



# Celiac Disease and the Verified Gluten-Free Pioneer® Promise

**What is celiac disease?** Celiac disease (also known as gluten intolerance, *non-tropical sprue*, *celiac sprue* and *gluten-sensitive enteropathy*) is a genetically carried, autoimmune disorder characterized by an abnormal digestive response to gluten – a protein found abundantly in wheat, barley and rye (and to a lesser degree in wheat's close relatives, spelt, triticale and kamut). In people with celiac disease, gluten is mistakenly perceived as a threat by cells that line the small intestine. When gluten interacts with these cells, the body's immune response is triggered. This initiates intestinal inflammation that, over time, can destroy the absorptive villi lining small intestine. Both intestinal inflammation and villous damage interfere with absorption of nutrients and can lead to malnutrition.

**Prevalence & symptoms.** Celiac disease affects approximately one percent of the general global population, and ten percent of first degree relatives of celiac patients. Common symptoms include abdominal bloating and pain, chronic diarrhea, weight loss, foul-smelling stools, gas, bone pain, unexplained osteoporosis and anemia and fatigue. Delayed growth or failure to thrive are common in children. Some people with celiac disease have no observable symptoms but still suffer from low-level malnutrition that may cause complications later on. Because symptoms can be confused with other chronic diseases (irritable bowel syndrome, colitis, diverticulitis, intestinal infections, chronic fatigue syndrome), many cases may go undiagnosed or be misdiagnosed.

**Diagnosis: Biopsy, blood or DNA?** A small intestine biopsy showing damage to the villi has been long-considered the gold standard in celiac disease diagnosis. Two blood tests that detect gluten antibodies in people who regularly consume gluten foods are used by some doctors as well. One, the highly accurate endomysial antibody (EMA) test is run on primate tissue and can only be interpreted by a trained technician. The more convenient tissue transglutaminase (TTG) test is a simple blood screen with sensitivity approaching that of the EMA. TTG is used in Italy and elsewhere to diagnose celiac disease. In this country, most doctors rely on biopsy to confirm diagnosis; others may consider a careful history, the presence of characteristic symptoms and a positive antibody test sufficient to begin treatment. Genetic testing cannot be used for diagnosis since some non-celiacs may carry genes DQ(2) and DQ(8), which are found in all celiacs. However, DNA testing is useful for *ruling out* celiac when these genes are *absent*.

**Treatment.** A strict gluten-free diet is the only treatment for celiac disease. Significant improvement often occurs within days to weeks, but sometimes takes months or years. Most people are able

to become symptom-free relatively quickly as long as they maintain complete avoidance of gluten-containing foods, including the numerous *hidden* food sources (soups, sauces, gravies, additives, etc). For some celiacs, eating even the smallest amount of gluten may re-injure the delicate lining of the intestine and impair absorption of nutrients.

**How is “gluten-free” defined?** There is no universal definition for “gluten-free.” In January 2007, the U.S. Food and Drug Administration proposed a standard for voluntary gluten-free labeling that would allow products containing less than 20 ppm gluten to bear the claim; however, at this writing, no such standards are in place.<sup>1</sup> Because there are varying degrees of sensitivity among people with gluten intolerance, it is not possible to say what constitutes a safe level for all, but below 20 ppm is likely quite safe in the majority of cases.

## Why supplements are useful in celiac disease.

Many symptoms and consequences of celiac disease are largely the result of malabsorption and malnutrition. Studies indicate that multiple nutrient deficiencies are common in people with active stage celiac disease, and possibly also during subclinical (unseen) stages. Deficiencies of fat-soluble vitamins (A, D, E), water-soluble vitamins (B12, folic acid, other B vitamins), and minerals such as calcium, iron and zinc have been noted in particular. Adequate replenishment of vitamins and minerals is critical both to minimize damage from this disease and to enable repair, healing and normal growth. Fortunately, as healing progresses, so does the ability to absorb nutrients.

## The Pioneer® promise: verified gluten-free.

Pioneer is committed to helping people with gluten intolerance meet their increased nutritional needs. To do this, we:

- 1) require that all raw ingredients are gluten-free.
- 2) test every batch of finished product using state of the art ELISA methodologies. Products must test below a detectable limit of 10 ppm. Our detectable limit standard is *twice as strict* as the proposed FDA standard of 20 ppm for gluten-free labeling. Each batch of Pioneer® product must pass the *below 10 ppm gluten* test before it is released for sale.

As the leaders in finished product gluten testing, Pioneer is proud to support the celiac community with top quality, clinician-formulated, verified gluten-free nutritional supplements – products designed for maximum absorption and benefit as suggested by current, published scientific research.

## REFERENCES

1. <http://a257.g.akamaitech.net/7/257/2422/01jan20071800/edocket.access.gpo.gov/2007/E7-843.htm>

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