with enlarged lymph nodes or glands, as the IgG4 has an affinity for that tissue. This can also occur in the esophagus as in eosinophilic esophagitis, and in autoimmune pancreatitis. IgG4 can also lodge in hormonal tissue such as the thyroid, ovaries, and prostate, creating pathology there as well.

Why Food Testing Matters:

• Allergens may induce an IgG4-dominated response, either as an outcome of the "modified TH2 response", or during desensitization therapy.
• IgG4 antibodies are associated with prolonged exposure to antigens, including food antigens (egg, milk) and biologics (FVIII, adalimumab). This is part of the programming that helps to achieve immune tolerance.
• IgG4 is often associated with "tolerance", due to its weak capacities to activate effector cells or complement, however, its generally high affinity makes it a good blocking antibody, decreasing IgE reactions.
• IL-10 and regulatory T cells have been implicated as discriminating factors in favor of IgG4.
• In IgG4-RD, besides an elevated serum IgG4, other "TH2/Treg" features often found include elevated levels of IL-4 and IL-10 in affected tissues and an elevated level of circulating IgE. To date, a specific antigen driving the massive B cell proliferation/ differentiation has not been found, therefore, testing multiple antigens is important.

Special notation of IgG4 food in Diet

Though IgG4 does not always result in a negative prognosis, with certain conditions higher levels of IgG4 can be harmful. In these cases, IgG4 reactive foods are usually taken out of the diet, but if there is solely an IgG4 reaction, you may decide that even for that patient it isn't a concern, since in general, LgG4 is not as inflammatory as IgG 1-3 and may merely be blocking an IgE reaction.



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Conditions Associated With IgG4

Autoimmune pancreatitis	Salivary gland disease	Orbital disease, often complicated by proptosis	Retroperitoneal fibrosis
Increased number of eosinophils	Peripheral Eosinophilia	Atopy	Lymphadenopathy
Sclerosing cholangitis	Mikulicz disease	Sclerosing sialadenitis	IgG4-related submandibular gland disease
Lacrimal gland enlargement	"Idiopathic" retroperitoneal fibrosis	IgG4-related thyroid disease	IgG4-related thyroid disease
IgG4-related kidney disease	Mimics sarcoidosis in the lung	Hypopituitarism associated withIgG4-related hypophysitis	Prostatitis
IgG4-related disease of the ovary	Constrictive pericarditis	Nasopharyngeal disease	Midline-destructive lesion
Eosinophilic Esophagitis			

Understanding your test results

Review of P88 Validation:

The P88 Dietary Antigen Test that is performed by Precision Point Diagnostics is a CMS approved and COLA accredited method for the detection of antigen-specific (foods) IgE, IgG4, total IgG, and Complement 3d (C3d). The validation process involved the establishment of normal patient values, or reference intervals, the intra- and inter-assay precision (reproducibility), and linearity of the tests.

Establishment of Reference Intervals: The P88 is a semi-qualitative test that not only reports the empirical value, or reactivity, for each antigen, but also expresses the patient's reactivity into 3 classes. Special notation of IgG4 food in Diet: IgG4 does not always result in a negative prognosis. With certain conditions, higher levels of IgG4 can be harmful. IgG4 is taken out of the diet, but if there is only an IgG4 reaction, you may decide in their condition it is of lesser concern, because in general it is not as inflammatory as IgG 1-3 and may merely be blocking an IgE reaction.

Low, Moderate, or High

The 3 class system is based upon a quartile system. Within this system, the most reactive 25% of the population will be reported as either "Moderate" or "High," with the most reactive 5% being reported as "High." Therefore 75% of the population will be reported as "Low," when a reaction is detected.

As a result of this method for determining class reactivity, each antigen possesses a unique reference range. Also, per federal regulation, Precision Point is required to evaluate the reference ranges annually. The top 10% of Complement (C3d) reactions are reported as positive.

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Intra-assay and Inter-assay Precision (Reproducibility):

Intra-assay precision is defined as the reproducibility of the assay within the same testing date. In order to assess the intra-assay precision, 10 patient samples were tested in duplicate. It was determined that the test contains 95% precision. The inter-assay precision is defined as the reproducibility of the assay over a period of time. In order to assess the inter-assay precision, the same serum sample was tested over 5 days. It was determined that the test contains a 94% inter-assay precision.

Linearity

The linearity of the enzyme-linked immunosorbent assay was established by plating varying amounts of serum. It was determined that the linearity of the test is greater than 99%. Additionally, the assay has been shown to be linear at concentrations 4-fold of normal patient samples. Therefore, patient values that are reported above the reference interval are accurate because the normal patient intervals are less than the assay range of the test.

We offer two diet options for patients: a more restrictive and a less restrictive diet.

The MORE RESTRICTIVE DIET removes all foods that test positive at a moderate to high level for both sensitivities and allergies and rotates mildly reactive foods that demonstrate a positive complement activation. Complement proteins amplify the IgG inflammation reaction. Please note that a positive result for complement, even with mild sensitivity, results in a greater inflammatory response than IgG alone would dictate.

We suggest that the patient adheres to the more restrictive diet, if possible. This diet is designed to quickly calm inflammation in patients with more aggressive symptoms. It is recommended to maintain this diet for 3-6 months, or for the duration determined by the physician, to allow enough time for inflammation and symptoms to dissipate before reintroducing reactive foods. In conditions that are strongly driven by complement, you may choose to remove all complement-implicated foods.

The LESS RESTRICTIVE DIET can be used for patients who may already have dietary restrictions and for those who would have trouble making all of the dietary changes all at once (for instance, children). The Less Restrictive Diet is also a good option for patients transitioning to a more open diet as the gut heals. The Less Restrictive Diet only eliminates foods that resulted in high or moderate results with complement reactions. There is no rotation suggested for this diet.

Follow-up testing is suggested 3-6 months after implementation of one of the above diets. Test results will likely show decreased reactivity once the foods have been eliminated for a significant period of time. Antibody levels can be elevated due to recent or frequent exposure, as well as genetic disposition.

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The Immune Index: What Does It Mean?

Common Allergy or Sensitivity testing only looks at one way the body reacts to foods, however, there are multiple ways the immune system reacts to food, so unless you measure multiple reactions or antibodies, you will miss foods you react to. The P88 DAT looks at 4 reactions, including IgE (Allergies) IgG (Sensitivities) as well as IgG4, and C3d, all specific to 88 foods.

Based on each antibody type and its level of reaction, a calculation is done to give the patient their overall reactivity to each food.

The P88 DAT shows the patient's level of reaction based on each antibody, and then also gives a cumulative score.

Included in the P88 DAT is a page that gives the overall reactivity to each food as a cumulative score. This is an innovative approach and tool, in that it gives the practitioner a sliding scale to remove as many or as few reactive foods as needed from the diet based on their relative level of reaction. In addition, rather than basing results on just one type of immune reaction, you are basing it on all types combined.

Rank	DIETARY ANTIGEN	Immune Index
1	Clam	HIGH
2	Almond	MODERATE
3	Black Pepper	MODERATE
4	Casein	MODERATE
5	Cow's Milk	MODERATE
6	Banana	MODERATE
7	Broccoli	MODERATE
8	Candida	MODERATE
9	Coconut	MODERATE
10	Codfish	MODERATE
11	Coffee	MODERATE
12	Ginger	MODERATE
13	Apple	MODERATE
14	Asparagus	MODERATE
15	Aspergillus Mix	MODERATE
16	Cashew	MODERATE
17	Cacao	MODERATE
18	Carrot	MODERATE
19	Egg Yolk	MODERATE
20	Gluten	MODERATE
21	Navy Bean	MODERATE
22	Pork	MODERATE
23	Spinach	MODERATE
24	Tuna	MODERATE
25	Goat's Milk	MODERATE

Rank	DIETARY ANTIGEN	Immune Index
45	Beef	LOW
46	Brewer's Yeast	LOW
47	Cabbage	LOW
48	Flounder	LOW
49	Garlic	LOW
50	Honeydew	LOW
51	Kidney Bean	LOW
52	Lobster	LOW
53	Oat	LOW
54	Orange	LOW
55	Lima Bean	LOW
56	Scallops	LOW
57	Plum	LOW
58	Yellow Squash	LOW
59	Sweet Potato	LOW
60	Tea	LOW
61	Whole Wheat	LOW
62	Avocado	
63	Cantaloupe	
64	Chicken	
65	Cinnamon	
66	Cucumber	
67	Green Pea	
68	Halibut	
69	Flax Seed	

This innovative interpretation continues to make the P88 DAT a superior tool for patient care.

Biogenic Compounds

This table shows you if foods that are that reacted to are high in certain compounds that have been found to be common irritants. This helps patients to identify if the reason they are irritated by a food may be because a certain compound (listed across the top) is present that elicits a reaction that is in addition to a food reaction such as IgE, IgG, IgG4, or complement. This helps a patient detect patterns with foods they react to. If they notice they have many reactions to a particular category, they may decide to review a list of foods containing those compounds and eliminate those from the diet as well.

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DIETARY ANTIGEN	Oxalates	Amines	Glutamate	Histamine	Lectins	Nitrite	FOD-MAP	Phenol	Salicylates
Almond		H							H
Apple							M	M	
Asparagus							M		
Avocado									
Banana							H		
Barley							M		
Blueberry	H								
Broccoli			H						
Cabbage						H			
Casein				H					
Cashew							H		
Cauliflower							H		
Celery									
Coconut						M			
Coffee	H								
Corn			M						
Grapefruit							M		
Kidney Bean									
Lettuce						H			
Mushroom									
Navy Bean	M			M	M		M		
Onion									
Orange	M								
Peach									
Peanut					M			M	
Pear									
Pineapple									
Plum		M					M		M
Shrimp				M					
Soybean	H			H			H		
Spinach	H					H			

The Natural Toxins in Food

In addition to artificial food additives, there are many different chemicals and toxins in foods that can cause unpleasant physical and mental reactions. These include natural flavor chemicals which must be avoided on the failsafe diet.

Plant Aromatics: Salicylates and Salicylate-Like Aromatics (SLAs)

Of the plant aromatics, we can say with certainty that food chemical intolerant individuals react to the following chemicals:

Salicylates	Natural benzoates	Natural gallates

Food chemical intolerant individuals seem to react to a diverse range of plant-derived aromatic chemicals, not merely to salicylates. This is called cross-reactivity and occurs when chemicals are similar enough in structure that they fire the same receptors in the body. What this range of chemicals has in common is that they exhibit the ability to interfere with arachidonic acid metabolism and prostaglandin production, and have a tendency to increase inflammatory leukotriene production through the inhibition of cyclooxygenase (COX) I/II and/or the induction of lipoxygenase (LOX). Many of these chemicals also suppress the production of inducible nitric oxide synthase (iNOS). The group includes relatively strong COX-II inhibitors like salicylates, and also weaker COX I/II inhibitors from a broad range of polyphenols and flavonoids. Even some vegetable carotenoids weak COX- II inhibitors that may affect those with extreme sensitivities (however the vitamin A found in animal foods in the form of all-trans retinoic acid actually induces COX-II enzymes). While salicylates act as selective COX-II inhibitors, some polyphenols also inhibit COX-I, an enzyme whose activity is required by the whole digestive system for normal function and protection. Other polyphenols simultaneously suppress COX I/II and LOX production. Though LOX induction is problematic and leukotrienes are involved in a number of food intolerance syndromes such as asthma and eczema, COX inhibition in and of itself appears to be problematic too, as prostaglandins are responsible for regulating autonomic neurotransmitters and interact with dopamine in the brain.

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OXALATES:

Oxalates are organic compounds found in certain varieties of plants including leafy greens, legumes, nuts, seeds, cacao, soy, and fruit. They have an affinity for binding to minerals such as calcium or iron and are thus associated with kidney stone development. Oxalate accumulation is also implicated in muscular pain syndromes like fibromyalgia and autoimmune conditions such as lupus and Rheumatoid arthritis.

People with an increased risk of inflammatory bowel disease also have an increased risk of developing kidney stones thought to be due in part to the impaired ability to regulate oxalate absorption.

AMINES/HISTAMINES:

Organic compounds formed during protein breakdown from cooking, aging (including leftovers), maturing/fermenting (cheese, kraut, pickling), and ripening (fruit).

Symptoms associated with amine intolerance most notably include migraines and headaches as well as rhinitis, eczema, high blood pressure, and GI distress. Low diamine oxidase (DAO) levels can contribute to amine/histamine intolerance.

Histamines exist as a defense mechanism in mast cells and are often associated with airborne allergens, in addition to occurring naturally in foods. While classic histamine symptoms include tearing, congestion, itching, swelling, and shortness of breath, they can also cause GI symptoms such as vomiting and diarrhea.

GLUTAMATES:

Glutamate occurs endogenously as both a neurotransmitter and an amino acid, and is also present exogenously in foods.

Excess glutamate may cause the “wired but tired” sensation and may lead to sensory overstimulation. While free glutamate is considered potentially problematic compared to bound glutamate; it has been acknowledged that free glutamates used as an additive (e. g. MSG) are worse than those naturally occurring in foods. Nausea, headache, migraine, flushing, and sweating are some symptoms associated with excess glutamate.

LECTINS:

Lectins are carbohydrate-binding proteins found concentrated in some plants such as legumes, nightshades, and grains. They have an affinity for gut epithelium tissue and can interfere with nutrient absorption. Lectins are also known for causing GI tract irritation as a mechanism for preventing their digestion while improving the plants’ chances to germinate once released. Lectins are also implicated in decreasing acid production and causing inflammation. Soaking legumes is known to reduce lectin content.

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NITRITES:

Nitrites occur both naturally in foods and as additives, the latter used widely in cured and processed meat products to preserve, color, and enhance flavor, but are also found widely in green, leafy vegetables. Nitrites are known to trigger headaches, migraines, and hives in some individuals.

FODMAPs:

Fermentable oligosaccharides, disaccharides, monosaccharides, and polyols (FODMAP) are short-chain carbohydrates fermented by gut bacteria. Some individuals poorly absorb them, while others with sensitive digestive tracts may not tolerate them well. Patients with FODMAP intolerance may present with IBS or with similar symptoms such as bloating, constipation, diarrhea, gas, indigestion, nausea, and vomiting. A low-FODMAP diet has been cited as a dietary intervention strategy for treating both IBS and SIBO (small intestinal bacterial overgrowth).

PHENOLS:

Phenols are known to impart both antioxidant and anti-inflammatory properties, and are acknowledged as offering a broad spectrum of beneficial biological activity through chemicals such as resveratrol and Epigallocatechin gallate (EGCG). The main enzyme involved in processing them is phenol sulfotransferase (PST) which when deficient due to lack of dietary sulfur or problems absorbing it, or with B6 or molybdenum deficiencies, can lead to phenol overload. Some symptoms include night sweats, hyperactivity, aggression, diarrhea, and constipation.

SALICYLATES:

Salicylates are naturally occurring aromatic chemicals that help plants defend against various threats such as insects and fungi. They are also a main ingredient in aspirin, muscle relaxers, topical acne products, cough medications, etc. Salicylates can build up due to a high intake from foods or use of other products, causing symptoms such as congestion, swelling, hives, brain fog, GI issues, and fatigue. They are also acknowledged to be selective COX-II inhibitors.

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FAQS: Frequently Asked Questions

What is the difference between Gluten and Wheat on the report?

Gluten is in whole wheat, however, wheat has other proteins that you could react to. It is possible for someone to come back positive to wheat and not gluten, and that would mean you are reactive to other proteins in the wheat instead of the gluten.

If your patient comes back positive to gluten, but not to wheat, it is because the other proteins in wheat can obscure a bit of the binding to gluten, so gluten is isolated, and run separately. We do this is to catch smaller gluten reactions that did not show up because of other proteins obscuring reactions and because lower-level reactions are captured that are only seen when gluten is isolated. Because it is such an antigenic molecule, it is important to see if even minimal amounts will trigger reactivity.

What should I do if mold comes back positive?

The P88 Test tells you that there is a response to mold, but it doesn't tell you whether exposure is coming from foods or the environment. To get a better picture of how mold is shifting immune function, markers such as TGF-Beta can be measured to see how immunoreactive a patient is to the exposure to direct treatment.

The measurement in the blood could either be from a reaction from the air, or a reaction from moldy foods. If you are concerned that mold may be a reason for inflammation throughout the body, then consider measuring TGF-beta. If that is high, this means your immune system is highly reactive to mold. Also, consider removing moldy foods. MOLDS TESTED INCLUDE: Aspergillus (A. oryzae, A. niger, A repent, A. terries)

Key foods to avoid in elevated mold reactions are moldy cheeses, peanuts, melons, and sake. For patients with severe reactions and active symptoms, a more restrictive mold diet may be needed. Consider using konjac fiber, which binds to mold aflatoxin.

What foods are high in Mold?

Vinegar & vinegar-containing food (mayonnaise, salad dressings, catsup, chili sauce, pickled foods, relishes, green olives, mustard), alcohol, soured breads, sauerkraut, cider & root beer, and pickled & smoked meats. Also remove all dried fruits, canned tomatoes, &all canned juice.

Eat only freshly opened canned foods & freshly prepared foods. Do not eat meat or fish more than 25 hours old. Avoid food from leftovers and avoid hamburgers if not made from freshly ground meat.

If I am allergic to certain foods, could I have environmental triggers too?

Cross-reactivity occurs when the protein structure of one substance is similar to another. Our body's immune system may react to a similar structure as it would to the true allergen. It is difficult to identify which substance is truly inducing the allergic reaction without a clinical test. Precision Point offers a thorough look at the body's immune system and its reaction to 88 commonly reactive foods in our P88 Test and 85 airborne substances in our Precision Airborne Allergen Test.

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I have a Thyroid condition, why is my clinician looking at foods I react to?

Eating foods that you are reactive to, can not only make you feel worse, but also decrease thyroid activity. IgG4 reactions to foods have been shown to damage thyroid tissue. Complement (C3D) reactions can also damage thyroid tissue. The P88 Dietary Antigen Test is the only food test that looks at the particular components that are most damaging to the thyroid. When you are eating foods you are sensitive to, it creates inflammation. This inflammation causes your body to be less able to convert the less active thyroid hormone, T4, into the more active thyroid hormone, T3. Finally, eating foods you are sensitive to can increase antibody production, causing your body to attack its own thyroid. Eliminating foods you are sensitive to is a great first step to increasing thyroid function naturally.

Why Test Complement and IgG together?

Complement plays a role in how inflammatory an IgG antibody is. Complement binds to IgG and creates a synergistic effect in terms of increasing inflammation. The combination of complement and IgG together can increase inflammation 1000 to 10,000-fold.

Why Test IgG and IgE together?

IgE and IgG should be measured together because they each independently play a role in reactive symptoms to foods. You can separately have an allergy (IgE) response, and a sensitivity (IgG) response. Both are independent of the other and both can create inflammation in the body.

What are the limitations of tests that only evaluate Total IgG?

Only testing IgG is a bit like knowing total cholesterol, but not knowing how much HDL (good) or LDL (bad) cholesterol you have. The reason for this is that different IgG antibodies do different things depending on their subtype. IgG4 decreases IgE, or allergic reactions. IgGI-III increases inflammation 3-72 hours after exposure.

Also, different subtypes are increased in certain pathologies. For example, while IgG4 is generally good, there are a handful of pathologies where it is of concern, such as auto-immune hypothyroidism and eosinophilic esophagitis.

Is IgG4 good or bad?

IgG4 is by and large good, as it blunts an IgE response and reduces anaphylaxis. In fact, desensitization injections and drops work by this mechanism of increasing Ig4 to induce tolerance. There are a handful of conditions that increase IgG4 reactions, and if the patient has one of these conditions it may be helpful to remove foods that provoke an IgG4 reaction. In non-responsive patients it is also reasonable to do a trial removal of IgG4, especially if removal of other foods did not create the improvement anticipated. IgG4 plays multiple roles in immune function and must be carefully evaluated with each patient.

Phone: 678-736-6374
Fax: 770-624-1701

9 Dunwoody Park, Suite 122
Dunwoody, GA 30338

Info@PrecisionPointDiagnostics.com
www.PrecisionPointDiagnostics.com

PRECISION POINT DIAGNOSTICS

FAQS: Frequently Asked Questions

Is IgG4 related to autoimmune disease?

IG4-related disease is an immune-mediated condition, meaning that it involves the occurrence of disease in organs as the result of a dysregulated immune system. Increasing evidence suggests that IgG4-RD is an autoimmune condition, much like rheumatoid arthritis and lupus. IgG4 can blunt an IgE response, but if it becomes confused, and upregulated by exposure to antigens or foods, it can begin to precipitate out into tissue, creating damage.

What is the difference between an allergy and sensitivity?

An allergy is mediated by IgE antibodies and creates an immediate reaction. A sensitivity is mediated by IgG antibodies and creates a delayed response. While these general traits hold true, there are also times when IgG can amplify IgE reactions, and also some examples of remarkably high levels of IgG causing an immediate reaction as wel. Allergies and sensitivities create independent reactions but can also influence each other. IgG is most typically a delayed reaction, but if high enough titers are present, it too can react within a few hours. The interplay between different parts of the immune system demonstrates why it is best to look at multiple antibodies together.

Are IgG reactions the result or the cause of gut-based permeability?

IgG reactions are both the cause and the result of gut-based permeability. One way we develop IgG reactions is when the gut becomes more compromised, or permeable. This allows for larger molecules than normal to “leak” through the gut. These larger molecules look antigenic to the immune system. T cells become sensitized and begin to make an immune response or produce antibodies. This is not the only way one can become sensitive to foods. Improper immune queuing in the GI tract, specifically in cells called Peyer’s patches, can cause this as well.

Once an IgG reaction begins, it increases the production of histamine, therefore, inflammation. This inflammation continues to damage the gut, thereby contributing to permeability. The best way to reduce gut-based inflammation is to remove the offending foods and work on healing the gut.

I react to gluten, but it does not show up on my test, why?

Reactions to gluten could be because of allergies or sensitivities, but there are a number of other reasons that you could feel bad from gluten apart from sensitivities. For example, gluten decreases the tryptophan/serotonin ratio, making the production of this neurotransmitter more difficult. Also, gluten can often be contaminated with bromides that decrease other important nutrients like Iodine, which compromises thyroid function.

Gluten-contained products can also often be moldy, demonstrated by the fact that commercial grains are measured for ppm of aflatoxin and are generally positive for this contaminant.

Can food sensitivities be related to weight gain?

Food sensitivities can be related to weight gain in that they will create more inflammation in the body. Inflammation will cause an increase in the hormone leptin, which in turn tells adipose tissue to store more fat. Inflammatory foods create an irritation that leads to weight gain.

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9 Dunwoody Park, Suite 122
Dunwoody, GA 30338

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FAQS: Frequently Asked Questions

Can food sensitivities be related to other issues such as headaches, pain or depression?

Yes! While the beginning reaction to foods start in the gut, it does not necessarily have to create gut pain, or be contained in the GI tract. The inflammatory process that starts in the gut can spread and can even be more symptomatic in places outside of the gut. Many conditions such as headaches, pain, and even depression have a gut-based cause but manifest in other areas of the body.

How are reference ranges determined?

Every lab is required to develop its own reference ranges. For this reason, you should not expect ranges to be the same from lab to lab. At Precision, we look at values over the hundreds of thousands of specimens we have run, and then look at distributions. In general, the top 5% is determined as high, and then the next 25% is moderate, and then the next 25% is lower. However, when there is epidemiologic evidence that the population, in general, has more difficulty with a food, such as wheat or dairy, we will consider % reactivity among populations in general, and consider research and data alongside our distributions to create a range. Given this, we define the top 10% of reactions to dairy, wheat, and shellfish to be high.

Why would I be reactive to something I never eat?

a) I could have a cross-reaction with something in the environment related to the food. For example, latex can cause banana allergies because they are in the same family. (See table below)

b) Sometimes there may be trace amounts of foods in other sources you are not aware of.

c) There can be cross-reactions to other foods in the same family of the food you are showing a reaction to.

See food families below.

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9 Dunwoody Park, Suite 122
Dunwoody, GA 30338

Info@PrecisionPointDiagnostics.com
www.PrecisionPointDiagnostics.com

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CROSS REACTIVITY LIST

Alder Pollen	almonds, apples, apricot, celery, cherries, hazelnuts, kiwi, nectarine, orange, peaches, pears, persimmon, plum, parsley, raspberry, strawberry, carrot, white potato, fennel
Birch Pollen	almonds, apples, apricots, avocados, bananas, carrots, celery, cherries, chicory, coriander, fennel, fig, hazelnuts, kiwifruit, lychee, nectarines, parsley, parsnips, peaches, pears, peppers, persimmon, plums, potatoes, prunes, soy, strawberries, wheat, zucchini. Potential: walnuts
Grass Pollen	almonds, apples, apricots, avocados, bananas, carrots, celery, cherries, chicory, coriander, fennel, fig, hazelnuts, kiwifruit, lychee, nectarines, parsley, parsnips, peaches, pears, peppers, persimmon, plums, potatoes, prunes, soy, strawberries, wheat, zucchini. Potential: walnuts
Mugwort Pollen	carrots, celery, coriander, fennel, parsley, peppers, sunflower, apple, kiwi, melon, lettuce, anise seeds, caraway, chamomile tea extract, cumin, almond, hazelnut, peanut, pistachio, poppy seed, honey, latex
Ragweed Pollen	banana, cantaloupe, cucumber, green pepper, paprika, sunflower seeds/ oil, honeydew, watermelon, zucchini, echinacea, artichoke, dandelions, honey (if bees pollinate from wild flowers), hibiscus or chamomile tea, pumpkin, tomato, latex
Latex	apple, banana, cherry, kiwi, melon, papaya, peach, pear, pineapple, tomato, avocado, carrot, celery, white potato, almond, chestnut, hazelnut
Cow's milk	Meat: sheep, lamb, goat, buffalo
Beef	cow's milk, lamb, pork, cat dander, Lyme's Disease
Pork	cow's milk, beef, cat epithelia, dog dander
Chicken Egg	duck egg, goose egg, seagull egg, turkey egg, pet bird dander, avian feathers and meat
Crustacean	Mollusks (abalone, clam, mussel, oyster, scallop, squid), dust mite, cockroach
Dog	Meat: cat, horse, pork
Dust Mite	lobster, snail, shrimp, cockroach, other insects
Mold	Baker's and Brewer's yeast, Candida albicans, raw mushroom, latex, fruit fly

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More restrictive mold diet suggestions:

Avoid the following foods:

- Peanuts
- Cheese – all cheese, especially aged cheese
- Melons
- Vinegar – and vinegar-containing food (mayonnaise, salad dressings, catsup, chili sauce, pickled foods, green olives, mustard
- Alcoholic liquors, beer, wine, and sake
- Soured breads, such as pumpernickel, coffee cakes, and other foods made with large amounts of yeast
- Sauerkraut
- Cider and homemade root beer
- Pickled and smoked meats and fish, including delicatessen foods, sausages, frankfurters, corned beef, pickled tongue, ham, bacon
- All dried fruits such as apricots, dates, prunes, figs, and raisins
- Canned tomatoes
- All canned juice
- Eat only freshly opened canned foods and freshly prepared fruits
- Do not eat meat or fish more than 25 hours old
- Avoid foods made from leftovers such as meatloaf, hash, and croquettes
- Avoid hamburger unless made from freshly ground meat

What should I do if yeast comes back positive?

Elevated candida markers are indicative of a current or recent intestinal overgrowth of yeast.

Some symptoms of candida overgrowth within the body are:

- Skin and nail fungal infections such as athlete's foot, ringworm, and toenail fungus
- Feeling tired and worn down or suffering from chronic fatigue or fibromyalgia
- Digestive issues such as bloating, constipation, or diarrhea
- Autoimmune diseases such as Hashimoto's thyroiditis, Rheumatoid arthritis, Ulcerative colitis, Lupus, Psoriasis, Scleroderma, or Multiple scler

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- Difficulty concentrating, poor memory, lack of focus, ADD, ADHD, and/or brain fog
- Skin issues such as eczema, psoriasis, hives, and rashes
- Irritability, mood swings, anxiety, or depression
- Vaginal infections, urinary tract infections, rectal itching, or vaginal itching
- Severe seasonal allergies or itchy ears
- Strong sugar and refined carbohydrate cravings

Consider further testing, such as our Comprehensive Stool and Parasitology x3, to confirm yeast overgrowth and strain susceptibility. Diet recommendations for yeast overgrowth are a low-carb, low-sugar diet. Restrict sugar, refined grains, alcohol and vinegar. Treatment recommendations are garlic, caprylic acid, berberine, and grapefruit seed extract.

*Precision Point now offers a non-invasive sIgA food intolerance test using saliva. sIgA antibodies, one of our five major antibodies, are found in mucous membranes and secretions, such as the lining of the gut, saliva, sweat, or tears. This is the body's first line of defense against invading pathogens. Sometimes, sIgA antibodies may form against specific foods when the body's intestinal mucosa is damaged, as in the case of Crohn's disease or colitis. This is known as Food Intolerance.

Patients with suspected mucosal damage may benefit greatly from the removal of sIgA-reactive foods, as will patients with low IgG. Again, patients with high IgE antibodies might also consider sIgA testing.

What if foods bother me, but there is no reaction shown on the test?

Other factors can cause reactions to foods aside from allergies. For example, gluten can interfere with the ability to convert amino acids into neurotransmitters. This can make us feel depressed and achy, but this is not an allergy or sensitivity. Another reason one can feel worse from foods is that they cause reactions in response to things like platelet-activating factor which may cause an adverse response but is also not an allergy or sensitivity. In addition, foods that are high in histamine can release their histamine into the body and this too can be a reason one experiences symptoms without an IgE, IgG, or complement reaction.

Measuring markers such as diamine oxidase may be a good follow-up plan. Certain foods can have other characteristics that make them reactive, but for other reasons. People may react to foods high in histamine, amines, and glutamine, or that are high FODMAP, sulfur-containing, etc. The table below shows other categories of foods that may be problematic for people for reasons other than allergy.

Does this mean I should never eat these foods again?

No! In fact, quite the opposite. The goal is to remove foods and work on the gut lining to retrain your immune system so that you are no longer reactive to them. Some foods may provoke so stronga reaction that you'll need to avoid them lifelong, but most people will be able to tolerate most foods as reactions to those foods gradually normalize over time.This means that you'll likely be able to enjoy

foods once in a while that had been eliminated and you will not be symptomatic from them. Your clinician will likely guide you through a challenge phase where you bring foods back in one at a time and monitor your reaction to them. If you challenge foods at 2-3 weeks, this is when you will have the greatest reaction with reintroduction. The reason for that is that you have not quieted the immune response yet, and when a food is introduced after short-term avoidance, the immune system is "refreshed" and rebounds aggressively. Your clinician may have you do a challenge at this point in your elimination diet to see which foods you are most reactive to. This may make your symptoms worse temporarily, but will help establish which foods to avoid in the future.

Many clinicians will wait longer, 3 months to a year to challenge foods depending on the severity of symptoms and will introduce foods months later rather than weeks later. The logic behind this is that the longer wait is more likely to eliminate symptoms, and you will have more successfully retrained your immune system to be nonreactive. Strict avoidance for longer periods of time will be more likely to restore normalcy in regards to the problem food and ultimately result in being able to increase diversity in your diet, not restrict it.

What are some treatments I should consider?

An elimination diet is the best way to calm inflammation stemming from an over-active immune system reacting to certain foods.

HIGH IGE REACTIVITY: If your patient has excessive IgE responses, consider a s-IgA test since underactive s-IgA could lead to an overactive IgE system.

HIGH COMPLEMENT: Consider curcuminoids from turmeric as part of the treatment to help reduce complement activation.

HIGH IN ANY CATEGORY: Consider immunoglobulins to help with immune system function and build healthy gut lining. Immunoglobulin usage helps a person to regain tolerance to foods. Therapies such as glutamine and probiotics will also be helpful in regaining immune tolerance. Further testing should include an Advanced Intestinal Barrier Assessment to determine gut health.

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FOOD FAMILY LIST

Sometimes removing foods in the same family as those you are allergic to can further reduce the inflammatory load on the body. Foods that are related can have similar protein structures and can also cause symptoms or ignite the process of pathology. Use the food family document below to determine related foods. The Precision Dietary Antigen Test also helps to identify food families that are most problematic for a given patient.

FOODS: SPECIES, FAMILIES, AND RELATABLE FOODS

ANTIGEN/SPECIES	FAMILY	FOODS IN FAMILY
Almond *Prunus dulcis*	*Rose (stone fruits)*	Almond, apricot, cherry, peach, nectarine, plum, prune
Apple *Malus pumila*	*Rose (pomes)*	Apple, applecider, applecider vinegar, crabapple, loquat, pear quince
Asparagus *Asparagus offtcinalis*	*Lily*	aloe vera, asparagus, chives, garlic, onion, ramp, shallot, leek
Aspergillus Mix *A. oryzae, A. niger, A. repens, A.terreus*	*Fungi*	Aspergillus, baker's yeast, brewer's yeast, citric acid, morel, mushroom, truffle
Avocado *Persea americana*	*Laurel*	Avocado, bay leaf, cassia bark, cinnamon, sassafras
Banana *Musa sapientum*	*Banana*	Arrowroot, banana, plantain
Barley *Hordeum vulgare*	*Grass*	Barley, malt, maltose, bamboo shoots, corn, corn meal, corn oil, cornstarch, corn syrup, hominy grits, popcorn, kamut, lemon grass, citronella, millet, oat, oatmeal, rice, rice flour, rye, spelt, sorghum grain, sorghum syrup, sugarcane, cane sugar, molasses, raw sugar, sweet corn, triticale, wheat, wheat bran, wheat bulgur, wheat flour, gluten, wheat graham, whole wheat, wheat germ, wild rice

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ANTIGEN/SPECIES	FAMILY	FOODS IN FAMILY
Beef *Bos taurus*	*Bovine*	Beef cattle, beef by-products, beef gelatin, oleomargarine, rennin, sausage, milk products like butter, cheese, ice cream, lactose, yogurt. Veal, buffalo (bison), goat, goat cheese, goat ice cream, goat milk, sheep, lamb, mutton, rocky, mountain sheep
Black Pepper *Piper nigrum*	*Pepper*	Black pepper, peppercorn, white pepper
Blueberry *Vaccinium myrtilloides*	*Heath or Ericaceae*	Bearberry, blueberry, cranberry, huckleberry
Brewer's Yeast *Saccharomyces*	*Fungi*	Aspergillus, brewer's yeast, baker's yeast, citric acid, morel, mushroom, truffle
Broccoli *Brassica oleracea var. botrytis*	*Mustard*	Broccoli, brussel sprouts, cabbage, collards, colza shoots, couve, tronchuda, curly cress, horseradish, kale, kohlrabi, mustard greens, mustard seed, radish, rape seed, rutabaga, turnip, puland cress, water cress
Cabbage *Brassica oleracea var. capitata*	*Mustard*	Broccoli, brussel sprouts, cabbage, collards, colza shoots, couve, tronchuda, curly cress, horseradish, kale, kohlrabi, mustard greens, mustard seed, radish, rape, rutabaga, turnip, puland cress, water cress
Cacao (Chocolate) *Theobroma cacao*	*Sterculia*	Chocolate, cocoa, cocoa butter, cola nut
Candida *Candida albicans*		
Cantaloupe *Cucumis melo cantalupensis*	*Gourd*	Chayote, Chinese melon, cantaloupe, cucumber, gherkin, loofah, muskmelons, casaba, Crenshaw, honeydew, Persian melon, pumpkin, pumpkin seed, pumpkin meal, squash (acorn, buttercup, butternut, Boston, spaghetti), zucchini, watermelon

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Fax: 770-624-1701

9 Dunwoody Park, Suite 122
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ANTIGEN/SPECIES	FAMILY	FOODS IN FAMILY
Carrot *Daucus carota*	*Carrot*	Angelica, anise, caraway, menhaden, celery root, celery seed, celery leaf, chervil, coriander, cumin, dill, dill seed, fennel, finocchio, Florence, gotu kola, lovage, parsley, parsnip, sweet cicely
Casein *Bos tauras*	*Bovine*	Beef cattle, beef by-products, beef gelatin, oleomargarine, rennin, sausage, milk products like butter, cheese, ice cream, lactose, yogurt. Veal, buffalo (bison), goat, goat cheese, goat ice cream, goat milk, sheep, lamb, mutton, rocky, mountain sheep
Cashew *Anacardium occidentale*	*Cashew*	Cashew, mango, pistachio, poison ivy, poison oak, poison sumac
Cauliflower *Brassica oleracea var. botrytis*	*Mustard*	Broccoli, brussel sprouts, cabbage, cardoon, cauliflower, collards, colza shoots, couve, tronchuda, curly cress, horseradish, kale, kohlrabi, mustard greens, mustard seed, radish, rape seed, rutabaga, turnip, puland cress, water cress
Celery *Apium graveolens*	*Carrot*	Angelica, anise, caraway, menhaden, celery root, carrot, celery seed, celery leaf, chervil, coriander, cumin, dill, dill seed, fennel, finocchio, Florence, gotu kola, lovage, parsley, parsnip, sweet cicely
Cherry *Prunus avium*	*Rose (stone fruits)*	Apple, Apricot, cherry, peach, nectarine, plum, prune
Chicken *Gallus gallus*	*Pheasant*	Chicken, eggs, peafowl, pheasant, quail
Cinnamon *Cinnamomum verum*	*Laurel*	Avocado, bay leaf, cassia bark, cinnamon, sassafras
Clam *Mercenaria mercenaria*	*Mollusks*	abalone, snail, squid, clam, cockly, mussel, oyster, scallops
Coconut *Cocos nucifera*	*Palm*	Coconut (meal, oil), date (sugar, palm), sago starch

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ANTIGEN/SPECIES	FAMILY	FOODS IN FAMILY
Codfish *Gadus morhua*	*Codfish*	Cod (scrod), cusk, haddock, hake, Pollack
Casein *Bos tauras*	*Bovine*	Beef cattle, beef by-products, beef gelatin, oleomargarine, rennin, sausage, milk products like butter, cheese, ice cream, lactose, yogurt. Veal, buffalo (bison), goat, goat cheese, goat ice cream, goat milk, sheep, lamb, mutton, rocky, mountain sheep
Coffee *Coffee arabica*	*Madder*	Coffee
Corn *Zea mays*	*Grass*	Barley, malt, maltose, bamboo shoots, corn, corn meal, corn oil, cornstarch, corn syrup, hominy grits, popcorn, Kamut, lemon grass, citronella, millet, oat, oatmeal, rice, rice flour, rye, spelt, sorghum grain, sorghum syrup, sugarcane, cane sugar, molasses, raw sugar, sweet corn, triticale, wheat, wheat bran, wheat bulgar, wheat flour, gluten, wheat graham, whole wheat, wheat germ, wild rice
Cottonseed	*Mallow*	Althea root, cottonseed (oil), hibiscus, okra
Cow's Milk *Bos taurus*	*Bovine*	Beef cattle, beef by-products, beef gelatin, oleomargarine, rennin, sausage, milk products like butter, cheese, ice cream, lactose, yogurt. Veal, buffalo (bison), goat, goat cheese, goat ice cream, goat milk, sheep, lamb, mutton, rocky, mountain sheep
Crab *Paralithodes camtschatica*	*Crustaceans*	Crab, crayfish, lobster, prawn, shrimp
Cucumber *Cucumis sativus*	*Gourd*	Chayote, Chinese melon, cantaloupe, cucumber, gherkin, loofah, muskmelons, casaba, Crenshaw, honeydew, Persian melon, pumpkin, pumpkin seed, pumpkin meal, squash (acorn, buttercup, butternut, Boston, spaghetti), zucchini, watermelon
Egg Albumin *Gallus gallus*	*Pheasant*	Chicken, eggs, peafowl, pheasant, quail
Egg Yolk *Gallus gallus*	*Pheasant*	Chicken, eggs, peafowl, pheasant, quail

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ANTIGEN/SPECIES	FAMILY	FOODS IN FAMILY
English Walnut *Juglans regia*	*Walnut*	Black walnut, butternut, English walnut, heartnut, hickory nut, pecan
Flax Seed *Linum usitatissimum*	*Flax*	Flaxseed
Flounder *Paralichthys lethostigma*	*Flounder*	Dab, flounder, halibut, plaice, sole, turbot
Garlic *Allium sativum*	*Lily*	aloe vera, asparagus, chives, garlic, onion, ramp, shallot, leek
Ginger *Zingiber officinale*	*Ginger*	Cardamon, East Indian Arrowroot, ginger
Gluten		Wheat, barley, rye
Goat's Milk *Capra aegagrus hircus*	*Bovine*	Beef cattle, beef by-products, beef gelatin, oleomargarine, rennin, sausage, milk products like butter, cheese, ice cream, lactose, yogurt. Veal, buffalo (bison), goat, goat cheese, goat ice cream, goat milk, sheep, lamb, mutton, rocky, mountain sheep
Grapefruit *Citrus X paradisi*	*Rue (Citrus)*	Citron, grapefruit, kumquat, lemon, lime, murcot, orange, pomelo, tangelo, tangerine
Grapes *Vitis vinifera*	*Grape*	Grape, brandy, champagne, cream of tartar, currant, wine, wine vinegar, muscadine
Green Olive *Olea europaea*	*Olive*	Olive (green or ripe), olive oil
Green Pea *Pisum sativum*	*Legume*	Alfalfa, sprouts, beans, fava, lima, mung (sprouts), navy, string, kidney, black-eyed pea, cowpea, carob, carob syrup, chickpea, garbanzo, jicama, kudzu, lentil, licorice, pea, peanut, peanut oil, red clover, senna, soybean, lecithin, soy (flour, grits, milk, oil), tamarind, tonka bean, coumarin
Green Pepper *Piper spp.*	*Potato*	Eggplant, ground cherry, pepino, melon pear, pepper (bell, sweet, cayenne, chili, paprika, pimiento), potato, tomato, tomatillo

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ANTIGEN/SPECIES	FAMILY	FOODS IN FAMILY
Halibut *Hippoglossus*	*Flounder*	Dab, flounder, halibut, plaice, sole, turbot
Honeydew melon *Cucumis melo*	*Gourd*	Chayote, Chinese melon, cantaloupe, cucumber, gherkin, loofah, muskmelons, casaba, Crenshaw, honeydew, Persian melon, pumpkin, pumpkin seed, pumpkin meal, squash (acorn, buttercup, butternut, Boston, spaghetti), zucchini, watermelon
Hops *Humulus lupulus*	*Mulberry*	Breadfruit, fig, hops, mulberry
Kidney/Pinto *Phaseolus vulgaris*	*Legume*	Alfalfa, sprouts, beans, fava, lima, mung (sprouts), navy, string, kidney,black-eyed pea, cowpea, carob, carob syrup, chickpea, garbanzo, jicama, kudzu, lentil, licorice, pea, peanut, peanut oil, red clover, senna, soybean, lecithin, soy (flour, grits, milk, oil), tamarind, tonka bean, coumarin
Lemon *Citrus limon*	*Rue (Citrus)*	Citron, grapefruit, kumquat, lemon, lime, murcot, orange, pomelo, tangelo, tangerine
Lettuce *Lactuca sativa*	*Composite*	Boneset, burdock root, cardoon, chamomile, chicory, coltsfoot, dandelion, endive, escarole, globe artichoke, goldenrod, Jerusalem artichoke, artichoke flour, lettuce (celtuce, pyrethrum, romaine, safflower oil, salsify, santolina, scolymus, scorzonera, southernwood, sunflower), sunflower (seed, meal, oil) , tansy, tarragon, wormwood (absinthe), yarrow
LimaBean *Phaseolus lunatus*	*Legume*	Alfalfa, sprouts, beans, fava, lima, mung (sprouts), navy, string, kidney, black-eyed pea, cowpea, carob, carob syrup, chickpea, garbanzo, jicama, kudzu, lentil, licorice, pea, peanut, peanut oil, red clover, senna, soybean, lecithin, soy (flour, grits, milk, oil), tamarind, tonka bean, coumarin
Lobster *Homarus americanus*	*Crustaceans*	Crab, crayfish, lobster, prawn, shrimp
Mushroom *Agaricus campestris*	*Fungi*	Aspergillus, brewer's yeast, baker's yeast, citric acid, morel, mushroom, truffle

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DIAGNOSTICS

ANTIGEN/SPECIES	FAMILY	FOODS IN FAMILY
Mustard *Brassicaceae*	*Mustard*	Broccoli, brussel sprouts, cabbage, collards, colza shoots, couve, tronchuda, curly cress, horseradish, kale, kohlrabi, mustard greens, mustard seed, radish, rape, rutabaga, turnip, puland cress, water cress
Navy Bean *Phaseolus vulgaris*	*Legume*	Alfalfa, sprouts, beans, fava, lima, mung (sprouts), navy, string, kidney,black-eyed pea, cowpea, carob, carob syrup, chickpea, garbanzo, jicama, kudzu, lentil, licorice, pea, peanut, peanut oil, red clover, senna, soybean, lecithin, soy (flour, grits, milk, oil), tamarind, tonka bean, coumarin
Oat *Avena sativa*	*Grass*	Barley, malt, maltose, bamboo shoots, corn, corn meal, corn oil, cornstarch, corn syrup, hominy grits, popcorn, Kamut, lemon grass, citronella, millet, oat, oatmeal, rice, rice flour, rye, spelt, sorghum grain, sorghum syrup, sugarcane, cane sugar, molasses, raw sugar, sweet corn, triticale, wheat, wheat bran, wheat bulgar, wheat flour, gluten, wheat graham, whole wheat, wheat germ, wild rice
Onion *Allium cepa*	*Lily*	aloe vera, asparagus, chives, garlic, onion, ramp, shallot, leek
Orange *Citrus X sinensis*	*Rue (Citrus)*	Citron, grapefruit, kumquat, lemon, lime, murcot, orange, pomelo, tangelo, tangerine
Peach *Prunus persica*	*Rose (stone fruits)*	Almond, apricot, cherry, peach, nectarine, plum, prune
Peanut *Arachis hypogaea*	*Legume*	Alfalfa, sprouts, beans, fava, lima, mung (sprouts), navy, string, kidney,black-eyed pea, cowpea, carob, carob syrup, chickpea, garbanzo, jicama, kudzu, lentil, licorice, pea, peanut, peanut oil, red clover, senna, soybean, lecithin, soy (flour, grits, milk, oil), tamarind, tonka bean, coumarin
Pear *Pyrus communis*	*Rose (pomes)*	Apple, applecider, applecider vinegar, crabapple, loquat, pear, quince
Pecan *Carya illinonensis*	*Walnut*	Black walnut, butternut, English walnut, heartnut, hickory nut, pecan

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Pineapple *Ananas comosus*	*Pineapple*	Pineapple
Plum *Prunus domestica*	*Rose (stone fruits)*	Almond, apricot, cherry, peach, nectarine, plum, prune
Pork *Sus scrofa*	*Swine*	Hog, pork, bacon, ham, lard, pork gelatin, sausage, scrapple
Rice *Oryza sativa*	*Grass*	Barley, malt, maltose, bamboo shoots, corn, corn meal, corn oil, cornstarch, corn syrup, hominy grits, popcorn, Kamut, lemon grass, citronella, millet, oat, oatmeal, rice, rice flour, rye, spelt, sorghum grain, sorghum syrup, sugarcane, cane sugar, molasses, raw sugar, sweet corn, triticale, wheat, wheat bran, wheat bulgar, wheat flour, gluten, wheat graham, whole wheat, wheat germ, wild rice
Rye *Allium cepa*	*Grass*	Barley, malt, maltose, bamboo shoots, corn, corn meal, corn oil, cornstarch, corn syrup, hominy grits, popcorn, Kamut, lemon grass, citronella, millet, oat, oatmeal, rice, rice flour, rye, spelt, sorghum grain, sorghum syrup, sugarcane, cane sugar, molasses, raw sugar, sweet corn, triticale, wheat, wheat bran, wheat bulgar, wheat flour, gluten, wheat graham, whole wheat, wheat germ, wild rice
Salmon *Salmo salar*	*Salmon*	Salmon species
Scallops *Pectinidae*	*Mollusks*	Abalone, snail, squid, clam, cockles, mussel, oyster, scallops
Sesame *Sesamum indicum*	*Pedalium*	Sesame seed, sesame oil, tahini
Shrimp *Crangon penaeus*	*Crustaceans*	Crab, crayfish, lobster, prawn, shrimp
Spinach *Spinacia oleracea*	*Goosefoot*	Quinoa, beet, chard, lamb's quarters, spinach, sugar beet, tampala

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Soybean *Glycine max*	*Legume*	Alfalfa, sprouts, beans, fava, lima, mung (sprouts), navy, string, kidney,black-eyed pea, cowpea, carob, carob syrup, chickpea, garbanzo, jicama, kudzu, lentil, licorice, pea, peanut, peanut oil, red clover, senna, soybean, lecithin, soy (flour, grits, milk, oil), tamarind, tonka bean, coumarin
Squash, Zucchini *Cucurbita pepo*	*Gourd*	Chayote, Chinese melon, cantaloupe, cucumber, gherkin, loofah, muskmelons, casaba, Crenshaw, honeydew, Persian melon, pumpkin, pumpkin seed, pumpkin meal, squash (acorn, buttercup, butternut, Boston, spaghetti), zucchini, watermelon
Strawberry *Fragaria X ananassa*	*Rose (Berries)*	Blackberry, boysenberry, dewberry, loganberry, longberry, youngberry, raspberry
String Bean / Green Bean *Phaseolus vulgaris*	*Legume*	Alfalfa, sprouts, beans, fava, lima, mung (sprouts), navy, string, kidney, black-eyed pea, cowpea, carob, carob syrup, chickpea, garbanzo, jicama, kudzu, lentil, licorice, pea, peanut, peanut oil, red clover, senna, soybean, lecithin, soy (flour, grits, milk, oil), tamarind, tonka bean, coumarin
Sweet Potato *Ipomoea batatas*	*Morning Glory*	Sweet potato
Tea *Thea sinensis*	*Tea*	All tea: black tea, white tea, green tea etc. Does not include herbal teas
Tomato *Solanum lycopersicum*	*Potato*	Eggplant, ground cherry, pepino, melon pear, pepper (bell, sweet, cayenne, chili, paprika, pimiento), potato, tomato, tomatillo
Tuna *Thunnus albecarus*	*Mackerel*	Albacore, bonito, mackerel, skipjack, tuna
Turkey *Meleagris gallopavo*	*Turkey*	Turkey, turkey eggs
Vanilla *Vanilla planifolia*	*Orchid*	Vanilla

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Watermelon *Citrullus lanatus*	*Gourd*	Chayote, Chinese melon, cantaloupe, cucumber, gherkin, loofah, muskmelons, casaba, Crenshaw, honeydew, Persian melon, pumpkin, pumpkin seed, pumpkin meal, squash (acorn, buttercup, butternut, Boston, spaghetti), zucchini, watermelon
White Potato *Solanum tuberosum*	*Potato*	Eggplant, ground cherry, pepino, melon pear, pepper (bell, sweet, cayenne, chili, paprika, pimiento), potato, tomato, tomatillo
Whole Wheat *Triticum aestivum*	*Grass*	Barley, malt, maltose, bamboo shoots, corn, corn meal, corn oil, cornstarch, corn syrup, hominy grits, popcorn, Kamut, lemon grass, citronella, millet, oat, oatmeal, rice, rice flour, rye, spelt, sorghum grain, sorghum syrup, sugarcane, cane sugar, molasses, raw sugar, sweet corn, triticale, wheat, wheat bran, wheat bulgar, wheat flour, gluten, wheat graham, whole wheat, wheat germ, wild rice

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