

## On Gluten-Free

In 2010, the "gluten-free" (GF) consumer products market was a \$2.6 billion industry, and it has since grown exponentially with an increasing amount of people embracing the gluten-free diet/lifestyle (GFDL) (Johanson, 2015; Pietzak, 2012). According to the U.S. Food and Drug Administration (FDA), products can be labeled "gluten free" only if they contain less than 20 parts per million of gluten (Johanson, 2015). While there are legitimate reasons for maintaining a GFDL, part of the GFDL movement has become somewhat of a "fad" in the sense that many people "believe" that GFDL is "healthier" and thus have electively adopted GF options. The GFDL movement may be powered by misunderstanding the role of gluten and the mechanisms of GF.

Gluten refers to the combination of gliadin (a prolamin protein) and glutenin (a glutelin protein) found in grains including wheat, barley, bulgur, rye, spelt, oats, and semolina (Andrews, n.d.). Gluten sensitivity (iGS) is an immunological response to gluten (Fasano, Sapone, Zevallos, & Schuppan, 2015; Pietzak, 2012; Sapone et al., 2012; Walsh, n.d.). Celiac disease (CD) is a more severe form of iGS whereby the immune response causes intestinal damage (Sapone et al., 2012; Walsh, n.d.). Wheat allergy (WA) elicits an immune response to wheat proteins (Pietzak, 2012). Gluten sensitivity (GS without immune response) or non-celiac gluten sensitivity (NCGS) describe individuals who react to gluten without a specific allergic or immune response and without intestinal damage (Catassi et al., 2013; Fasano et al., 2015). The reason for distinguishing between iGS and GS/NCGS is because new research has found that in a small percentage of GS/NCGS individuals, there may be some evidence of an immune response to gluten (but without intestinal damage) (Fasano et al., 2015; Pietzak, 2012). For iGS/CD/WA individuals, avoiding gluten is important in order to avoid the symptoms.

There are legitimate health ramifications for individuals diagnosed with a true iGS/CD/WA issue. For women, there is an increased risk of stillbirths or abortions, anemia, amenorrhea, and early menopause (Walsh, n.d.). Gluten has also been linked to mood disorders, schizophrenia-like symptoms, and depression (Pietzak, 2012; Walsh, n.d.). Gluten affects the neurological system and has been linked to behavioral disorders--seizures, neuropathies, Alzheimer's, multiple sclerosis, attention deficit and hyperactivity disorder, migraines, and brain activity abnormalities (Andrews, n.d.; Pietzak, 2012; Walsh, n.d.). Gluten also seems to be linked to bone loss and/or decreased calcium absorption (Johanson, 2015; Walsh, n.d.). There is evidence that both type 1 and 2 diabetes have some relationship with gluten (Catassi et al., 2013; Walsh, n.d.). Individuals diagnosed with iGS/CD/WA should avoid gluten. In any case, a proper diagnosis requires deeper investigation by a qualified medical professional as opposed to "self-declaring/diagnosing" GS/NCGS.

The difficulty and confusion with GS/NCGS seems to lie in the diagnostic processes. GS/NCGS individuals seem to experience an array of symptoms (e.g. foggy brain, joint pain, non-specific behavioral problems, gastrointestinal issues) associated with the consumption of gluten-containing products (Catassi et al., 2013; Fasano et al., 2015). With the removal of gluten-containing products in their diets, these individuals became asymptomatic. The diagnosis of GS/NCGS is often given after all other possibilities have been excluded (iGS/CD/WA) like a "catch-all" (Catassi et al., 2013). Researchers and clinicians still debate on whether GS/NCGS

exists as an independent clinical entity or if it is part of another condition (Catassi et al., 2013). Some of the symptoms of GS/NCGS overlap with irritable bowel syndrome (IBS) (Catassi et al., 2013). Fasano et al. (2015) defined food sensitivities as "immune-mediated reactions to some nutrients...these reactions (intestinal and extra-intestinal) do not always occur in the same way when people ingest that particular nutrient" (p. 1197). Fasano et al. (2015) clarified that GS/NCGS was a food sensitivity. Fermentable oligosaccharides, disaccharides, monosaccharides and polyols (FODMAPS), molecules found in food, seem to induce very similar symptoms in GS/NCGS individuals leading researchers to believe that GS/NCGS may be similar to IBS (Fasano et al., 2015). Furthermore, there have been some studies showing that other proteins associated with wheat or grains may be leading to GS/NCGS which would re-classify GS/NCGS as an immune response (Fasano et al., 2015). Clearly, more research is needed.

There are many legitimate reasons to adopt GFDL. However, there are also many asymptomatic people who have adopted GFDL. They may miss out on some of the benefits of whole grains such as reducing risks of stroke, heart disease, and type 2 diabetes (Johanson, 2015).

## References

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