# Food Summary

VibrantAmerica
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## PATIENT

## PROVIDER

Planet Naturopath

## Food Summary

Blank Cell - Low Reactivity  High Reactivity  Moderate Reactivity  Not Ordered or N/A

| | Food Name | IgA | IgG | IgE | IgG4 | C3D | Peptide level sensitivity | Food Name | IgA | IgG | IgE | IgG4 | C3D | Peptide level sensitivity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| High Reactivity Foods | Wheat | - | - | - | - | - |  | | | | | | | |
| Moderate Reactivity Foods | Intestinal Perm. | - | - | - | - | - |  | | | | | | | |

# WheatZoomer

VibrantWellness
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**Final Report Date:**

**Accession ID:**

| LAST NAME | FIRST NAME | GENDER | DATE OF BIRTH | ACCESSION ID | DATE OF SERVICE |
|---|---|---|---|---|---|
| | | | | | |

## PATIENT

Gender: Female
Age: 39
Height: 0'0"

## PROVIDER

Practice Name: Planet Naturopath

Phlebotomist: 0000000

**Vibrant Wellness** is pleased to present to you, **WheatZoomer** testing, to help you make healthy lifestyle and dietary choices in consultation with your healthcare provider. It is intended to be used as a tool to encourage a general state of health and well-being.

**The Vibrant Wheat Zoomer** is a wheat sensitivity analytics tool consisting of a microarray platform of wheat antigens which offers very specific antibody-to-antigen recognition. The panel is designed to assess an individual's IgG and IgA sensitivity to these antigens at the peptide level. Additionally, the panel tests for the HLA isoforms associated with celiac disease and wheat allergy testing is performed by checking for IgE antibodies against wheat.

**Interpretation of Report:** The summary score provided for Wheat Zoomer is a unified score calculated from the IgE, IgA and IgG reactivity of the individual to the respective antigens with higher weightage for IgE than IgA than IgG. Weightage is also assigned to the antigens based on its importance and abundance in the specific food that is tested.The intestinal permeability score is a unified score calculated from the serum zonulin result and antibody reactivity to the antigens in the Intestinal Permeability panel (anti-zonulin IgA, anti-zonulin IgG, anti-actin IgA, anti-actin IgG, and anti-LPS IgA and anti-LPS IgG+IgM), with higher weightage for IgA than IgG. This takes into account the titer value even when the result may be in control.

In the detailed report, the test results of antibody levels to the individual proteins are calculated by comparing the average intensity of the individual protein antibody to that of a healthy reference population. Reference ranges have been established for pediatric and adult population using 192 healthy individuals. The results are displayed as High Risk, Moderate or In Control. A High Risk (Red) result indicates that you have an increased reactivity to the antigen with respect to the reference range. A Moderate (Yellow) sensitive result indicates that you have a moderate reactivity to the food antigen with respect to the reference range. A Negative or In Control (Green) result indicates that you have a low reactivity to the food antigen with respect to the reference range. Vibrant utilizes proprietary fluorescent analysis which is designed to assay specific total IgG (subclasses 1, 2, 3, 4) and total IgA (subclasses 1, 2) antibodies. The classification of High Risk to Moderate to In Control denotes the level of antibody reactivity detected through this analysis.

**Ratings for the references** are calculated based on the Impact Factor, Citations, and Study Population of the references which correlate the antigen/antibody with the associated conditions. It is indicated based on a star based system (1 star – 5 stars) with 5 stars indicating the best correlation of the protein with the potential associated risk. The Impact Factor of the journal in which the reference is published is the number of citations received by articles published in that journal during the two preceding years, divided by the total number of articles published in that journal during the two preceding years. Study population includes the number of samples tested along with gender, age and ethnicity of the population.

The Vibrant Wellness platform provides tools for you to track and analyze your general wellness profile. Testing for Wheat Zoomer panel is performed by Vibrant America, a CLIA certified lab CLIA#:05D2078809. Vibrant Wellness provides and makes available this report and any related services pursuant to the Terms of Use Agreement (the "Terms") on its website at www.vibrant-wellness.com. By accessing, browsing, or otherwise using the report or website or any services, you acknowledge that you have read, understood, and agree to be bound by these terms. If you do not agree to accept these terms, you shall not access, browse, or use the report or website. The statements in this report have not been evaluated by the Food and Drug Administration and are only meant to be lifestyle choices for potential risk mitigation. Please consult your physician/dietitian for medication, treatment, or lifestyle management. This product is not intended to diagnose, treat, or cure any disease.

Please Note - It is important that you discuss any modifications to your diet, exercise and nutritional supplementation with your physician before making any changes.

# WheatZoomer

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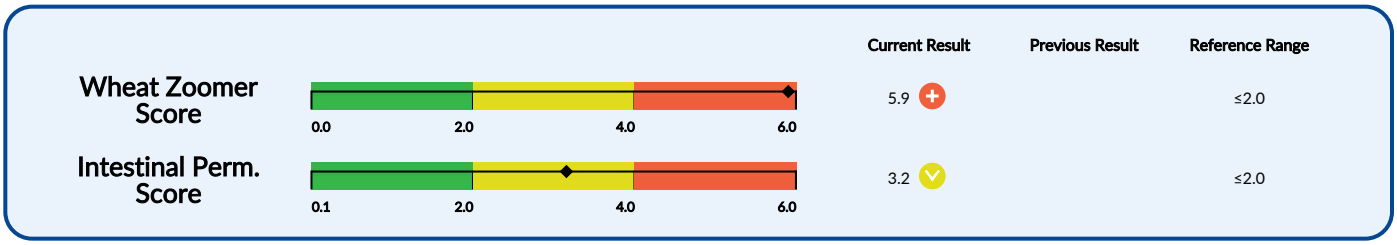
## Sample Test




| Positive | | Moderate | |
|---|---|---|---|
| **IgG** | **IgA** | **IgG** | **IgA** |
| **Intestinal Permeability Panel**<br>Anti-Zonulin<br>Anti-LPS (IgG + IgM)<br>**Gliadin Panel**<br>Alpha-Beta Gliadin<br>Omega Gliadin<br>Gluteomorphin<br>**Glutenin Panel**<br>HMW Glutenin<br>**Non-Gluten Wheat Panel**<br>Serpin<br>Amylase/Protease Inhibitors | | **Wheat Germ Panel**<br>Wheat Germ Agglutinin<br>**Gliadin Panel**<br>Prodynorphin<br>**Non-Gluten Wheat Panel**<br>Globulins | |

| Negative | |
|---|---|
| **Celiac** | Transglutaminase 2, DGP |
| **tTG/DGP Complex** | tTG/DGP Fusion Peptide |
| **Intestinal Permeability Panel** | Anti-Actin |
| **Transglutaminase Panel** | Transglutaminase 3, Transglutaminase 6 |
| **Gliadin Panel** | Alpha Gliadin, Gamma Gliadin |
| **Glutenin Panel** | LMW Glutenin |
| **Non-Gluten Wheat Panel** | Farinins, Purinin |

## Wheat Allergy Panel

| Test name | In Control | Moderate | High Risk | In Control Range | Moderate Range | High Risk Range | Previous |
|---|---|---|---|---|---|---|---|
| Wheat Allergen IgE (kU/L) | 0.18 | | | ≤0.34 | 0.35~3.49 | ≥3.50 | |

## Other

| Test name | In Control | Moderate | High Risk | In Control Range | Moderate Range | High Risk Range | Previous |
|---|---|---|---|---|---|---|---|
| Zonulin (ng/mL) | 40.6 | | | ≤45.3 | 45.4~55.3 | ≥55.4 | |

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Sample Test

## Celiac

| Test name | In Control | Moderate | High Risk | In Control Range | Moderate Range | High Risk Range | Previous |
|---|---|---|---|---|---|---|---|
| Transglutaminase 2 IgG | 0.74 | | | ≤0.94 | 0.95~1.05 | ≥1.06 | |
| Transglutaminase 2 IgA | 0.59 | | | ≤0.94 | 0.95~1.05 | ≥1.06 | |
| DGP IgG | 0.39 | | | ≤0.94 | 0.95~1.05 | ≥1.06 | |
| DGP IgA | 0.85 | | | ≤0.94 | 0.95~1.05 | ≥1.06 | |

## tTG/DGP Complex

| Test name | In Control | Moderate | High Risk | In Control Range | Moderate Range | High Risk Range | Previous |
|---|---|---|---|---|---|---|---|
| tTG/DGP Fusion Peptide IgG | 0.59 | | | ≤0.89 | 0.90~1.10 | ≥1.11 | |
| tTG/DGP Fusion Peptide IgA | 0.23 | | | ≤0.89 | 0.90~1.10 | ≥1.11 | |

## Intestinal Permeability Panel

| Test name | In Control | Moderate | High Risk | In Control Range | Moderate Range | High Risk Range | Previous |
|---|---|---|---|---|---|---|---|
| Zonulin (ng/mL) | 40.6 | | | ≤45.3 | 45.4~55.3 | ≥55.4 | |
| Anti-Zonulin IgG | | | 1.40 | ≤0.89 | 0.90~1.10 | ≥1.11 | |
| Anti-Zonulin IgA | 0.62 | | | ≤0.89 | 0.90~1.10 | ≥1.11 | |
| Anti-Actin IgG | 0.65 | | | ≤0.89 | 0.90~1.10 | ≥1.11 | |
| Anti-Actin IgA | 0.27 | | | ≤0.89 | 0.90~1.10 | ≥1.11 | |
| Anti-LPS IgA (U/ml) | 21.7 | | | ≤30.0 | | ≥30.1 | |
| Anti-LPS (IgG + IgM) (U/ml) | | | 322.7 | ≤281.0 | | ≥281.1 | |

## Transglutaminase Panel

| Test name | In Control | Moderate | High Risk | In Control Range | Moderate Range | High Risk Range | Previous |
|---|---|---|---|---|---|---|---|
| Transglutaminase 3 IgG | 0.20 | | | ≤0.89 | 0.90~1.10 | ≥1.11 | |
| Transglutaminase 3 IgA | 0.32 | | | ≤0.89 | 0.90~1.10 | ≥1.11 | |
| Transglutaminase 6 IgG | 0.21 | | | ≤0.89 | 0.90~1.10 | ≥1.11 | |
| Transglutaminase 6 IgA | 0.23 | | | ≤0.89 | 0.90~1.10 | ≥1.11 | |

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Sample Test

## Wheat Germ Panel

| Test name | In Control | Moderate | High Risk | In Control Range | Moderate Range | High Risk Range | Previous |
|---|---|---|---|---|---|---|---|
| Wheat Germ Agglutinin IgG | | 1.02 | | ≤0.89 | 0.90~1.10 | ≥1.11 | |
| Wheat Germ Agglutinin IgA | 0.30 | | | ≤0.89 | 0.90~1.10 | ≥1.11 | |

## Gliadin Panel

| Test name | In Control | Moderate | High Risk | In Control Range | Moderate Range | High Risk Range | Previous |
|---|---|---|---|---|---|---|---|
| Alpha Gliadin IgG | 0.56 | | | ≤0.89 | 0.90~1.10 | ≥1.11 | |
| Alpha Gliadin IgA | 0.47 | | | ≤0.89 | 0.90~1.10 | ≥1.11 | |
| Alpha-Beta Gliadin IgG | | | 1.11 | ≤0.89 | 0.90~1.10 | ≥1.11 | |
| Alpha-Beta Gliadin IgA | 0.20 | | | ≤0.89 | 0.90~1.10 | ≥1.11 | |
| Gamma Gliadin IgG | 0.53 | | | ≤0.89 | 0.90~1.10 | ≥1.11 | |
| Gamma Gliadin IgA | 0.37 | | | ≤0.89 | 0.90~1.10 | ≥1.11 | |
| Omega Gliadin IgG | | | 2.13 | ≤0.89 | 0.90~1.10 | ≥1.11 | |
| Omega Gliadin IgA | 0.72 | | | ≤0.89 | 0.90~1.10 | ≥1.11 | |
| Gluteomorphin IgG | | | 2.08 | ≤0.89 | 0.90~1.10 | ≥1.11 | |
| Gluteomorphin IgA | 0.47 | | | ≤0.89 | 0.90~1.10 | ≥1.11 | |
| Prodynorphin IgG | | 0.95 | | ≤0.89 | 0.90~1.10 | ≥1.11 | |
| Prodynorphin IgA | 0.74 | | | ≤0.89 | 0.90~1.10 | ≥1.11 | |

## Glutenin Panel

| Test name | In Control | Moderate | High Risk | In Control Range | Moderate Range | High Risk Range | Previous |
|---|---|---|---|---|---|---|---|
| HMW Glutenin IgG | | | 1.13 | ≤0.89 | 0.90~1.10 | ≥1.11 | |
| HMW Glutenin IgA | 0.55 | | | ≤0.89 | 0.90~1.10 | ≥1.11 | |
| LMW Glutenin IgG | 0.66 | | | ≤0.89 | 0.90~1.10 | ≥1.11 | |
| LMW Glutenin IgA | 0.27 | | | ≤0.89 | 0.90~1.10 | ≥1.11 | |

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Sample Test

## Non-Gluten Wheat Panel

| Test name | In Control | Moderate | High Risk | In Control Range | Moderate Range | High Risk Range | Previous |
|---|---|---|---|---|---|---|---|
| Serpin IgG | | | 1.35 | ≤0.89 | 0.90~1.10 | ≥1.11 | |
| Serpin IgA | 0.25 | | | ≤0.89 | 0.90~1.10 | ≥1.11 | |
| Farinins IgG | 0.78 | | | ≤0.89 | 0.90~1.10 | ≥1.11 | |
| Farinins IgA | 0.71 | | | ≤0.89 | 0.90~1.10 | ≥1.11 | |
| Amylase/Protease Inhibitors IgG | | | 2.03 | ≤0.89 | 0.90~1.10 | ≥1.11 | |
| Amylase/Protease Inhibitors IgA | 0.53 | | | ≤0.89 | 0.90~1.10 | ≥1.11 | |
| Globulins IgG | | 0.98 | | ≤0.89 | 0.90~1.10 | ≥1.11 | |
| Globulins IgA | 0.42 | | | ≤0.89 | 0.90~1.10 | ≥1.11 | |
| Purinin IgG | 0.74 | | | ≤0.89 | 0.90~1.10 | ≥1.11 | |
| Purinin IgA | 0.40 | | | ≤0.89 | 0.90~1.10 | ≥1.11 | |

Sample Test

## Intestinal Permeability Panel

### Intestinal Permeability Panel

#### *Potential Risk:*

Increased levels of zonulin/anti-zonulin antibodies indicate leaky gut condition;

Increased levels of lipopolysaccharides antibodies indicate leaky gut condition.

#### *Related Information:*

High levels of lipopolysaccharides (LPS) antibodies are indicative of penetration of LPS into the bloodstream. LPS binds to cells lining the gut and increases synthesis of pro-inflammatory substances.;

Zonulin acts as the gate-keeper between the cells of the intestinal lining in order for nutrients and other essential molecules to be transported in and out of the intestine. However, when leaky gut is present, the intestinal lining is compromised allowing larger protein molecules to get into the bloodstream thereby causing an immune response.

#### *Potential Risk Mitigation Choices:*

**Consider subsequent testing of your gut bacteria profile to identify an optimum dosage of the right probiotic necessary to help fix your leaky gut. A combination therapy may be recommended using probiotics, L-glutamine, L-arginine and Omega3 supplementation.**

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## Wheat Germ Panel

### Wheat Germ Panel

#### *Potential Risk:*

Increased antibody titers to WGA suggests a leaky gut condition and may explain the cause of Vitamin D deficiency.

#### *Related Information:*

Wheat Germ Agglutinin (WGA) binds to N-glycolylneuraminic acid (Neu5Ac), the sialic acid predominantly found in humans, allowing it to adhere to cell surfaces like the epithelial layer of the gut. WGA irritates and causes premature cell death in the gut and has been known to lead to a leaky gut condition.

#### *Potential Risk Mitigation Choices:*

**Consider subsequent testing of your gut bacteria profile to identify an optimum dosage of the right probiotic necessary to help fix your leaky gut. A combination therapy may be recommended using probiotics, L-glutamine, L-arginine and Omega3 supplementation.**

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## Gliadin Panel

### Gliadin Panel

#### *Potential Risk:*

Increased levels of Beta Gliadin IgG/IgA could suggest sensitivity to the beta gliadin component of gluten.;

Antibodies to prodynorphin have been found to be elevated in individuals with gluten sensitivity associated neurochemical disorders.;

Antibodies to gluteomorphin have been found to be elevated in individuals with gluten sensitivity associated neurochemical disorders.;

Increased levels of Omega Gliadin IgG/IgA could suggest sensitivity to the omega gliadin component of gluten.

#### *Related Information:*

Gliadin constitutes a class of proteins that are present in wheat and other cereal which give it the ability to rise properly when baked. The main types of gliadin are alpha, beta, gamma and omega gliadins. Research has suggested that antibody reactivity against all the above mentioned forms of gliadin are found in individuals with 'Wheat related disorders.';

If a person has elevated antibodies to Gluteomorphin or Prodynorphin, they may have severe neurochemical reactions to gluten and also create what is called a gluteomorphin withdrawal response. This is a response that causes a patient to have significant reactions such as depression, mood swings, abnormal bowel activity when they go on a gluten-free diet. If this occurs the person must hang in there for a couple of weeks being gluten-free to potentially avoid harmful disorders.

#### *Potential Risk Mitigation Choices:*

**Consider avoiding wheat in your diet.;**

**Consider going on a gluten free diet.**

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## Glutenin Panel

### Glutenin Panel

***Potential Risk:***

Elevated levels of HMW Glutenin has been associated with Wheat Sensitivity, asthma and Atopic dermatitis.

***Potential Risk Mitigation Choices:***

**Consider going on a gluten free diet.**

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## Non-Gluten Wheat Panel

### Non-Gluten Wheat Panel

#### *Potential Risk:*

Increased levels of antibodies to non-gluten wheat proteins (serpins, purinins, farinins, amylase/protease inhibitors and globulins) are responsible for inflammation in patients with wheat sensitive enteropathies.

#### *Related Information:*

Non-gluten proteins constitute about 25% of the total protein content of wheat cereal. Recently it has been shown that these non-gluten proteins are immune-reactive in individuals with wheat sensitivity. The 5 groups of non-gluten proteins which are distinctly different from the gluten proteins that are responsible for inflammation in patients with wheat sensitivity are serpins, purinins, farinins, amylase/protease inhibitors and globulins.

#### *Potential Risk Mitigation Choices:*

**Consider avoiding wheat in your diet.**

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## What is Gluten?

Gluten is a name for a group of proteins found in wheat, rye, barley and triticale. It acts as a 'glue' to give grains their doughy texture and is also commonly used as a food additive or thickener.

## How to Eliminate Gluten Step-by-Step

If you have been instructed to go on a gluten-free diet, you might feel overwhelmed with how exactly to eliminate gluten 100% from your diet. Follow these steps to make your transition as smooth as possible:

1. Work with your Vibrant Registered Dietitian Nutritionist to develop a custom plan to replace gluten-containing foods you may already be consuming regularly.
2. Learn what foods naturally contain gluten
3. Learn what foods commonly have gluten added to them
4. Learn what foods might contain hidden sources of gluten
5. Learn to read labels to identify gluten-free foods (consider using a smartphone app)
6. Learn practical strategies to avoid cross contamination

## Tips for Dining Out

- Be prepared and research the menu online before you arrive
- Explain your gluten-free needs to your server
- Ask detailed questions about how your food will be prepared (Are separate utensils used? Are separate preparation surfaces used? Etc)
- A number of apps exist that identify restaurants that cater to gluten-free patrons

## Additional Resources

Celiac Disease Foundation www.celiac.org
Beyond Celiac (National Foundation of Celiac Awareness) www.beyondceliac.org
The Gluten Intolerance Group of North America www.gluten.org

## Gluten vs. Wheat…What's the Difference?

Gluten is a protein that is found in wheat, rye and barley. Wheat is a cereal grain that contains both gluten and non-gluten proteins. Most gluten free foods are wheat free but some may contain traces of wheat proteins.

| Foods that contain gluten or might contain gluten* | Foods that are naturally gluten free* |
|---|---|
| Wheat and wheat products (farina, kamut, semolina, spelt, baked goods such as bread, cakes, cookies, granola bars, pasta and other sweets) | Animal proteins: beef, chicken, pork, fish, shellfish and wild game; eggs, yogurt, kefir, cottage cheese, milk (cow or goat) |
| Rye products and beer or ale made from rye | All fresh fruits |
| Seasoning blends, sauce mixes, gravies and dressings | All fresh vegetables |
| Soups and marinades | Pure herbs or spices (basil, cumin, oregano, etc) |
| Barley products and beer or ale made from barley, malt products such as malt vinegar, malted milk, malt flavor | Non-gluten grains: amaranth, buckwheat, rice, quinoa, gluten-free oats, sorghum |
| Soy sauce and teriyaki sauce | Legumes (beans) |
| Energy bars, trail mix, wheatgrass, cereals, oats (unless they say certified gluten-free) | Oils: coconut oil, extra virgin olive oil, avocado oil |
| Breaded foods, meatballs, veggie burgers, deli meat, cold cuts, imitation crab | Nuts: almonds, walnuts, peanuts, cashews, pistachios, Brazil nuts |
| Prescription and over-the-counter medications and supplements | Stevia and dark chocolate (70% or more cocoa) |
| Cosmetic products and skincare products | Wine |

***naturally gluten-free foods may have gluten-containing ingredients added to them during processing, therefore it is always recommended to read labels before consuming**

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## Glossary

**Farinins** - The name "Farinins" was given for avenin-like proteins because they are slightly closer in primary structure to gamma-gliadins than to avenins.

**Gliadin** constitutes a class of proteins that are present in wheat and other cereal which give it the ability to rise properly when baked. The main types of gliadin are alpha, gamma and omega gliadins. Most commercial ELISA plates focus only on the alpha/gamma gliadin component and its deamidated forms. Research has however shown that antibody reactivity against all the 3 main forms of gliadin are found in individuals with 'Wheat related disorders'. The Vibrant Wheat Zoomer covers all known gliadins from all the different wheat species in both native and deamidated form making it the most comprehensive test against gliadins. The Vibrant Wheat Zoomer also includes all the key gliadin motifs– 33mer alpha gliadin, 26mer gamma gliadin, 17mer omega gliadin.

**Globulins** - Several types of Globulins are also detected among the flour proteins. Proteins termed globulin-1 or alpha-globulin are encoded at the highly conserved Glo-2 locus between the loci for the x- and y-type HMW-GS on chromosome 1.

**Glutenin** is a major protein found in wheat and constitutes about 47% of its protein content. Glutenin is responsible for the strength and elasticity of dough. The main types of glutenin are the LMW (low molecular weight) and the HMW (high molecular weight) glutenin. HMW glutenin has been associated with Celiac disease, asthma and Atopic dermatitis. LMW Glutenin has been associated with Celiac disease, asthma, Atopic dermatitis, Urticaria and Anaphylaxis.

**Gluteomorphin** is an opioid peptide that is formed during digestion of the gliadin component of the gluten protein.

**Intestinal Permeability** is a term describing the control of material passing from inside the gastrointestinal tract through the cells lining the gut wall, into the rest of the body. One way in which intestinal permeability is modulated is via CXCR3 receptors in cells in the intestinal epithelium, which respond to zonulin. Gliadin (a glycoprotein present in wheat) activates zonulin signaling irrespective of the genetic expression of autoimmunity, leading to increased intestinal permeability to macromolecules. The cytoskeleton is also made up of proteins, which comprise a network of thin, overlapping fibers known as the actin-myosin network. This partnership between the actin-myosin network proteins controls the permeability of the tight junctions, and thus the intestinal barrier.

**Lipopolysaccharides (LPS)** are a naturally occurring endotoxin found in the gut, genitourinal, and respiratory tracts. A healthy mucosal layer with intact tight junctions prevents the paracellular translocation of LPS. The presence of LPS antibodies in the blood has been discovered to be clinically relevant when attempting to identify the degree of intestinal barrier permeability.

**Non Gluten Wheat Proteins** Gliadins and Glutenins comprise approximately 70 different proteins and constitute about 75% of the total protein content of wheat cereal. The key proteins identified to be immune-reactive include Serpins, farinins, globulins, and amylase/protease inhibitors.

**Prodynorphin** is an opioid that is a basic building block of endorphins.

**Purinin** proteins are legumin-like 12 S globulin storage proteins encoded at Tri-A1 and Tri-D1 on the short arms of chromosomes 1A and 1D. The native proteins exist as hetero-tetramers composed of long and short arms from two cleaved, disulfide-linked triticin precursors.

**Serpins** are serine protease inhibitors and the wheat serpins are suicide substrate inhibitors of chymotrypsin and cathepsin A that may serve to inactivate serine proteases of grain-boring insects.

**Transglutaminases** – 2, 3 and 6 Transglutaminases are enzymes that catalyze an isopeptide bond formation between a free amine group and the acyl group. The Vibrant Wheat Zoomer includes transglutaminases 2, 3 and 6 which are known to be associated with various disease conditions. **Tissue transglutaminase or transglutaminase 2** IgA and IgG profile is one of the most important tests in the diagnostics of celiac disease. tTG is a known autoantigen in celiac disease which has replaced the tissue level tests like antiendomysium antibody test. Clinically tTG has been determined to have a strong sensitivity (99%) and specificity (90%) for identifying celiac disease. While Wheat sensitivity in many cases presents itself as celiac disease in some individuals it is associated with dermatitis herpetiformis. Serum from patients with dermatitis herpetiformis has shown an increased binding towards **transglutaminase 3** or epidermal transglutaminase. Gluten sensitivity is sometimes also associated with neurological disorders. This condition also known as gluten ataxia occurs in around 10% of the patients with gluten sensitivity. These patients have been found to have developed antibodies against a different transglutaminase namely **transglutaminase 6**.

**tTG/DGP Complex** – tTG/DGP complex comprises of a synthesized peptide which contains a portion of the tTG region and a portion of the DGP region. Recent studies support the hypothesis that a neoepitope may be formed in CD patients' sera under in vivo physiological conditions, by a covalent cross-link between tTG and deamidated gliadin peptides, and this neo-antigen may be specifically recognized by autoantibodies. The tTG/DGP complex could potentially indicate the healing status of celiac disease.

**Wheat alpha-amylase and protease inhibitors** are reported to be active against the amylases and proteases from insects such as grain-boring weevils. However, they also are sufficiently abundant to serve as storage proteins for the developing grain and are a source of essential amino acids such as Lys, Met and Cys for humans who consume wheat products.

**Wheat Germ Agglutenin** Wheat germ agglutinin is a lectin that protects wheat from bacteria, yeast and insects and is naturally found in all wheat varieties. The Vibrant Wheat Zoomer includes the different agglutinins from both T.aestivum and T.urartu varieties. Lectins have the capacity to bind to different cell types and are also resistant to digestive enzymes making them a possible candidate for immune-sensitivity. Wheat Germ Agglutinin (WGA) irritates and causes premature cell death in the gut and has been known to lead to a leaky gut condition. WGA also disrupts the mucus membrane in the gut, which can cause bacterial overgrowth and lead to a host of digestive issues like GERD and ulcers.

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## References

| PANEL | REFERENCE/ABSTRACT | RATING |
|---|---|---|
| LEAKY GUT PANEL | **Alessio Fasano.Zonulin and Its Regulation of Intestinal Barrier Function: The Biological Door to Inflammation, Autoimmunity, and Cancer.** This review talks about the increased interest in the role of a "leaky gut" in the pathogenesis of several pathological conditions targeting both the intestine and extra intestinal organs. | ★★★★★ |
| | **Silvia Pedreira et.al. Significance of smooth muscle/anti-actin autoantibodies in celiac disease.** The study evaluates the clinical relevance of the presence of IgA type anti-actin antibody (AAA) and SMA in 92 adult patient with celiac disease. The results indicted the presence of increased IgA AAA serum levels is a highly sensitive marker of the disturbed architecture of intestinal epithelial cells of CD patients also the presence of SMA seems to define a distinct subset of CD patients with a more severe clinical outcome. | ★★★ |
| | **Melanie Uhde, Mary et. al. Intestinal cell damage and systemic immune activation in individuals reporting sensitivity to wheat in the absence of coeliac disease.** The study aims to determine if sensitivity to wheat in the absence of coeliac disease is associated with systemic immune activation that may be linked to an enteropathy. | ★★★★ |
| WHEAT GERM PANEL | **Karin de Punder and Leo Pruimboom. The Dietary Intake of Wheat and other Cereal Grains and Their Role in Inflammation.** This review states the evidence from in vitro, in vivo and human intervention studies that describe how the consumption of wheat, other cereal grains, can contribute to the manifestation of chronic inflammation and autoimmune diseases by increasing intestinal permeability and initiating a pro-inflammatory immune response. | ★★★ |
| | **L M Sollid, J Kolberg, H Scott, J Ek, O Fausa, and P Brandtzaeg. Antibodies to wheat germ agglutinin in coeliac disease.** The study shows the celiac patients have significantly higher Serum IgG and IgA antibodies to wheat germ agglutinin (WGA) compared to the control group. Thus adding WGA as a potential biomarker for pathogenesis of CD. | ★★ |
| GLIADIN PANEL | **Alessio Fasano.Zonulin and Its Regulation of Intestinal Barrier Function: The Biological Door to Inflammation, Autoimmunity, and Cancer.** This review talks about the increased interest in the role of a "leaky gut" in the pathogenesis of several pathological conditions targeting both the intestine and extra intestinal organs. | ★★★★★ |
| | **Luca Elli, Federica Branchi, Carolina Tomba, Danilo Villalta, Lorenzo Norsa, Francesca Ferretti, Leda Roncoroni, and Maria Teresa Bardella. Diagnosis of gluten related disorders: Celiac disease, wheat allergy and non-celiac gluten sensitivity.** The review article covers a complete overview of celiac disease, wheat allergy and non-celiac gluten sensitivity and its current clinical diagnosis. | ★★ |
| | **Chirdo FG, Rumbo M, Carabajal P, Mavromatópulos E, Castagnino N, Añón MC, Fossati CA. Determination of anti--gliadin antibodies in serologic tests for coeliac disease.** The study compromised of 105 coeliac patients, 81 healthy controls, and 73 subjects in a disease control group to evaluate the efficacy of omega-gliadins to be a useful antigen in serologic detection of coeliac disease. | ★★★ |
| | **Aristo Vojdani .The Characterization of the Repertoire of Wheat Antigens and Peptides Involved in the Humoral Immune Responses in Patients with Gluten Sensitivity and Crohn's Disease.** The study examines the humoral immune response to various wheat proteins and peptides in patients with gluten sensitivity or Crohn's disease. In gluten-sensitive patients, IgG reacted most against transglutaminase, prodynorphin, wheat extract, and -, -, and -gliadin; IgA reacted most against wheat then transglutaminase, glutenin, and other peptides. In Crohn's disease patients, IgG reacted most against wheat and wheat germ agglutinin then transglutaminase, prodynorphin, -, and -gliadin; IgA reacted foremost against prodynorphin then transglutaminase and -gliadin. | ★★ |
| GLUTENIN PANEL | **G Salcedo, S Quirce, A Diaz-Perales. Wheat Allergens Associated with Baker's Asthma.** This review deals with the current diagnosis and immunomodulatory treatments, as well as the role of wheat allergens as molecular tools to enhance management and knowledge of Baker's Astma. | ★★★ |
| | **Frances M Dupont et.al. Deciphering the complexities of the wheat flour proteome using quantitative two-dimensional electrophoresis, three proteases and tandem mass spectrometry.** The study of wheat genome to identify the majority of abundant flour proteins for a single wheat cultivar, relate them to individual gene sequences and estimate their relative levels. | ★★★ |
| NON GLUTEN WHEAT PANEL | **Sina Huebener et. al. Specific Nongluten Proteins of Wheat are Novel Target Antigens in Celiac Disease Humoral Response.** The study aims to investigate the level and molecular specificity of antibody response to wheat non gluten proteins in celiac disease. The results demonstrate that, in addition to the well-recognized immune reaction to gluten, celiac disease is associated with a robust humoral response directed at a specific subset of the no gluten proteins of wheat. | ★★★ |
| TRANSGLUTAMINASE PANEL | **Timo Reunala, Teea T. Salmi and Kaisa Hervonen. Dermatitis Herpetiformis: Pathognomonic Transglutaminase IgA Deposits in the Skin and Excellent Prognosis on a Gluten-free Diet.** The study shows the coeliac disease in the gut appears to be a result of the IgA Epidermal transglutaminase antibody complexes aggregated into DH skin. | ★★ |
| | **Hull CM, Liddle M, Hansen N, Meyer LJ, Schmidt L, Taylor T, Jaskowski TD, Hill HR, Zone JJ. Elevation of IgA anti-epidermal transglutaminase antibodies in dermatitis herpetiformis.** The study to determine the association between Dermatitis herpetiformis with IgA antibodies against TG2 and TG3. The results indicates IgA antibodies to TG3 are elevated in patients with DH and adults with Celiac disease. | ★★★ |
| | **Gadoth A, Nefussy B, Bleiberg M, Klein T, Artman I, Drory VE. Transglutaminase 6 Antibodies in the Serum of Patients with Amyotrophic Lateral Sclerosis.** The Study to evaluate the prevalence of celiac disease-related antibodies and HLA antigen alleles, as well as TG6 antibodies, in patients with amyotrophic lateral sclerosis (ALS) and healthy individuals serving as controls to determine whether a neurologic presentation of a gluten-related disorder mimicking ALS might occur in some patients. The result indicates certain cases, an ALS syndrome might be associated with autoimmunity and gluten sensitivity and also study indicates gluten sensitivity is potentially treatable with strict gluten free diet. | ★★★★★ |
| tTG/DGP Complex Panel | **Margherita Di Pisa et.al. Synthetic Peptides Reproducing Tissue TransglutaminaseGliadin Complex Neo-epitopes as Probes for Antibody Detection in Celiac Disease Patients' Sera.** Sera from 48 CD patients were collected at the diagnosis before gluten-free diet (39 females, 9 males; age range 2.252 years). Two of 48 (4%) CD patients presented IgA deficiency. Analysis of patients' subgroups established a possible clinical correlation not detected by established tests. These observations indicate that a neoepitope may be formed in CD patients' sera under in vivo physiological conditions, by a covalent cross-link between tTG and deamidated gliadin peptides, and this neo-antigen may be specifically recognized by autoantibodies. | ★★★★ |

The complete list of references and the summary of performance studies can be found online at www.vibrant-wellness.com or BY CONTACTING CLIENT SERVICES AT +1(866)364-0963.