

The Gluten-Free Choice

Is it for me?

The gluten-free diet is emerging as one of the most popular trends on the market, but gluten seems to be widely misunderstood. This publication defines gluten, describes a gluten-free diet, and discusses who should follow this diet.



Gluten is known for giving baked goods their fluffiness. Gluten is frequently found in cereals, breads, pastas, and other bakery items.

What is gluten?

Gluten is a protein found in wheat, barley, and rye. Known for giving baked goods their fluffiness, gluten is frequently found in cereals, breads, pastas, and other bakery items. Gluten is also contained in other foods such as salad dressings, canned foods, sauces, seasonings, and soups. Malted alcoholic beverages such as beer, porter, stout, and pilsner also contain gluten, due to the barley content. Technically, oats do not contain gluten; however, oats are commonly found to be cross contaminated with wheat during milling and processing. This cross contamination is harmless for most people but is dangerous to individuals experiencing gluten sensitivity.

Who should be on a gluten-free diet?

It is estimated that 1 in 133 people exhibit symptoms of gluten sensitivity. Those who have celiac disease cannot tolerate even the smallest amounts

of gluten. In contrast to celiac, non-celiac gluten intolerance is neither an autoimmune disorder nor an allergy. Non-celiac gluten intolerance or sensitivity is thought to be an immune system response. In the past, these gluten sensitivities have been underdiagnosed, but with increased information and awareness, the diagnosis has become more prevalent. The symptoms of indigestion, bloating, diarrhea, and fatigue can be similar in both conditions, but they are more severe in celiac disease, which has long-term health consequences.

Celiac

Celiac disease is a genetic autoimmune disorder, now known to be hereditary, which causes a negative reaction to gluten in the gastrointestinal tract. Only 1 percent of the population has been diagnosed with celiac, while 30 percent carry the genetic markers. Women are thought to be 2.5 to 3 times more likely than men to have celiac disease. Currently, the only

Nutrient dense, gluten-free foods	
Calcium	Milk, yogurt, cheese, sardines and salmon with bone, broccoli, collard greens, almonds, calcium-fortified juice, amaranth, teff, quinoa
Iron	Meat, fish, chicken, beans, nuts, seeds, eggs, amaranth, quinoa, teff
B vitamins	Eggs, milk, meat, fish, orange juice, beans, nuts, seeds, gluten-free whole grains
Vitamin D	Vitamin D-fortified milk and yogurt, egg yolks, salmon, sardines, tuna
Fiber	Vegetables, fruits, beans, amaranth, quinoa, millet, buckwheat, sorghum, teff, flax

proven treatment for those with celiac is to maintain a gluten-free diet.

What happens when someone with celiac does eat something containing gluten? Those with celiac are unable to digest gluten. The gluten destroys some of the gastrointestinal lining as it passes through the gut. The greatest amount of nutrient absorption occurs in the intestine and is drastically hindered without a healthy lining, making even the smallest amount of gluten dangerous.

Those with celiac exhibit a wide array of symptoms that change with age and the amount of time left undiagnosed. In many cases, there can be a long delay between a diagnosis and the onset of symptoms. Some symptoms can include diarrhea, bloating, fatigue, malnutrition, cramping, vomiting, and constipation among others. The longer someone is left undiagnosed, the more problems he or she may develop, largely due to lack of nutrient malabsorption. Because gluten interferes with nutrient absorption, people with celiac disease experience deficiencies in vital nutrients, leading to more serious health conditions. Such health conditions can include anemia, reduced bone mineral density, and infertility.

A newly diagnosed patient is advised to speak to a registered dietitian specializing in the gluten-free field immediately following diagnosis. With correct guidance for a gluten-free diet plan, a patient can repair the damage caused by gluten, healing the intestine and replenishing depleted nutrient stores. In turn, the patient will experience relief from symptoms and reverse the consequences of malabsorption. The sooner he or she can get started on a gluten-free diet plan, the better the outcome. As long as the patient consciously abides by the gluten-free diet, he or she will greatly improve his or her nutritional status. Although the deficiencies will improve, they may never completely disappear. A lack of improvement may be an indicator that the patient is not adhering to a gluten-free diet. It should be noted, however, that a lack of improvement can also be caused by unsatisfactory education and distorted information, not always by fault of the patient.

Who should not be on a gluten-free diet?

For some unknown reason, the gluten-free diet has been added to the list of current fad diets. Many people are under

the impression that gluten is a bad thing. They mistakenly believe that following a gluten-free diet is a good way to lose weight. A gluten-free diet is specifically meant for people who cannot digest gluten. For those without gluten sensitivity following a gluten-free diet can have serious side effects. In an effort to mimic the taste and flavor of their gluten-containing counterparts, gluten-free foods frequently contain more fat and refined carbohydrate and thus are higher in calories. In addition, a gluten-free diet is often low in carbohydrates, fiber, iron, folate, niacin, thiamine, riboflavin, calcium, vitamin B12, phosphorus, and zinc, all of which are commonly added into processed foods.

Contrary to the belief that gluten-free diets promote weight loss, most celiac patients find they gain weight in response to the increased fat and sugar in many gluten-free products. Foods most commonly known to contain gluten also tend to be carbohydrate dense. For the most part, weight loss is seen in those who drastically reduce carbohydrate-dense foods in their diet rather than exchanging them for a gluten-free version.

Some gluten-containing foods and ingredients

Ale	Flavoring	Oats*
Atta	French fries	Orzo
Autolyzed yeast	Fu	Processed meat
Baked beans	Gelatinized starch	Puddings
Barley (pearl, flakes, flour)	Gluten, gluten flour	Rice mixes
Beer*	Graham flour	Roux
Blue cheese crumbles	Gravy	Rye
Breading	Herbal Teas	Salad dressings
Brewer's yeast	Hydrolyzed vegetable/plant protein	Sauces
Broth, bouillon	Ice cream	Sausage
Brown rice syrup	Icing/frosting	Seasonings
Bulgur	Imitation bacon	Seitan
Candy	Imitation seafood	Self-basting poultry
Cereal binding	Kamut	Semolina
Chapatti	Lager	Soups, soup bases
Chocolate bars, chocolates	Licorice	Soy sauce
Coloring (artificial, caramel)	Malt	Spelt
Communion wafers	Malt extract, malt syrup, malt flavoring	Stuffing
Couscous	Malted milk	Thickeners
Dextrin	Maltodextrin	Triticale
Dinkel	Marinades	Vegetarian "burgers"
Dry roasted nuts	Matzoh	Wheat
Durum	Meat loaf	Wheat bran
Einkorn	Modified food starch	Wheat flour
Emmer	Mono- and di-glycerides	Wheat germ
Farina	Nuts	Wheat starch
Faro/Farro		

*Gluten free beer is available.

**Oats should be labeled gluten free. They do not contain gluten but have the risk of cross-contact during harvesting or processing.

Source: All tables adapted from Li, Anderson, and Roach 2009.

Gluten-free marketplace

While the gluten-free diet is widely misunderstood as a beneficial diet, this fad diet has resulted in a great increase in the availability of gluten-free products in the marketplace. The number and quality of gluten-free products has drastically increased in order to meet the demand for these products, which command a premium price. A recent survey discovered that a mere 10 percent of people who purchase gluten-free products do so as an absolute necessity. The remaining 90 percent purchase gluten-free products under the impression that the products are healthier or better quality.

Along with an increase in the marketplace, there is also a concern with gluten-free labeling. Currently, there are no regulations on gluten-free labeling. The FDA is expected to release a standard in the near future, but this definition has long been delayed. The expected and commonly recognized standard,

similar to that found in Europe, is that anything labeled “gluten-free” may not contain anything more than 20ppm gluten. However, until this regulation is made official, those with any type of gluten sensitivity remain cautious.

Conclusion

The gluten-free diet is meant specifically for those with a gluten intolerance or sensitivity. For the larger population, gluten is a harmless protein found in wheat, barley and rye. Those suspicious of a gluten-sensitivity should seek the guidance of both a doctor and a registered dietitian. Changing to a gluten-free lifestyle can be challenging and costly. Consumers seeking to eat a highly nutritious diet to maintain or lose weight should consider eating more fruits and vegetables, whole grains, and lean protein. Most of us can spend our food dollars more wisely by choosing fewer processed foods and preparing simple meals at home.

Resources

- Allen, Jane E. Gluten-Free: The low-carb of this decade? ABC News/Health. May 2011.
- Li, J, Anderson, J, and Roach, J. Gluten-free diet guide for people with newly diagnosed celiac disease. Colorado State University Extension, Fact Sheet No. 9.375, March 2009. <http://www.ext.colostate.edu/pubs/foodnut/09375.pdf>.
- Malandrino, Noemi et al. (2008). Metabolic and nutritional features in adult celiac patients. *Digestive Diseases* 26:128-133.
- Mancini, Lee A. et al. Celiac disease and the athlete. *Current Sports Medicine Reports*. Volume 10 (March/April 2011).
- Moran, Terry; Stuart, Elizabeth. “Gluten-free”: FDA may be closer to definition. ABC News/Health. August 2, 2011.
- Niewinski, Mary M. (2008). Advances in celiac disease and gluten-free diet. *Journal of the American Dietetic Association* 108:661-672.
- Steinmetz, Katy (2011). Bad-mouthing gluten. *Time* May 23; 177(21):64.
- Thompson, Tricia.; Brown, Marlisa (2010). Easy gluten-free. *American Dietetic Association* 1-53.



Developed by Sandra Bastin, Ph.D., R.D., L.D., Janet Mullins, Ph.D., R.D., L.D., Leslie Workman, Pike County Extension Agent for Family and Consumer Sciences, and Laura White, Rowan County Extension Agent for Family and Consumer Sciences, December 2012.

Sample gluten-free shopping list

Vegetables			
Lettuce	Tomatoes	Cabbage	Carrots
Broccoli	Potatoes	Celery	
Fruits			
Apples	Oranges	Bananas	Grapes
Meat, Proteins			
Beef	Chicken	Fish	Eggs
Pork	Turkey	Shrimp	
Dairy			
Milk*	Cheddar cheese	Cream cheese*	Butter
Yogurt*	Cottage cheese*	Sour cream	
Binders (for baking)			
Xanthan gum	Guar gum	Tapioca	
Frozen Foods			
Berries	Corn	Sorbet	Gluten-free waffles
Mangoes	Peas		
Canned and Packaged Foods			
Peaches	Pears	Green beans	Dried beans
Gluten-free Grains			
Rice* (all forms, even glutinous)	Amaranth	Buckwheat	Soy
Quinoa	Arrowroot	Potato flour, starch	Teff
Millet	Bean flours (garbanzo, fava)	Sorghum	Tapioca (manioc, cassava)
Corn			
Snacks			
Popcorn*	Corn chips*	Nuts and seeds*	Jello
Rice cakes, rice crackers*	Potato chips*		
Condiments			
Honey	Jams, jellies, marmalade	Herbs	Pickles
Ketchup	Corn and maple syrup	Salt	Vinegars
Mustard	Sugar	Pepper	Regular mayonnaise and salad dressings*
Peanut butter	Spices	Olives	Vegetable oils
Drinks			
Fruit juice	Coffee	Tea	

*With no gluten-containing additives.

Mention or display of a trademark, proprietary product, or firm in text or figures does not constitute an endorsement and does not imply approval to the exclusion of other suitable products or firms.