



# Gluten: A cause of inflammation and disease

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Silent inflammation is the underlying cause of disease. Nearly one in four of my patients have a sensitivity to gluten, which causes inflammation as part of a malabsorption syndrome. Symptoms may go unnoticed and reactions in the body may be cumulative after years of ingesting gluten. It may mask itself as general malaise and fatigue. If a problem exists in the gut, there is usually an associated problem in the brain. Therefore, there may be a direct link between gluten sensitivity and “brain fog”, autism, ADD and ADHD in our children. It may present as indigestion or gastric reflux or it may progress to an irritable bowel syndrome (IBS). Iron deficiency anemia and classic vitamin deficiencies may be attributable to gluten sensitivity. The list is long. Consequences and conditions associated with gluten sensitivity and/or celiac disease are:

- **Delayed growth in infants**
- **Constipation or diarrhea**
- **Adrenal exhaustion**
- **Weight loss or weight gain**
- **Nutritional deficiencies leading to syndromes including night blindness**
- **Headaches, migraines**
- **Gas and abdominal bloating**
- **Depression, and anxiety**
- **Fatigue**
- **Skin rash and eczema**
- **Hair loss, thin fragile hair**
- **Anemia**
- **Osteoporosis**
- **Diabetes**
- **Lupus**
- **Ataxia (poor coordination of movement), Parkinson’s**
- **Autism**
- **Intestinal cancer**
- **Infertility**
- **Thyroid disease such as hypothyroidism**
- **Asthma**
- **Decreased immunity to viruses and bacteria**



## What is gluten?

Gluten is a protein found in grains (wheat, rye, barley). It is the stuff that makes dough sticky. The component parts or proteins in gluten are gliadin and glutenin. When those allergic to gluten eat gluten-containing grains, an immune response occurs. Instead of digesting this protein completely, the body recognizes it as a foreign substance and reacts to it as it would to any invader. The immune system **may** then make food-specific IgG or IgE antibodies to gluten, which we can measure via a blood test, as we would most food allergies. Each time you ingest gluten, the immune system sounds an alarm and proceeds to attack the proteins in gluten. You may experience immediate reactions like an itchy mouth, stomach cramping or hives due to the histamine reaction of the immune system. More severe reactions like breathing problems or anaphylaxis (shock) may also ensue.

## Allergy vs. sensitivity

Yet most reactions to gluten are not due to an allergic response. Gluten **sensitivity is not a typical allergy**. It is a food **intolerance**. Allergies and intolerance are both reactions involving your immune system, but sensitivity reactions may be more complicated.

**Note:** Terms can be confusing: Gluten intolerance involves an immune system reaction to gluten whereas lactose intolerance is an enzyme deficiency and does not involve an immune response.

A food intolerance reaction is a delayed reaction to gluten or other foods. It may take hours or days for reactions to occur, and symptoms may become apparent over time. These reactions do not involve IgG/ IgE antibody reactions (although some individuals may also have an allergy to gluten).

***An allergic reaction may have a significant effect on the body, as in the case of anaphylaxis, but these reactions usually do not harm the organs long term. Food intolerance reactions do have long- term effects on the body organs and may even cause premature death.***

## Testing

Testing may include –

- IgG/IgE tests for gliadin antibodies
- IgA anti-transglutaminase
- Anti-endomysial antibodies
- Tests for reactions to 12 different proteins associated with wheat (not only gluten)
- Genetic markers that predispose to celiac disease and/or gluten sensitivity (important to see for long-term family food choices)
- Biopsy of the small intestine to see if there is destruction of villi, which indicates celiac disease

Anti-tissue transglutaminase is an autoimmune reaction to enzymes that are found in the cells that line the gut. Transglutaminase enzymes repair damage to the gut lining and are deposited in the lumen of the gut in response to inflammation. The antibodies against transglutaminase enzymes do not trigger a histamine reaction. They *do* cause chronic inflammation and can lead to the destruction of the tissues of the intestines. This destruction can lead to celiac disease and all its consequences. The blood test is often used to test for celiac disease.

Testing may be inaccurate at times. For instance, the blood test for anti-transglutaminase antibody is considered best for celiac disease. The test is supposed to be 95% accurate. Remember, celiac disease is defined by the destruction of the villi in the small intestine. When the anti-transglutaminase test was developed, it was compared to those people who had an intestinal biopsy for celiac. Therefore, in those subjects who had proven celiac (biopsy) the anti-transglutaminase test was 95% accurate. But what about those who have varying symptoms and do not have celiac and are sensitive to gluten?



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The test may not be accurate, and false negatives can result. The take-home message is: If the test comes back positive, you are definitely gluten sensitive; if the test is negative, you may be sensitive to gluten nevertheless.

Therefore, until the testing becomes more accurate, I stick to the rule that “if you stay completely off of gluten for 10 weeks and feel better, you may be sensitive to it”. I am partial to the newer tests for many of the gluten-related peptides. It casts a wider net to see if you react to those foods containing gluten.

Villi, the finger-like projections in the small intestine, increase the surface area by which nutrients are digested and absorbed. In celiac disease they are destroyed, affecting the digestion of nutrients needed for survival and the beneficial probiotic bacteria that line the villi are destroyed. Nutrients, such as B vitamins, and minerals, such as zinc and iron, are poorly absorbed, causing a breakdown in the enzyme systems throughout the body that rely on them. Overall energy is affected and the immune system becomes depleted. From there, any of the symptoms and disease processes listed above may occur.

Remember that once you recover from an allergic reaction (IgG/IgE tests) your body usually resumes normal functioning. As long as the offending food is removed, you usually get little or no progression of symptoms and other reactions. **Ninety percent of all reactions to gluten are sensitivity/intolerance. Food intolerance reactions have long-term effects that can spread to all organ systems of the body and result in severe, permanent tissue damage if not controlled.** This causes inflammation throughout the body and may present as almost any symptom or disease.

**Celiac disease affects 1 in 135 people.** It predisposes you to increased inflammation and, if untreated, to other diseases or even early death. **For example, the incidence of asthma in children with celiac disease is nearly 25%. The proportion of children that have asthma and do not have celiac disease is approximately 4%!**

A high percentage of people with celiac suffer from:

- Cancer (40%)
- Arthritis (20%)
- Cows milk intolerance (24%)
- Liver disease (42%)
- Osteoporosis/osteopenia (70%)
- Nerve disease or peripheral neuropathy (51%)
- Thyroid disease (6-15%)

**People with a genetic component to their gluten sensitivity have a 1 in 22 chance of developing celiac disease.** 90% of patients with celiac disease have certain genetic markers for it. One genetic component is the inability to make the enzyme DDP4, which digests both gluten and casein (milk protein). **Those with an intolerance to gluten who do not have celiac disease number 1 in 3.** Symptoms usually vary from one individual to another.

**Note:** Remember, gluten sensitivity may not progress to celiac disease (the destruction of villi) and yet may still lead to many of the same symptoms.

The way to resolve gluten sensitivity involves:

## The 4 R's:

**Remove:** gluten-containing foods, yeast, unwanted bacteria

**Replace:** HCL (stomach acid), enzymes, nutrients found in food, nutrients to feed and repair the gut

**Repair:** probiotics (support good bacteria), vitamins (B's, C, others), amino acids,

**Re-Inoculate:** probiotics (several types – all geared to specific areas of the gut)



## Gluten-Free and Not Feeling Better:

Frustrated patients who restrict gluten from their diets and still do not feel better may need to address the **4R program** more completely, especially where supplementation of vitamins, minerals and enzymes is concerned. There are several factors which may be secondary effects of gluten sensitivity. Here are some observations I have made through years of treating patients with gluten problems. These observations may be beneficial to those who may become frustrated with gluten-free diets:

1. Most patients feel better with simple dietary guidelines and the proper supplementation. Damage from gluten sensitivities can take 6 months to a year (or more) to heal. Usually, most folks feel better within weeks of starting a gluten-free diet. The silent inflammation as a result of gluten reactions may take longer to heal, requiring supplements and other dietary changes.
2. Many times, other foods that cause inflammation may need to be eliminated. The food category that most commonly needs to be eliminated along with gluten is **dairy, including milk, cheese and products containing casein**, a protein found in milk. Many of us are also **lactose-intolerant**, which means we do not produce the necessary enzymes to break down milk proteins for digestion. We retain the enzyme to digest our mothers' milk for only 2-5 years. Almost 15-30% of adults no longer produce this enzyme. Mothers' milk is rich in essential fatty acids and relatively low in phosphorus and protein as compared to cows' milk. Sometimes goat cheese and goat milk are acceptable. (NOTE: Lactose intolerance is the lack of an enzyme and should not be confused with gluten intolerance, which is an immune reaction.)
3. If in doubt about other foods that cause problems, food allergy tests will help to determine which foods may need to be eliminated.
4. Next, the adrenal response (stress response) is something I measure through labs to determine if the inflammation in the body due to gluten sensitivity has affected the stress hormones, insulin response, cortisol balance and reaction to gliadin. If there is an imbalance in the adrenal hormones, then fatigue, brain fog and a host of other symptoms may persist until lifestyle changes and supplementation help to re-create a natural balance throughout the body.
5. There are other instances where restricting all grains for 3-4 months has proven to be very beneficial in helping to normalize digestion.
6. Yeast overgrowth in the gut always needs to be addressed, sometimes requiring sugar and processed-food restriction along with replacement of several probiotics and prebiotics needed for gut function.

Remember that gluten sensitivity usually goes on for years without many symptoms. It usually takes 6 months to one year of a continuous program to re-establish normal digestion and long-lasting relief from symptoms.