

## Celiac Disease: A Commonly Underdiagnosed Condition of the Small Bowel

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**Celiac disease** is an autoimmune inflammatory condition of the small intestine. It is also known as non-tropical sprue, endemic sprue, gluten enteropathy or gluten-sensitive enteropathy, and gluten intolerance. It is important to keep in mind that while the disease is caused by a reaction to wheat proteins, it is *not* the same as wheat allergy.

Celiac disease is caused by a reaction to the ingestion of gliadin, a polypeptide component of wheat, rye, barley and oat flour. Upon exposure to gliadin, the enzyme tissue transglutaminase modifies the protein and the immune system cross-reacts with the small-bowel tissue, causing an inflammatory reaction.

In the body, transglutaminase enzymes normally help form extensively cross-linked, insoluble protein polymers, which are necessary for the body to create barriers and stable structures. Examples are blood clots (the synthesis of coagulation factor XIII), skin and hair. In celiac disease, antibodies to tissue transglutaminase are found, which play a role in the small bowel damage in response to dietary gliadin.

### Pathophysiology

Upon ingestion, gliadin binds to receptor protein on enterocyte surfaces, producing an antigenic autoimmune inflammatory response in the small intestine with blunted villi (villous atrophy) and enhanced crypt mitosis. With destruction of villi the disaccharidase enzymes and dipeptidase and tripeptidase enzymes are decreased, producing lack of macronutrient absorption with weight loss and gastrointestinal symptoms and other symptoms, which range from mild to severe. The intestinal damage leads to a truncating of the villi lining of the small intestine (called villous atrophy), which further interferes with the absorption of nutrients, as the intestinal villi are responsible for absorption.

### Signs and Symptoms

The most common signs and symptoms of celiac disease include the following: abdominal cramping and diarrhea, growth failure, anemia, signs of nutrient deficiencies, life-threatening electrolyte losses, osteomalacia and bone pain in children, secondary hyperparathyroidism from decreased absorption of calcium and vitamin D, and dermatitis herpetiformis - a pruritic pattern of recurrent blisters over elbows and knees (disappears with gluten-free diet).

### Testing For Celiac Disease

A blood test is now available to help diagnose celiac disease. Of interest is the fact that celiac disease can be asymptomatic; therefore, the blood test is recommended for family members of celiac patients. The test (serology for anti-transglutaminase antibodies) is highly sensitive (99 percent) and specific (>90 percent) for identifying the disease.

Endoscopy can also be used to confirm the diagnosis. Typically, an upper endoscopy with biopsy of the duodenum or jejunum is performed. The physician normally obtains multiple samples (four to eight) from the duodenum.

### At-Risk Populations

Celiac disease is found in higher frequency in peoples of North and Western Europe (Ireland and Basque Country in Spain show the highest frequencies) as well as portions of Africa and India. It also occurs more frequently in South and Central America. People of African, Japanese and Chinese descent are rarely diagnosed with celiac disease. Population studies suggest that a large proportion of celiac sufferers remain undiagnosed. This is due to many clinicians not screening for the condition as indicated.

### Treatment Strategies

The primary treatment for celiac disease is a gluten-free diet. The following food chart assembled by Shelley Case is an excellent reference to further your understanding of gluten-containing foods that can impact the expression of celiac disease:

Gluten-Containing Ingredients to Be Avoided		
Barley	Graham flour	Rye
Bulgar	Kamut*	Semolina
Cereal binding	Malt**	Spelt (Dinkel)
Couscous	Malt extract**	Triticale
Durum*	Malt flavouring	Wheat
Einkorn*	Malt syrup**	Wheat bran
Emmer*	Oats***	Wheat germ
Filler	Oat bran***	Wheat starch
Farro*	Oat syrup***	

\*Types of wheat  
 \*\*Derived from barley  
 \*\*\*Information about oats appears below  
*Source: Shelley Case, BSc, RD: Gluten-Free Diet: A Comprehensive Resource Guide.*

Foods Allowed on a Gluten-Free Diet		
<u>Flour/Grains/Seeds/Etc.:</u>	<u>Gums:</u>	<u>Legumes:</u>
<ul style="list-style-type: none"> <li>• Amaranth</li> <li>• Arrowroot flour</li> <li>• Baking soda</li> <li>• Bean flour</li> <li>• Buckwheat</li> <li>• Cassava (Manioc flour)</li> <li>• Chick pea flour</li> <li>• Corn flour</li> <li>• Cornmeal</li> <li>• Cornstarch (<i>Masa harina</i>)</li> <li>• Cream of tartar</li> <li>• Dal or Dahl (legume from India)</li> <li>• Flax</li> <li>• Gelatin</li> <li>• Green pea flour</li> </ul>	<ul style="list-style-type: none"> <li>• Acacia (<i>Gum Arabic</i>)</li> <li>• Carob bean gum</li> <li>• Carrageenan</li> <li>• Cellulose</li> <li>• Guala</li> <li>• Guar</li> <li>• Karaya</li> <li>• Locust bean</li> <li>• Tragacanth</li> <li>• Xanthum</li> <li>• Invert sugar</li> <li>• Kudzu</li> <li>• Lecithin</li> </ul>	seeds of plants which include: <ul style="list-style-type: none"> <li>• Channa</li> <li>• Chick peas</li> <li>• Gram</li> <li>• Lentils</li> <li>• Peanuts</li> <li>• Peas</li> <li>• Soya</li> </ul>

## Oats

According to [Shelley Case in her book](#), "The safety of oats in individuals with celiac disease has been extensively investigated. Clinical evidence confirms that consumption of pure, uncontaminated oats is safe in the amount of 50 to 70 grams per day (1/2 - 3/4 cup dry rolled oats) by adults and 20 to 25 grams per day (1/4 cup dry rolled oats) by children with celiac disease. Studies looking at the consumption of oats over five years have confirmed their safety. However, the studies looking at safety of oats in celiac disease have involved a small number of subjects, the oats used were pure, free of gluten contamination and the amount allowed per day was also limited."

## Associated Health Conditions

Even with a gluten-free diet, celiac disease patients show a higher incidence of future development of intestinal lymphoma and colon cancer, rheumatoid arthritis, diabetes, thyroid disease, ulcerative colitis and schizophrenia. As such, routine screening for colon cancer and intestinal lymphoma is recommended, as well as blood glucose levels, tests for thyroid function (TSH). Joint inflammatory symptoms require investigation for rheumatoid arthritis.

Celiac disease is often underdiagnosed by the medical profession. Chiropractors and other complementary health practitioners should be aware of signs and symptoms that may suggest celiac disease, especially in ethnic groups that are most genetically predisposed to this condition, and encourage family members of celiac disease patients to undergo the simple, but highly accurate, blood test for celiac disease.

In cases of diagnosed celiac disease, practitioners should strongly encourage patients to follow a gluten-free diet, as outlined meticulously by Shelly Case. I also suggest that patients take a high-potency multiple vitamin/mineral, an essential fatty acid supplement containing borage seed, flaxseed and fish oil, a digestive enzyme supplement that contains the prebiotics FOS and inulin, and a glutamine supplement (500 mg, twice daily). These nutrients work synergistically to help form healthier intestinal cells, aid in digestion, immune regulation of the gut immune system, and help to minimize local and systemic inflammatory responses via their effects on prostaglandin (eicosanoid) synthesis.

## Resources

1. *Current Therapy in Nutrition*. Jeejeebhoy KN, Editor. BC: Decker Inc., 1988:121-134.
2. *Quick Reference to Clinical Nutrition, 2nd Edition*. Halpern S, Editor. J.B. Lippincott Company, 1987:201.
3. *Gluten-Free Diet: A Comprehensive Resource Guide*. Shelley Case. Centax Books & Distribution. ISBN # 1-894022-79-3.

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