



PRECISION POINT
— DIAGNOSTICS —

The information in this guide will help you to understand the results from the

P88 DIETARY ANTIGEN TESTING

Why test for food sensitivities?

The immune system is your body's way of letting you know that you may be intolerant or sensitive to certain foods. A reaction to food is an abnormal response in the gastrointestinal tract that can occur for different reasons.

Sometimes there may not be enough of a particular enzyme to digest a certain food correctly. Other times, the immune system creates antibodies to proteins in specific foods. When the immune system reacts to a food in this way, it can lead to inflammation and irritation of the intestine when eaten. Food allergies are distinct from food sensitivities. Allergies can result in life-threatening reactions. Sensitivities result in milder symptoms such as diarrhea, gas, or bloating but also create inflammation that drives many pathologies and prevents improvement. This test is the only one that looks at both.

Allergic reactions are classified into four types. Our food allergy profile detects Type I, II, III and IV responses, which are associated with a delayed allergic response that is mediated by an IgG response and immune complexes.

Within an immune complex, the complement component 3 (C3) is converted into C3d, which is an activator of the complement cascade. Our food allergy test is unique in that the test detects multiple classes of IgG and complement which results in a higher sensitivity.



What does the test tell me?

Your doctor may use the **P88 Dietary Antigen Test** to report on the degree of immune sensitivity and severity to each specific food. Our test is one of the only tests that looks not only at immunoglobulins (IgG, IgE, IgG4) but also complement, which amplifies activity of the immune system. Most tests look at one immune reaction.

We look at 4 together, giving you a true picture of the immune system.

If you have food sensitivity symptoms such as diarrhea, gas, bloating, fatigue, constipation, or hives, then your doctor is looking to pinpoint which specific foods or may be causing these symptoms by running **P88 Dietary Antigen Testing**.

How is this test different?

The Precision Point profile is published in medical literature and is used in a number of clinical trials. By looking at multiple types of immunoglobulins together as well as complement that amplifies its presence, it is easier to identify what is truly involved in your symptoms and health.

| DIETARY ANTIGEN | ALLERGY | | IMMUNE TOLERANCE TO | | SENSITIVITY | | | | |
|-----------------|----------|-------------|---------------------|----------|-------------|----------|-------|----------|------|
| | IgE | IgG (total) | IgG4 | IgG4 | IgG | IgE | C3D | C3D | |
| Almond | MODERATE | 1.22 | YES | HIGH | 8.88 | MODERATE | 2.10 | MODERATE | 1.20 |
| Apple | HIGH | 2.89 | | LOW | 0.24 | HIGH | 6.26 | LOW | 0.40 |
| Apricot | MODERATE | 0.81 | | LOW | 0.15 | | 0.00 | LOW | 0.50 |
| Asparagus | LOW | 0.20 | | LOW | 0.15 | LOW | 22.03 | LOW | 0.22 |
| Australian Mtn | | | | | | | | | |
| Avocado | | | | | | | | | |
| Banana | HIGH | 7.40 | | LOW | 0.41 | HIGH | 12.08 | LOW | 1.40 |
| Barley | MODERATE | 1.34 | | LOW | 0.42 | LOW | 4.00 | LOW | 1.20 |
| Basil | LOW | 1.35 | | LOW | 0.42 | LOW | 6.45 | | 0.20 |
| Black Pepper | | 0.00 | | | 0.00 | LOW | 5.23 | | 0.00 |
| Blackberry | LOW | 0.16 | | | 0.00 | LOW | 0.00 | | 0.00 |
| Broccoli | | 0.00 | | LOW | 0.05 | LOW | 2.39 | | 0.00 |
| Buckwheat | LOW | 0.00 | | LOW | 0.16 | LOW | 0.00 | | 0.50 |
| Cabbage | | 0.00 | YES | | | | | | |
| Cantaloupe | LOW | 0.39 | | LOW | 0.10 | LOW | 1.15 | | 0.00 |
| Cashew | MODERATE | 1.07 | | | | | | | |
| Carrot | MODERATE | 0.89 | | LOW | 0.10 | LOW | 1.16 | | 0.00 |
| Cassava | LOW | 0.12 | | LOW | 0.07 | LOW | 1.16 | LOW | 0.40 |
| Cauliflower | | 0.39 | | | | | | | |
| Celery | MODERATE | 1.11 | YES | MODERATE | 7.82 | MODERATE | 13.18 | | 0.00 |
| Chickpea | | | | | | | | | |
| Chili Pepper | | 0.00 | | | 0.00 | | | | 0.00 |
| Chives | | 1.11 | | | | | | | 1.00 |
| Citrus | HIGH | 6.00 | | | | | | | HIGH |
| Cocoa | | 0.00 | | | | | | | 0.00 |
| Corn | | 0.00 | | | | | | | 0.00 |
| Cranberry | | 0.00 | | | | | | | 0.00 |
| Cucumber | | 0.00 | | | | | | | 0.00 |
| Custard | | 0.00 | | | | | | | 0.00 |
| Dill | | 0.00 | | | | | | | 0.00 |
| Edamame | | 0.00 | | | | | | | 0.00 |
| Eggplant | LOW | 1.88 | | MODERATE | 8.80 | LOW | 4.09 | LOW | 0.80 |
| Fennel | | 0.18 | | | | | | | 0.20 |
| Goat Cheese | MODERATE | 0.58 | | LOW | 0.11 | MODERATE | 2.11 | LOW | 0.00 |
| Goffic | LOW | 0.16 | | | | | | | 0.00 |
| Gon | LOW | 0.16 | | | | | | | 0.00 |
| Grape | | 0.00 | | | | | | | 0.00 |
| Grapefruit | | 0.00 | | | | | | | 0.00 |
| Green Bean | LOW | 0.19 | YES | MODERATE | 16.22 | MODERATE | 51.31 | LOW | 1.27 |
| Guava | | 0.00 | | | | | | | 0.00 |
| Ginger | | 0.00 | | | | | | | 0.00 |
| Guar Gum | | 0.00 | | | | | | | 0.00 |
| Ham | | 0.00 | | | | | | | 0.00 |
| Horseradish | | 0.00 | | | | | | | 0.00 |
| Hot Sauce | | 0.00 | | | | | | | 0.00 |
| Ice Cream | | 0.00 | | | | | | | 0.00 |
| Jackfruit | | 0.00 | | | | | | | 0.00 |
| Jicama | | 0.00 | | | | | | | 0.00 |
| Kale | | 0.00 | | | | | | | 0.00 |
| Kidney Bean | | 0.00 | | | | | | | 0.00 |
| Kimchi | | 0.00 | | | | | | | 0.00 |
| King of Hearts | | 0.00 | | | | | | | 0.00 |
| Kumquat | | 0.00 | | | | | | | 0.00 |
| Lamb | | 0.00 | | | | | | | 0.00 |
| Lentils | | 0.00 | | | | | | | 0.00 |
| Lemon | | 0.00 | | | | | | | 0.00 |
| Lemon Juice | | 0.00 | | | | | | | 0.00 |
| Letuce | | 0.00 | | | | | | | 0.00 |
| Lily Root | | 0.00 | | | | | | | 0.00 |
| Lime | | 0.00 | | | | | | | 0.00 |
| Lime Juice | | 0.00 | | | | | | | 0.00 |
| Liquor | | 0.00 | | | | | | | 0.00 |
| Macadamia | | 0.00 | | | | | | | 0.00 |
| Mango | | 0.00 | | | | | | | 0.00 |
| Mango Pulp | | 0.00 | | | | | | | 0.00 |
| Melon | | 0.00 | | | | | | | 0.00 |
| Mint | | 0.00 | | | | | | | 0.00 |
| Mint Leaf | | 0.00 | | | | | | | 0.00 |
| Mint Seed | | 0.00 | | | | | | | 0.00 |
| Mustard | | 0.00 | | | | | | | 0.00 |



SYMPTOMS ASSOCIATED WITH FOOD REACTIONS

| | |
|---------------------------|---|
| Auto-Immune Conditions | Gas or bloating |
| Constipation or Diarrhea | Gastroesophageal reflux |
| Decreased immune function | Headache or migraine |
| Weight Gain | Hives, rash, eczema, or edema |
| Depression/Anxiety | Joint pain and inflammation |
| Fatigue/Poor Sleep | Poor absorption of valuable vitamins and minerals |

IgE and IgG4

Precision Point Diagnostics Dietary Antigen Test measures IgE similar to the skin prick test, but more reproducible. This test analyzes the serum levels of IgE antibodies for 88 different food antigens, as well as IgG4 total, which is indicative of immune tolerance. The serum allergy test has several advantages over a skin prick test. It is much safer for the patient, as they are not being directly exposed to antigens which may cause a severe reaction. The serum test is also more reproducible and sensitive and therefore more accurate.

IgE antibodies are one of five subclasses of antibodies in our immune system. Antibodies are proteins that attack antigens, such as bacteria, viruses and allergens to keep our body healthy.

Blocking Potential

| Allergen Range Values | IgE | Immune Tolerance to IgE | IgG4 |
|-----------------------|------|-------------------------|------|
| | 0.78 | Yes | 1.57 |

If IgG4 is > IgE = Immune tolerance

Sometimes the antibodies become confused and will attack food proteins as well. The IgE antibody response is the most common known food allergy response. It usually occurs immediately and can create severe symptoms, such as swelling, hives, itching, and in some cases, anaphylaxis.

IgG4, which is a subclass of IgG, is another antibody in the immune system. IgG4 blocks IgE antibodies from binding to receptor sites and releasing histamine. During treatment, when an allergist gives injections for desensitization, it is to increase IgG4 to block IgE, not to lower IgE. When the qualitative amount of IgG4 is higher than IgE, it creates a blocking effect and keeps the IgE from causing anaphylaxis.

The presence of this blocking agent assists your practitioner in diagnosis and treatment by helping to determine the severity of your reaction to certain foods.

— BLOCKING POTENTIAL = No Symptoms





IgG and Complement

Many have noted that IgG alone seems to not tell the entire story, and that is true. When IgG and complement are both present together this amplifies reactions, making them up to 1000 times more reactive.

Combining complement with IgG gives a more precise result. Complement, when elevated, increases cytokines in general and is a key player in increasing inflammation in many conditions. When we remove foods based on both IgG and complement, clinical symptoms resolve more quickly.

Features of this Test

- Most Tests Measure one way the immune system reactions to food, this test measures 4 immune reactions to 88 different dietary antigens.
- This test shows you which allergies you have developed a tolerance to, most just show allergic reaction but not when you have adapted to the antigen.
- Precision provides an Immune Index, listing all foods from highest to lowest so you know which foods to avoid in a simple format.
- Provides multiple diet choices for the patient so you can match their needs from more symptomatic to less symptomatic.





PRECISION POINT DIAGNOSTICS

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P88-Dietary Antigen Test

A Targeted Approach to Wellness



P88 Guide

PATIENT INFO

NAME: **Sample Patient**
REQUISITION ID: 2307140049
DOB: 3/11/1957
SAMPLE DATE: 7/25/2023
RECEIVE DATE: 8/1/2023
DRAFT DATE: 8/15/2023

CLINIC INFO

Research And Development
ADDRESS: 123 Sample Lane
Sample City, SS 00000
PHONE: (000)000-0000
FAX: (000)-000-0000

Patient Report: Summary

| DIETARY ANTIGEN | ALLERGY | | | SENSITIVITY | |
|-----------------|----------|----------|-------------------------------------|-------------|------|
| | IgE | IgG4 | Immune Tolerance IgG4 > IgE Abs* | IgG | C3d |
| Almond | LOW | | | LOW | LOW |
| Apple | LOW | LOW | | LOW | |
| Asparagus | LOW | | | LOW | |
| Aspergillus Mix | LOW | | | LOW | |
| Avocado | LOW | LOW | YES | | |
| Banana | LOW | LOW | | LOW | |
| Barley | MODERATE | HIGH | YES | MODERATE | |
| Beef | | MODERATE | YES | MODERATE | |
| Black Pepper | LOW | | | MODERATE | |
| Blueberry | LOW | | | MODERATE | LOW |
| Brewer's Yeast | | | | MODERATE | |
| Broccoli | MODERATE | | | HIGH | |
| Cabbage | LOW | LOW | | LOW | |
| Cacao | LOW | | | MODERATE | |
| Candida | LOW | MODERATE | YES | LOW | HIGH |
| Cantaloupe | LOW | | | LOW | |
| Carrot | MODERATE | | | LOW | |
| Casein | LOW | LOW | YES | LOW | |
| Cashew | | MODERATE | | LOW | LOW |
| Cauliflower | MODERATE | LOW | YES | LOW | |
| Celery | LOW | | | LOW | |
| Cherry | LOW | LOW | | LOW | |
| Chicken | LOW | | | LOW | |
| Cinnamon | HIGH | | | MODERATE | |
| Clam | HIGH | LOW | | MODERATE | LOW |
| Coconut | LOW | | | MODERATE | LOW |
| Codfish | LOW | LOW | YES | HIGH | |
| Coffee | LOW | LOW | YES | MODERATE | LOW |
| Corn | HIGH | | | LOW | |
| Cottonseed | LOW | | | HIGH | |
| Cow's Milk | | LOW | YES | LOW | |
| Crab | | | | HIGH | LOW |
| Cucumber | | | | LOW | |
| Egg Albumin | HIGH | LOW | | LOW | LOW |
| Egg Yolk | LOW | LOW | YES | LOW | |
| English Walnut | LOW | MODERATE | YES | HIGH | LOW |
| Flax Seed | MODERATE | LOW | | LOW | |
| Flounder | LOW | LOW | | LOW | |

This test has been developed and its performance characteristics determined by Precision Point Diagnostics. It has not been cleared by the U.S. Food and Drug Administration.

PATIENT NAME:

Sample Patient

REQUISITION ID:

2307140049

DRAFT DATE:

8/15/2023

Patient Report: Summary

| DIETARY ANTIGEN | ALLERGY | | | SENSITIVITY | |
|-----------------|----------|----------|-------------------------------------|-------------|----------|
| | IgE | IgG4 | Immune Tolerance IgG4 > IgE Abs* | IgG | C3d |
| Garlic | | | | MODERATE | |
| Ginger | LOW | LOW | YES | MODERATE | MODERATE |
| Gluten | LOW | MODERATE | YES | LOW | |
| Goat's Milk | LOW | MODERATE | YES | LOW | |
| Grapefruit | MODERATE | LOW | | MODERATE | |
| Grapes | HIGH | | | LOW | |
| Green Olive | LOW | | | LOW | |
| Green Pea | LOW | MODERATE | YES | LOW | |
| Green Pepper | LOW | LOW | | LOW | |
| Halibut | LOW | | | LOW | |
| Honeydew | HIGH | MODERATE | | MODERATE | |
| Hops | LOW | | | LOW | |
| Kidney Bean | HIGH | LOW | YES | LOW | LOW |
| Lemon | LOW | | | LOW | MODERATE |
| Lettuce | HIGH | | | LOW | |
| Lima Bean | LOW | LOW | YES | LOW | |
| Lobster | LOW | LOW | YES | LOW | |
| Mushroom | LOW | | | LOW | |
| Mustard | LOW | LOW | YES | LOW | |
| Navy Bean | MODERATE | LOW | | LOW | |
| Oat | | LOW | YES | LOW | |
| Onion | LOW | | | LOW | |
| Orange | LOW | LOW | YES | LOW | |
| Peach | LOW | | | HIGH | |
| Peanut | LOW | MODERATE | YES | LOW | |
| Pear | | | | | |
| Pecan | | | | HIGH | |
| Pineapple | LOW | LOW | YES | LOW | |
| Plum | | | | | |
| Pork | LOW | LOW | YES | LOW | |
| Rice | LOW | | | HIGH | |
| Rye | | | | LOW | |
| Salmon | LOW | | | | |
| Scallops | LOW | | | HIGH | |
| Sesame | | | | MODERATE | LOW |
| Shrimp | LOW | | | LOW | MODERATE |
| Soybean | LOW | LOW | | LOW | |
| Spinach | LOW | | | LOW | |
| Strawberry | LOW | | | LOW | |
| String Bean | | | | LOW | LOW |
| Sweet Potato | LOW | | | LOW | LOW |
| Tea | | | | MODERATE | |
| Tomato | LOW | | | LOW | |
| Tuna | | | | MODERATE | |
| Turkey | LOW | | | LOW | |
| Vanilla | LOW | | | LOW | |
| Watermelon | LOW | | | LOW | |
| White Potato | LOW | | | LOW | |
| Whole Wheat | LOW | LOW | | HIGH | |
| Yellow Squash | LOW | MODERATE | YES | LOW | |

| Reference Range | High | Medium | Low | Normal |
|----------------------|---------|-----------|----------|--------|
| Increased Prevalence | > 10% | >= 50-90% | > 10-50% | < 10% |
| Average Prevalence | >Top 5% | >=75-95% | > 10-75% | < 10% |

Reference Range is based on how reactive a person is compared to population distribution.

Increased Prevalence: Foods that more people have a reaction to including dairy and casein, wheat and gluten, shellfish, tree nuts, and eggs.

Average Prevalence: All other foods.

* Immune Tolerance is based upon the absolute (Abs) value of IgG4 compared to the absolute value of IgE.

This is different from percent reactivity which is given in the summary page to easily see which foods are the most reactive. Find absolute values for each food in the references range on the test results between pages 6-12.

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ADVANCED INTESTINAL BARRIER ASSESSMENT

Imbalances in Zonulin, Histamine, DAO and LPS are associated with intestinal permeability, often referred to as, “leaky gut.”

When the gut barrier is weakened, a person is more vulnerable to food antigens, toxins, and unfriendly microbes. A leaky gut tears down the body’s defenses and opens up the system to increased inflammation.

Common causes of intestinal permeability are bacterial overgrowth, food sensitivities including gluten sensitivity, antibiotics, PPI inhibitors, stress, food additives, NSAIDs, and alcohol consumption.

Reducing inflammation and healing the GI lining can help restore the GI barrier and normalize Zonulin, DAO, histamine, and LPS.

Zonulin

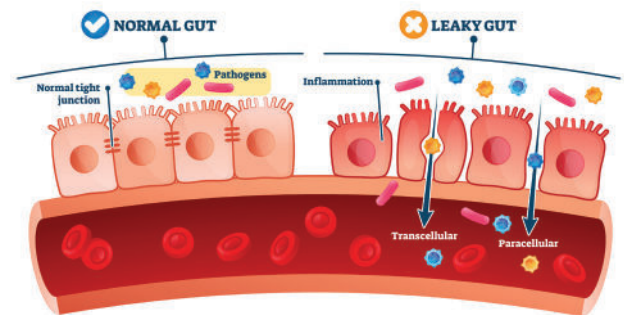
High plasma zonulin is associated with intestinal permeability. Zonulin is a protein that leads to the break-down of tight gap junctions in the GI lining. These junctions are critical for a healthy barrier against the outside world. Low zonulin has no impact.

LPS

An elevated Lipopolysaccharide (LPS) reaction indicates intestinal permeability or “leaky gut”. When LPS is high in the blood, it means they are passing not only between intestinal cells, but also through the cells, potentially causing neuro-inflammation and brain injury.

When a patient tests on the low end of the spectrum for an immune response for LPS, this is a good indication that their immune system is not functioning as it should, which means the patient can no longer fight infections as they should and experience gut irritation.

LEAKY GUT



DAO

Diamine Oxidase (DAO) is histamine’s vital counterpart and the primary enzyme responsible for keeping histamine levels in check. DAO degrades extracellular histamine and is mainly produced in the microvilli of the small intestine. When diamine oxidase is low it means the patient cannot properly break down Histamine.

DAO: Histamine Ratio

The DAO: Histamine Ratio helps detect even subtle imbalances between Histamine and DAO levels. Even if the DAO enzyme level is normal, symptoms can occur when histamine is high. A low ratio indicates that there may not be enough of the DAO enzyme relative to the amount of histamine in the body.





ANALYTES

LOW LEVELS

| | |
|--------------------------|--|
| Zonulin | Low Zonulin is not clinically significant. |
| DAO | Low DAO is a result of atrophied microvilli demonstrating gut permeability. This will also result in an inability to degrade Histamine creating sensitivity and symptoms associated with histaminosis. See high histamine for treatment. |
| Histamine | Low levels can be associated with fatigue, depression and certain types of schizophrenia. Histidine and accessory amino acids can be given to raise levels. |
| DAO: Histamine | A high ratio shows that the gut lining is in balance between its ability to make and degrade histamine. |
| LPS IgA, IgM, IgG | <p>Low LPS Antibodies are associated with an immune system that is chronically worn down. IBS and IBD can both be a result of an infection that was chronic and that has resulted in little to no immune reserve. Immunoglobulins are an excellent intervention.</p> <p>Adequate Vitamin A and D as well as adequate protein can also help to increase levels. Assume there is a long-term infection that has decreased levels and consider antimicrobials such as Berberine and Garlic as well.</p> |





ANALYTES

HIGH LEVELS

| | |
|-------------------------------------|--|
| <p>Zonulin</p> | <p>Possible bacteria, yeast, gluten. Treatment:</p> <ul style="list-style-type: none"> • Treat dysbiosis with garlic, oregano, and with berberines from Goldenseal or Oregon grape. • Immunoglobulins sourced from colostrum, egg, or serum because immunoglobulins block Zonulin from binding to tight junctions • Remove wheat/gluten. |
| <p>DAO</p> | <p>DAO will increase initially to compensate for higher levels of histamine from dysbiosis and/or immune dysregulation of foods. It is a compensatory response due to challenge of Histamine. Treat by lowering Histamine. Higher levels may also just be due to healthy microvilli and a robust production.</p> |
| <p>Histamine</p> | <p>Increased levels are secondary to antigens causing mast cell degranulation. Also, certain bacteria can create histamine and certain foods are higher in histamine. Treatments to increase DAO: Oral DAO, Omega 3 fatty acids, Vitamin C, Copper and b6 as cofactors, and Sacchromyces. Treatments to lower histamine: Oral DAO, SAME to increase methylation of Histamine, or B5 to acetylate Histamine. Other therapies for degranulation of mast cells or histamine producing cells include: Quercetin, Vitamin C, and Omega 3 fatty acids. Other therapies to decrease degranulation of mast cells or histamine producing cells include: Quercetin, Vitamin C and Omega 3 fatty acids.</p> |
| <p>DAO: Histamine</p> | <p>When the ratio is low it means there is not enough Diamine Oxidase to degrade histamine. See Histamine section above for treatment.</p> |
| <p>LPS IgA, IgM, IgG</p> | <p>This indicates that the immune system is actively fighting bacterial overload. Treatments include antimicrobials to lower bacterial load. Berberine and Garlic are suggested as well as immunoglobulins to support the immune system.</p> |
| <p>LPS High IgM: Low IgG</p> | <p>A high IgM with a Low IgG means there was poor seroconversion to a matured response to LPS. Antimicrobial therapies and immunoglobulins will support improvement in these areas. Toxicity can block seroconversion from IgM to IgG. Detox may be warranted.</p> |





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Advanced Intestinal Barrier Assessment

A "Targeted" Approach to Wellness

PATIENT INFO

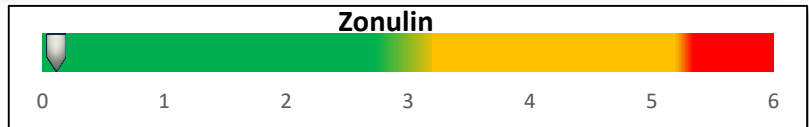
NAME: John Doe
REQUISITION ID: DAO211470002
DOB: 12/8/1991
SAMPLE DATE: 4/20/2021
RECEIVE DATE: 4/21/2021
DRAFT DATE: 7/7/2022

CLINIC INFO

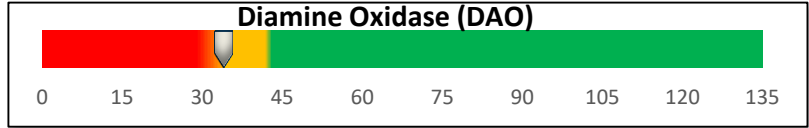
RESEARCH & DEVELOPMENT
9 DUNWOODY PARK
DUNWOODY, GA 30338
Phone: (123)123-1234
Fax: (123)123-1234

ADVANCED INTESTINAL BARRIER ASSESSMENT (PLASMA) | 1/2

0.11
Normal Range: < 3.19 ng/ml
NORMAL



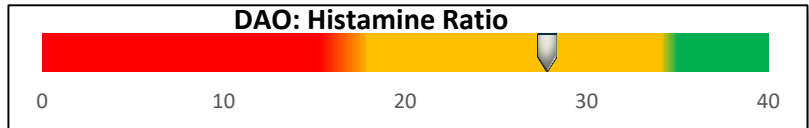
34.00
Normal Range: > 42.9 ng/mL
LOW



1.22
Normal Range: < 1.2 ng/mL
NORMAL



27.82
Normal Range: > 34.0 ng/mL
BORDERLINE LOW



A high DAO-to-Histamine ratio suggests that there is sufficient DAO present to degrade any free histamine.
Conversely, a low DAO:Histamine ratio may be more indicative of histamine intolerance.

This test has been developed and its performance characteristics determined by Precision Point Diagnostics. It has not been cleared by the U.S. Food and Drug Administration.

PATIENT NAME:

John Doe

REQUISITION

DAO211470002

DRAFT DATE:

7/7/2022

ADVANCED INTESTINAL BARRIER ASSESSMENT (PLASMA) | 2/2

0.58

Normal RANGE: 0.83-4.47 µg/mL

LOW

LPS IgA



0.59

Normal RANGE: 9.09-31.5 µg/mL

LOW

LPS IgG



2.11

Normal RANGE: 2.5-9.4 µg/mL

BORDERLINE LOW

LPS IgM



This test has been developed and its performance characteristics determined by Precision Point Diagnostics. It has not been cleared by the U.S. Food and Drug Administration.



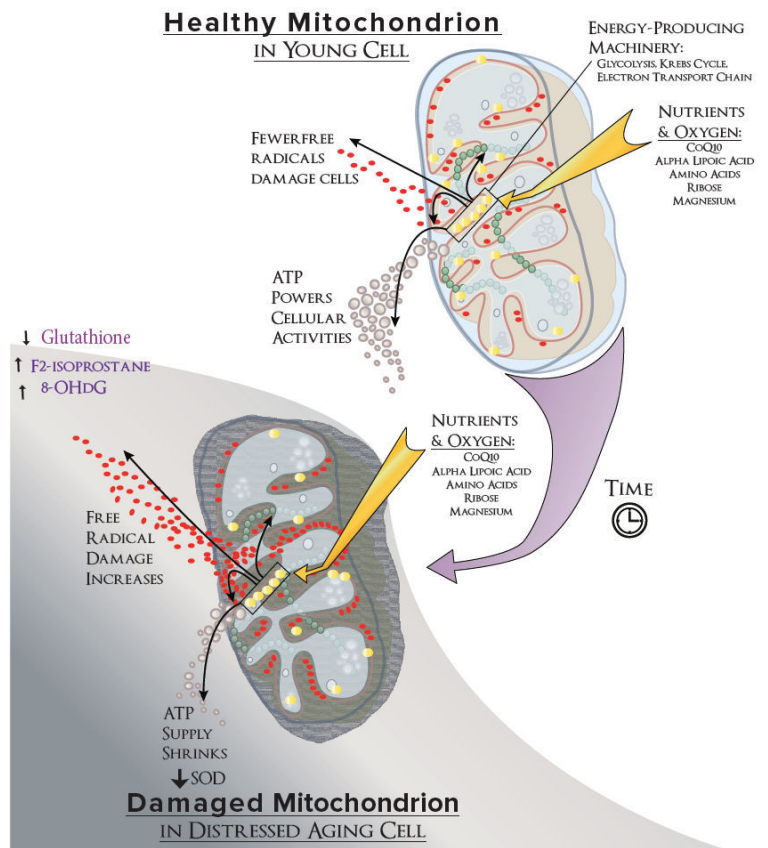
ADVANCED OXIDATIVE STRESS TEST

The Advanced Oxidative Stress test shows how much oxidative stress there is in the body and how effectively antioxidant enzymes remove it. Reactive oxygen species (ROS, also called free radicals) are produced by virtually every metabolic process in the body and are counterbalanced by the action of antioxidants.

Mitochondria are the main producers of ROS and the main victims of ROS. Two systems are important for proper removal of ROS. One is intracellular reduced glutathione, the primary antioxidant found within cells. The other is the superoxide dismutase (SOD) family, the main enzymes which remove ROS from the cell and mitochondria. When these antioxidants do not function normally, free radicals accumulate, which leads to cellular damage including DNA, protein and lipid membrane dysfunction.

Oxidative stress can increase a person's risk for heart disease, neurologic conditions, cancers, or toxicity. Oxidative damage to lipids occurs early in the development of atherosclerosis and can lead to cardiovascular and cerebrovascular disease. Oxidative damage to mitochondria and DNA are hypothesized to be involved in the pathogenesis of Alzheimer's disease. As seen in Table 1, oxidative stress is thought to contribute to Parkinson's disease, cancer, and autoimmune thyroiditis.

Oxidative damage in the central nervous system has been implicated in neuropathological changes. It has been estimated that 3-10% of the oxygen used by tissues is converted into reactive oxygen species, posing a threat to nearby cells and tissues. The nervous system consumes a high amount of oxygen but does not have high antioxidant defenses, making it susceptible to damage by reactive oxygen species and reactive nitrogen species. Both oxidative and nitrosative stress have been implicated in neurodegenerative and neurological disorders as well as traumatic brain injury.



Conditions Associated with Oxidative Stress

| | | |
|----------------------|-----------------------------|--------------------------------|
| Alzheimer's disease | Chronic inflammation | Premature labor and stillbirth |
| Atherosclerosis | Diabetes | Rapid aging |
| Autism | Gastrointestinal disorders | Schizophrenia |
| Autoimmune disorders | Hormonal imbalance | Stroke |
| Bipolar disorder | Major depressive disorder | Thyroid dysfunction |
| Cancer | Neurodegenerative disorders | |

Cellular Antioxidant Defense Systems

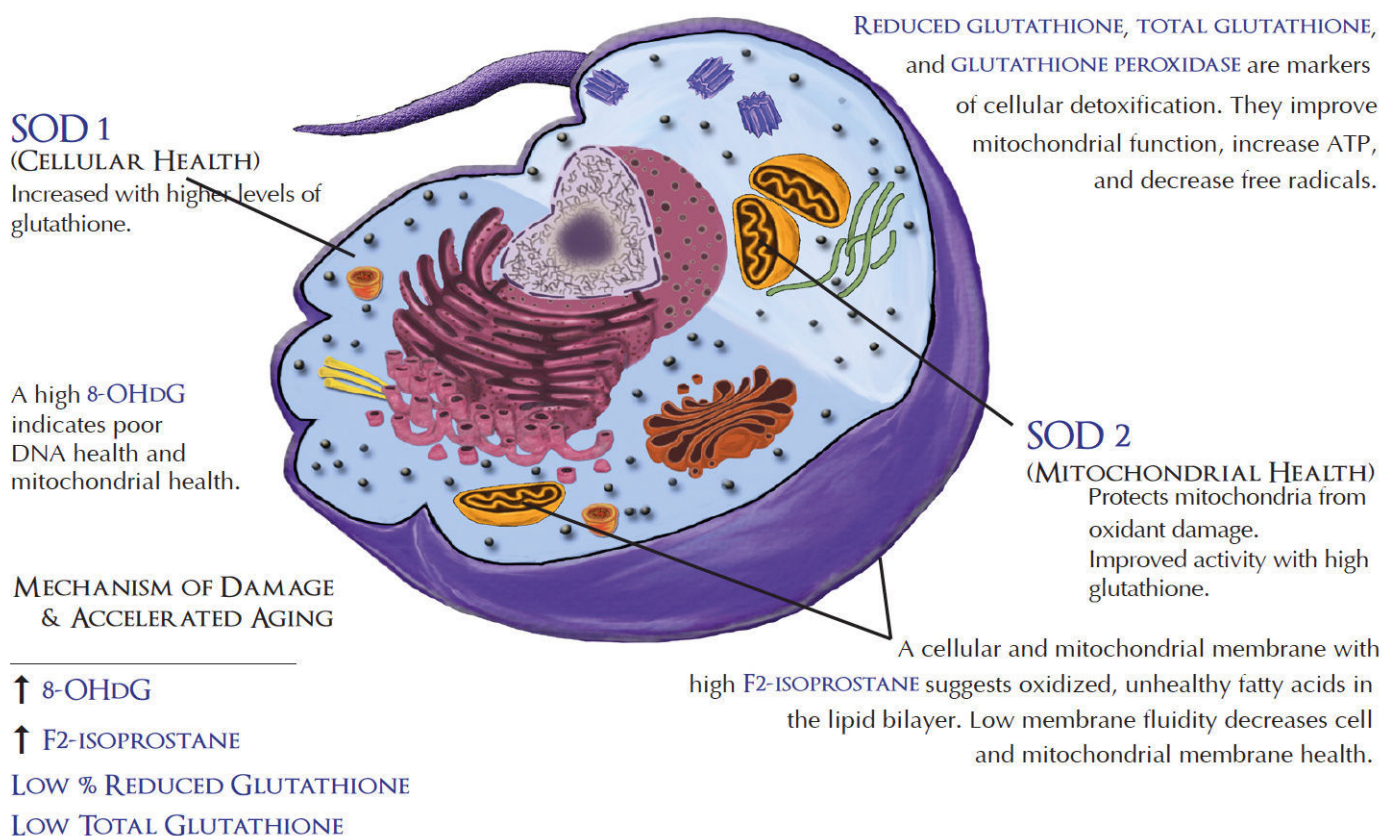


Figure 2. High levels of 8-OHdG, F2-isoprostane, with low glutathione and reduced glutathione indicate cell damage and free radical overload.



Glutathione

Total glutathione includes both reduced and oxidized glutathione levels. Glutathione is constantly undergoing oxidation and reduction and therefore exists in two forms, reduced and oxidized. The reduced form of glutathione is the radical scavenger (or antioxidant). Oxidized glutathione is the “used up” form of glutathione. Oxidized glutathione has contributed its antioxidant potential and then must be recycled to the reduced form of glutathione to be useful once again. Total glutathione levels can indicate the body’s total reserves of glutathione for removing harmful free radicals and toxins. Total glutathione may be low due to genetic variation in enzymes involved in glutathione production, nutritional insufficiency, or exposure to reactive chemicals or medications.

The Advanced Oxidative Stress Test measures these biomarkers from a whole blood and urine specimen:

| | |
|---------------------------------|---|
| Total glutathione (whole blood) | Percent reduced glutathione (whole blood) |
| F2-isoprostane (urine) | 8-hydroxy-2'-deoxyguanosine (8-OHdG, urine) |

F2-Isoprostane

F2-isoprostane (F2-isoprostoglandin, 8-iso-prostaglandin F2 α) is the oxidized degradation product of arachidonic acid, a fatty acid with significant inflammatory potential. Urinary F2-isoprostane is the gold standard marker of lipid peroxidation in biological specimens. F2-isoprostane can cause vasoconstriction in the kidneys, lungs, liver, bronchi, blood and lymph vessels, uterus and gastrointestinal tract. F2-isoprostanes are associated with increased perception of pain and are elevated in hyperglycemic diabetics, smokers, and in those with autism. F2-isoprostanes are thought to be a predictor of coronary artery disease and correlates with lesions, hypertension, and atherosclerotic plaques.

8-OHdG

8-OHdG (8-hydroxy-2'-deoxyguanosine) is an oxidized base that has been identified and removed from the DNA, and excreted in the urine. It is the most studied marker of oxidative damage to DNA. DNA damage is a normal part of life, but chronic elevation can be a concern because it signals increased oxidative damage. Oxidative stress as evidenced by high 8-OHdG has been found in depression, fatigue, diabetes, extreme exercise, neurodegenerative disease, toxicity, and other conditions. High urinary 8-OHdG was found in patients with major depression and chronic fatigue syndrome. There is a correlation between 8-OHdG levels and scores for sadness and flu-like malaise. Extreme sports, medications, and environmental toxins, such as arsenic and mercury, can increase 8-OHdG, as can antibiotics and chemotherapy. DNA damage has been shown to be involved in the pathogenesis of Alzheimer’s disease. High 8-OHdG is correlated with Alzheimer’s and the duration of illness.





Oxidant Stress Treatment Options

Oxidative stress can cause high or low levels of an antioxidant enzyme. At the initial onset of oxidative stress, the body produces more of the enzyme to cope with the free radicals. However, with chronic oxidative stress, enzyme levels are depleted and cannot respond properly to the oxidant challenge. Toxins can also deplete antioxidant enzymes. Therefore, treatment options are the same for both high and low

levels of GSH. In contrast, F2-isoprostanes and 8-OHdg are elevated in cases of oxidative stress. Generally, treatments include nutritional support for detoxification, stimulation of Nrf2-ARE pathway, antioxidants, minerals, adjunctive nutritional treatments, and elimination of toxins, infection, and environmental sources of oxidative stress. Females may have higher needs for antioxidants.²⁷

| Biomarker | Increase Antioxidant Defenses | Reduce Oxidative Stressors |
|-----------------------|---|---|
| Total GSH | Se, B vitamins, NAC, ALA, amino acids, taurine, GSH, SAG, broccoli seed extract or glucaphorarin, turmeric, green tea, pterostilbene, black pepper, resveratrol | Avoid toxins, infections, and unnecessary medications |
| Reduced GSH | ALA, B vitamins, Se, Nrf2 activators, glucaphorarin, SAG, vitamins A, E, D and CoQ10 | Avoid toxins, infections, and unnecessary medications |
| F2-isoprostane | Omega-3 fatty acids, SAG, vitamins A, E, D, CoQ10, dietary antioxidants, reduce BMI | Reduce arachidonic acid, stop smoking |
| 8-OHdG | Vitamin C, flavonoids, water-soluble phytonutrients, green tea, broccoli seed extract or glucaphorarin, turmeric, pterostilbene, black pepper, resveratrol, quercetin | Avoid toxins, infections, and unnecessary medications |



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PATIENT INFO

NAME: SAMPLE PATIENT
REQUISITION ID: 2007040000
DOB: 1/1/1981
SAMPLE DATE:
RECEIVE DATE:
REPORT DATE:

CLINIC INFO

Precision Point Diagnostics
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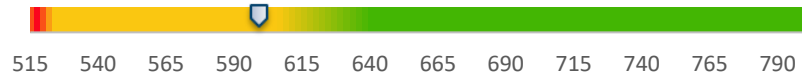
ADVANCED OXIDATIVE STRESS PROFILE

599.2

Normal Range: >613.9 μ M

BORDERLINE

Total Glutathione



99.4

Normal Range: >99.1%

OPTIMAL

Percent Reduced Glutathione

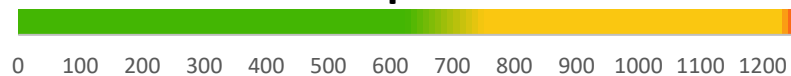


1318.7

Normal Range: <720.9 pg/mg*

ABNORMALLY HIGH

F2-Isoprostane



351.3

Normal Range: <271.0 pg/mg*

BORDERLINE

8-OHdG



13.8

m/dL

*pg/mg of Creatinine

Creatinine

This test was developed and its performance characteristics determined by Precision Point Diagnostics or third-party reference affiliates. FDA clearance is not currently required for clinical use. Results are not intended to be used as the sole means for clinical diagnosis. Clinical correlation is required.



ADVANCED ADRENAL STRESS TEST

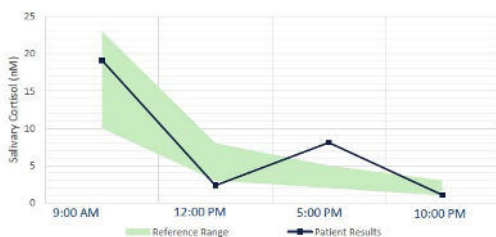
Why evaluate adrenal function?

Adrenal glands produce hormones that help regulate the immune system, metabolism, and other essential bodily functions.

Robust adrenal function is necessary for maintaining energy levels, circadian rhythms and a healthy stress response. Chronic stress can cause the adrenal glands to become fatigued and run down, which can cause symptoms like anxiety, insomnia, and irritability.

This can lead to chronic fatigue, inability to cope with the stressors in life, and even chronic pain. Adrenal fatigue can drag down hormone levels and damage your immune system.

Testing your adrenal function is the first step in figuring out why you are feeling out of balance, and what solutions will work best with your body to correct it. By monitoring adrenal function, you can determine the impact that stress is having on the body.



| | PATIENT RESULTS (nM) | NORMAL RANGE (nM) |
|----------------|----------------------|-------------------|
| 9:00 AM | 19.1 | 10 - 23 |
| 12:00 PM | 2.3 LOW | 3 - 8 |
| 5:00 PM | 8.1 HIGH | 2 - 5 |
| 10:00 PM | 1.1 | 1 - 3 |
| CORTISOL TOTAL | 30.6 | 16 - 39 |

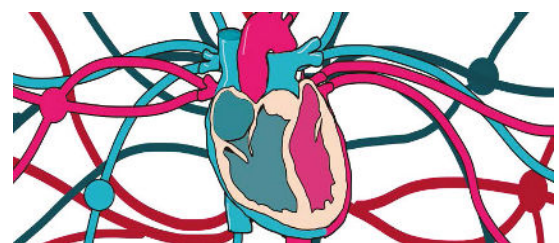
| | PATIENT RESULTS | NORMAL RANGE |
|------|--------------------|----------------|
| DHEA | 1000.0 HIGH | 18 - 225 pg/ml |
| slgA | 272.3 | 53 - 653 µg/ml |

What does the test tell me?

The Adrenal Stress Test will show if your body is struggling to make stress hormones and if you are in stress overdrive, known as "fight or flight." This non-invasive saliva test that measures cortisol, slgA, and DHEA. Four samples are collected from each patient in a 24-hour time frame.

Cortisol is the body's main stress hormone, and helps regulate blood pressure, metabolism of fats and carbohydrates, anti-inflammatory response, blood sugar level, and immune response. slgA (secretory immunoglobulin A) antibodies are critical for the proper function of your immune system and gastrointestinal tract, making up 80-90% of the immune system. This is the body's first line of defense against invading pathogens and toxins. Levels of slgA can provide insight into how stress is affecting your immune system.

DHEA (dehydroepiandrosterone) is the most abundant circulating steroid in the body, and is best known as a metabolic intermediate for the production of androgens and estrogens. DHEA production is measured alongside cortisol production. Unfavorable ratios of DHEA to cortisol have been linked to depression, anxiety, and other psycho-emotional disorders.





Adrenal Stress May Cause

| |
|--|
| Abdominal weight gain |
| Anxiety |
| Depression |
| Exercise intolerance |
| Fatigue |
| Increased infection susceptibility |
| Insomnia |
| Low blood pressure |
| Pain |
| Poor coping skills |
| Shakiness & irritability between meals |

What will my doctor recommend if my results are abnormal?

If your results are abnormal, your doctor may prescribe nutritional & adrenal support, lifestyle modifications, hormone supplementation, or adaptogenic herbs. By finding out the root cause of problematic symptoms, your doctor can make effective treatment protocols to support your immune system.





REPORTS

Normal

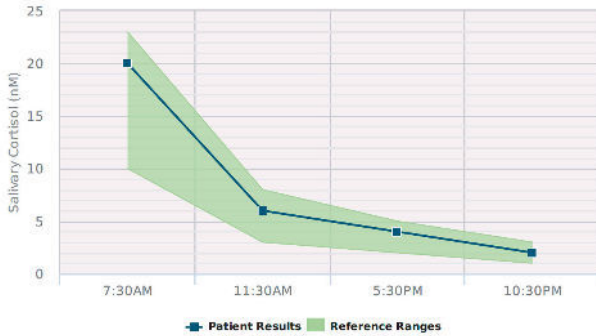


Figure 1: Normal Adrenal Function.

There should be a peak of cortisol in the a.m. and slowly decrease throughout the day. This pattern means that stress response is optimal. How we handle stress is critical to energy, reduction of heart disease and cancer prevention. It is also this normal pattern that helps us to set our circadian rhythm so that we feel like waking in the morning, and slowly decrease throughout the day so that we stay alert but are ready to sleep by night.

Moderate Adrenal Fatigue



Figure 2: Moderate Adrenal Fatigue.

One of the most important pieces of adrenal function is to peak in the a.m. If this ability declines, shifts in well-being begin. A low a.m. peak or low cortisol at any point in the day is moderate adrenal fatigue.

Severe Adrenal Fatigue

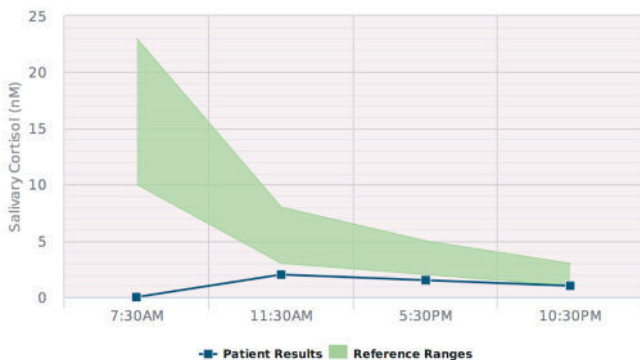


Figure 3: Severe Adrenal Fatigue.

In this state, one is bottomed out, has no energy and has the greatest levels of symptoms. Adrenal exhaustion means we have poor stress response and are more at risk for many conditions.

Insomniac Adrenal Fatigue

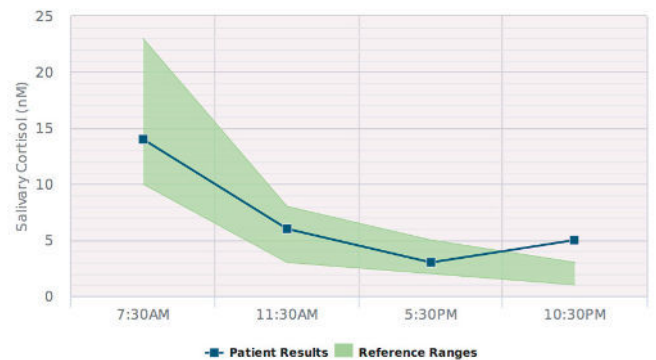


Figure 4: Insomniac Adrenal Function.

Cortisol increasing when it should be coming down. This will result in insomnia or poor sleep quality.

