

Overview of important information concerning the role of gluten in cooking and food allergies

February 24, 2010 Marc Williams italmon@hotmail.com

What is Gluten?

Gluten is made up of proteins that occur in many members of the grass family. It is most commonly responsible for the elasticity in bread dough. Gluten is not well digested by anyone but can cause particular issues for certain people (Ryberg, 2008, p. xv).

What plants contain gluten?

Wheat, Rye, Barley, Spelt and Kamut all contain gluten. Triticale is a hybrid cross between Wheat and Rye and is also not appropriate for a gluten free diet. Rice, Corn, Sorghum, Teff and Millet are in different tribes of the grass family and do not contain gluten (Dumke, 1992). Some people are allergic to Corn for a different reason. Some debate remains as to whether Oats can affect gluten sensitive individuals or if it is their contamination by being processed on the same machinery as other members of the grass family (Brostoff, 2000, p. 106; Fenster, 2008; Ryberg, 2008).

Grains that are not from the grass family do not contain gluten. These include Buckwheat, Quinoa, Amaranth. Garbonzo, Lentils, Fava and Soybeans are members from the pea family that can also be ground into flour and used in gluten free preparations. Flours may also be made from nuts such as Chestnuts, Almonds and even from Acorns.

Gluten is contained in many processed foods. Caramel color, modified food starch, hydrolyzed vegetable protein, dextrin, and imitation seafood all may contain gluten. It may be added as fillers to spices and various meats such as hamburger and hotdogs. Possible other additives with gluten include foreign citric acid, blue cheese, diglycerides, gum base, malt, maltodextrin, and monoglycerides.

Some baking powders may contain wheat flour. Hain baking powder is gluten free. Rumford and Bob's Red Mill baking powders contain only corn starch but are not labeled specifically gluten free. One can also make baking powder from scratch. Some suggested recipes follow: one part Baking soda, two parts Cream of tartar, one part Rice or Potato flour) (Brostoff, 2000). Another replacement is 1 part Corn starch or Arrowroot, 1 part Cream of tartar, ½ part Baking soda (Potts, 1998).

Flour containing gluten may also be used as a coating to dust certain candies that otherwise are gluten free. Reading labels is essential. Most products that contain gluten from common wheat are now labeled due to the Food Allergen Labeling and Consumer Protection Act (Fenster, 2008). However, foods containing gluten from, kamut, einkhorn and faro which are all ancient types of wheat may not be labeled. Remember that wheat also goes by the names of cous cous, semolina, farina, bulgur, durum and many others. Recently a lot of products have emerged that are labeled gluten free and available at natural food stores.

Who is affected by gluten?

The primary people affected by gluten have an autoimmune disease known as celiac. Celiac is a genetic disorder that is inherited and was first described in 1888 by Samuel Gee (Hagman, 1996, p. ix). Some estimates state that as many as 1 in 133 Americans or close to 3 million people suffer from celiac disease (Fenster, 2008). Some old names for the disease include nontropical sprue, and gluten sensitive enteropathy. Symptoms of celiac may include diarrhea, bloating, stomachaches, stunted growth, infertility, chronic fatigue, dermatitis and anemia. A

certain percentage of people with Celiac are also lactose intolerant. The gliadin fraction of gluten proteins inflames the small intestine and prevents the absorption of nutrients. Prolamins are another name for gluten proteins as well.

Some people who don't have celiac still have intolerance to gluten. These allergies fluctuate from mild to severe. Often times the difference in reaction is moderated by frequency or quantity of consumption. Some symptoms include stuffy nose, headaches, stomachaches, rashes, achy joints and other features that might easily be confused with other ailments. The inflammation that can occur from gluten intolerance may also decrease absorption of vitamins and minerals and therefore lead to nutrient deficiency. Possibly as many as 10 to 15% of Americans may suffer from wheat intolerance (Fenster, 2008). Other allergies to items such as mold, animal dander, or dust may heighten sensitivity to wheat and other foods (Walsh, 2000).

Autism is almost of epidemic proportions in American society today. One in 150 children are estimated to suffer from this disease. The removal of gluten from the diet of an Autistic child may help with behavior (Fenster, 2008).

Diagnosis of Celiac and wheat allergies/intolerances follows a few pathways. A replacement diet and logging of dietary intake may help determine sensitivity. Typically, a one week duration away from the suspected food is followed by a reintroduction of the food to the diet with observation of any symptoms (Jones, 1984). However, many authors caution against self diagnosis (Fenster, 2008; Hagman, 2000; Ryberg, 2008). Wheat allergies may mimic symptoms of other ailments including Chronic Fatigue, Fibromyalgia, Lupus, Crohn's disease, and Arthritis. Clinical tests include small intestine biopsies or blood tests that look for particular antibodies. Removal of gluten may remove the ability to diagnose by biopsy and thereby decrease the chance of certainty in gluten intolerance.

Baking gluten free

Many flours are available now for gluten free baking. Most books mention a stock mix of some starchy flour combined with a high protein flour (Fenster, 2008; Hagman, 2004). Rice flour, sorghum flour and potato flour are examples of starchy flours. Garbonzo bean or soy make for high protein flours. Wheat free baking may also require longer and slower baking times (Potts, 1998). Ultimately the finished product can be a bit heavier than those from wheat.

Gluten free baking sometimes requires special ingredients to provide similar effects attained by flours containing gluten. Xanthan gum or Guar gum are the items most often used to bind gluten free baked goods together (Hagman, 2002). Xanthan gum is a polysaccharide sometimes cultured from corn (Fenster, 2008). It is not available organically and therefore most likely contains conventional genetically modified corn at its base. Guar gum is made from the powder of a member of the bean family (*Cyamopsis tetragonoloba*) that is from India and Pakistan. It is not known the nature of the process to attain it. Locust bean gum and carrageenan are two binders that are unfortunately not available to the regular consumer (Fenster, 2008). I wonder if any of the native or naturalized pea family members such as the honey locust might be cultured similarly to the Guar bean. However, this family contains many toxic plants and should not be experimented with lightly!

Gluten Free thickeners

Many products exist that may replace wheat flour as thickeners in soups, sauces, etc. Corn starch is the most readily available item that can replace wheat flour. Kuzu powder is a traditional ingredient from Japan that is made from the root of the exotic invasive Kudzu plant. Arrowroot comes from the root of a tropical plant in the Marantaceae family. Potato starch and rice flour can be found in natural food stores. Tapioca comes from the tropical plant known as yuca, manioc or cassava.

Literature Cited

- Brostoff, J. (2000). *Food Allergies and Food Intolerance: The Complete Guide to Their Identification and Treatment*. Rochester, Vt.: Healing Arts Press.
- Dumke, N. M. (1992). *Allergy Cooking with Ease*. Lancaster, PA: Starburst Publishers.
- Fenster, C. L. (2008). *1,000 Gluten-Free Recipes*. Hoboken, N.J.: John Wiley & Sons.
- Hagman, B. (1996). *The Gluten-Free Gourmet Cooks Fast and Healthy: Wheat-Free with Less Fuss and Fat* (1st ed.). New York: Henry Holt.
- Hagman, B. (2000). *The Gluten-Free Gourmet: Living Well Without Wheat* (Rev. ed.). New York: Henry Holt and Co.
- Hagman, B. (2002). *The Gluten-Free Gourmet Makes Dessert* (1st ed.). New York: Henry Holt and Company.
- Hagman, B. (2004). *The Gluten-Free Gourmet Cooks Comfort Foods: More Than 200 Recipes for Creating Old Favorites with the New Flours* (1st ed.). New York: H. Holt.
- Jones, M. H. (1984). *The Allergy Self-Help Cookbook: Over 325 Natural Foods Recipes, Free of Wheat, Milk, Eggs, Corn, Yeast, Sugar and Other Common Food Allergens*. Emmaus, Pa.: Rodale Press.
- This is a classic text for gluten free living – Talks about rotation diet. What foods fall in which families. A little outdated in regards to what new ingredients are available now.
- Potts, P. L. (1998). *The Complete Guide to Wheat-Free Cooking*. Hillsboro, Or.: Beyond Words Pub.
- Ryberg, R. (2008). *You Won't Believe It's Gluten-Free!: 500 Delicious, Foolproof Recipes for Healthy Living* (1st ed.). Cambridge, MA: Da Capo Press.
- Walsh, W. E. (2000). *Food Allergies: The Complete Guide to Understanding and Relieving Your Food Allergies*. New York: John Wiley & Sons, Inc.

Quote

The finest gift we can give to our age and time is the gift of a constructive and creative life - Unknown

Websites

www.gluten.net, www.glutenfreediet.ca, www.bobsredmill.com, www.glutenfreeoats.com
www.onlyoats.com, www.celiaccentral.org, www.celiaccenter.org, www.celeiacdisease.net,
www.gluten.net, www.celiac.org, www.celiac.com,