

Gluten intolerance: Changing the face of public health

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Improvements in scientific and clinical research have advanced the efficacy of public health in recent decades, creating a more effective and integrated health care system. Much of this is rooted in the collaboration of separate, but related, fields that amalgamate ideas and results to create a holistic understanding of what contributes to a healthy population. Paradoxically, recent scientific advances have also introduced an abundance of health-related issues to Western society, with gluten intolerance being one that has mysterious roots and an ominous forecast.^{1,2}

Dietary sensitivity to gluten, found in wheat and other grains, has become five times more prevalent since 1974.³ For individuals afflicted with Celiac disease, a severe form of gluten intolerance, gluten in the bloodstream triggers an immune response that damages the villi lining of the small intestine, causing inflammation and malabsorption.^{2,4} Varying levels of gluten intolerance have been reported to lead to vitamin deficiencies, anemia, osteoporosis, gastrointestinal distress, skin rashes, depression, fatigue, and, in extreme cases, cancer and early death.^{1,2} High degrees of comorbidity also exist between Celiac disease and diabetes, thyroiditis, multiple sclerosis, autism, neuropathic pain, schizophrenia, ADHD, infertility, and seizures.^{2,4}

For many years, the origins of Celiac disease were unclear. Recently, genetically modified organisms (GMOs) have consistently been identified as an environmental trigger for varying levels of gluten intolerance, and this may be contributing to the celiac disease epidemic.^{2,5,6} GMOs are foods which are engineered to thrive in varied conditions by tolerating glyphosate, a commonly used weed killer, and by producing the insecticide Bt-toxin.^{2,5,7,8} Wheat itself is not a GMO, but has been hybridized over the years to produce a superior plant with a high yield. Nine GMOs currently exist, including soy, corn, cotton (oil), canola (oil), sugar (from sugar beets), zucchini, yellow squash, Hawaiian papaya, and alfalfa.²

Glyphosate, the active ingredient in the commercial herbicide Roundup™, is an antibiotic that targets and destroys gut bacteria in insects.⁵ The speculation is that it may do the same to humans, creating an imbalance of gut flora associated with Celiac disease. Similarly, Bt-toxin, found in corn and soy, is designed to puncture holes in insect cells, and has been shown to trigger immune responses in mice⁶ and humans.^{7,8} Together, these factors likely contribute to the characteristic leaky gut, compromised digestive activity, and hyperactive immune system associated with Celiac disease.⁹ It can therefore be argued that the introduction of GMOs has directly initiated an increase in gluten intolerance and a parallel increase in the number of cases of associated diseases and conditions for the health care industry to treat.

Taken together, this evidence suggests that the immune system has changed over the years in response to gluten, and there is hope that science can further modify that response. Future therapies focus on individualized treatment for patients living with Celiac disease.¹⁰ In Australia, Nexpep Pty. Ltd. has experimented with vaccine therapy, which has proven to be successful in mice, and has advanced to clinical trials. In the early stages, 40 patients with Celiac disease were injected with increasing doses of the protein found in gluten with the intention of increasing tolerance and ultimately eliminating gluten sensitivity. Evaluation will include examination of immune response and levels of intestinal distress, and prolonged treatment will ideally eliminate the adverse response to gluten.¹⁰

Understanding the relationship between GMOs and the immune response to gluten will be undoubtedly useful in generating therapies for individual patients with Celiac disease and gluten intolerance. However, the ultimate focus should be on prevention for future generations. Conventional methods of health care dictate that those who are sick should be treated. Perhaps it is time to ►

challenge this dogma and boldly attempt to prevent illness before it materializes.

Overall health is complex and extends beyond traditional medicine; diet and lifestyle choices play a role in immune function and general wellbeing. Progressive approaches to preventing illnesses like Celiac disease, including healthy eating habits, sensible lifestyle choices, and taking initiative to learn about the foods that we eat can and should be adopted. To this end, collaborative efforts must extend beyond the fields of scientific research and medical care, to include the agriculture, lifestyle, and fitness industries. Until more is conclusively known of GMOs, people should choose to avoid consuming these mysterious hybrids and think critically about how we truly are what we eat. If we choose to eat foods that have been unnaturally modified, it is reasonable to consider the possibility that our bodies may consequently be modified. ■

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