

# Gluten-free diets:



## Fact & fiction

*Nutrition experts sift through the information glut for grains of truth*

BY ROSIE SCHWARTZ • Toronto

**H**ow did gluten suddenly become dietary enemy number one? The protein—found in wheat, barley and rye—is now a substance to avoid, even for people who have never followed dietary advice before.

Gluten-free diets have become the panacea for all that ails North Americans. Celiac disease (CD) has moved from relative obscurity about a decade ago into the spotlight. Along with the flood of gluten-free products in the supermarket, there has been a glut of misinformation about gluten. While for some, gluten is indeed responsible for a host of ills, others, who eschew it, often have no idea what it really is.

At the recent Whole Grains: Breaking Barriers conference sponsored by Boston think-tank Oldways and the Whole Grains Council, Dr. Alessio Fasano, a world-renowned CD expert, separated the science from the pseudoscience. Dr. Fasano, a pediatric gastroenterologist, directs the Center for Celiac Research at MassGeneral Hospital for Children and is a visiting professor of pediatrics at Harvard Medical School and author of the recently published book *Gluten Freedom*.

Firstly, Dr. Fasano dispelled the myths of who was thought to be the typical CD sufferer. No longer considered a disease of Caucasians, it is, in fact, a disorder with a 1% prevalence worldwide. Those with CD carry genetic markers (HLA-DR3-DQ2 or HLA-DR4-DQ8)

which can now be tested for and may be key, in the near future, in the prevention of CD.

Serologic testing includes IgA anti-tissue transglutaminase autoantibodies (tTG), which are produced when an individual with CD consumes gluten. It's also wise to test for total IgA autoantibodies, as some patients with autoimmune disease may not produce these autoantibodies at all, which would result in a false negative when assessing tTG levels.

If CD affects just one in 100 people, you may be wondering why the market for gluten-free products has exploded. According to recent surveys, as many as 100 million Americans will consume gluten-free products within a year. The popularity of these products in Canada is no different. Even pet food commercials now tout that their brands are gluten free.

There are other segments of the population, besides those with CD, who may be required to limit or eliminate gluten from their diets. The emerging science suggests three basic groups: those with CD; wheat allergy sufferers; and those with a newly recognized condition, non-celiac gluten sensitivity (NCGS), which may affect about 5% of the population.

Those with wheat allergies may need to avoid only wheat products (which include gluten and other wheat components) for a period of time, depending on their allergic status. Allergic testing, which includes IgE deter-

**Gluten-free products have multiplied on grocery store shelves (above) despite the fact only 1% of the population suffers from celiac disease.**

minations (as opposed to the IgA responses found in CD patients), may be helpful when this is suspected. But as wheat allergies are more common in children and can change over time, the avoidance of wheat products is often not a lifelong requirement.

While serologic testing exists for both CD and wheat allergy, diagnosing NCGS is not simple. It's thought this sensitivity involves the innate immune system, with gluten leading to inflammation that could involve a wide, and somewhat surprising, range of ailments. For example, there may be associations between NCGS and the development of autism and attention deficit hyperactivity disorder in some individuals, but Dr. Fasano cautioned that these conditions are multifactorial and simply blaming gluten as the offender is flawed reasoning. On the other hand, experimenting with a nutritionally balanced gluten-free diet in these cases may not be unreasonable. Research is underway to assess various inflammatory markers, such as cytokine levels, that may aid in the diagnosis of NCGS.

While we await further research, here are six scientific facts to keep in mind:

- 1) Patients should never eliminate gluten from their diets when there is suspicion of gluten sensitivity before undergoing serologic testing.

While a gluten-free diet may seem to be the best initial diagnostic tool to see if symptoms subside, it is contrary to recommendations. In order for autoimmune antibodies to be produced, gluten must be consumed in large enough quantities over a period of time. A gluten-free regime will yield negative results even in those with CD.

Without a definitive diagnosis, patients may not adhere to a strict gluten-free regime, especially when you consider it's a diet for life. Over time, for those with CD, even minute amounts of gluten—such as when a food may be contaminated with the offending substance—can lead to long-term consequences such as increased risk for lymphoma and small bowel cancer. This small amount of gluten might allow the patient to be symptom-free but, ultimately, it may be harmful to their health.

Re-introducing gluten to perform a gluten challenge in an individual who has gone gluten-free can be difficult and is often not done to the degree required for accurate testing. Consuming the equivalent of two pieces of bread containing gluten may be necessary for a prolonged period—some experts say at least two weeks, while others suggest at least one month. In some cases (as there may be a 5% false negative rate), a biopsy, even with negative serology results, may be required.

Those with NCGS, after negative testing for CD, can consume as much gluten as is tolerated to be symptom-free. Currently, there do not appear to be any long-term adverse effects of tolerated amounts.

- 2) In spite of all the rumours, modern wheat has not changed significantly over the past few centuries and there is no genetically modified wheat on the market.

While wheat may not have changed in the recent past, our tolerance to gluten may have. Dr. Fasano acknowledged that, while our genetic makeup has not changed markedly either, the incidence of CD and gluten sensitivity is definitely on the rise. While scientists are puzzled by the increase, Dr. Fasano pointed to our environment as being a potential culprit for changes in gene expression.



Dr. Fasano

In particular, an unfavourable shift in our gastrointestinal microbiota may be a top offender. Overuse of antibiotics and suboptimal diets containing processed foods with inadequate amounts of fibre and a shortage of probiotic and prebiotic foods may leave beneficial bacteria in short supply, possibly increasing the risk for CD and other forms of gluten sensitivity.

- 3) Don't just test your patients with gastrointestinal symptoms for CD and NCGS.

While CD may have GI symptoms, there are many more conditions to consider. For example, what your patients call brain fog or an inability to

think clearly due to physical changes in the brain has been documented in the scientific literature for those with CD consuming gluten. After gluten elimination, cognitive function has indeed improved. It's this kind of research that has muddied the waters and led to books such as *Grain Brain* becoming best-sellers with claims that gluten is the cause of Alzheimer's disease.

Dr. Fasano pointed to tTG testing as a cost-effective diagnostic tool for many other conditions. Children of short stature often undergo a battery of tests when CD may be the cause. Anemia, eczema, joint pain and osteoporosis in both men and premenopausal women would also fit into this category.

- 4) Test those with autoimmune diseases such as type 1 diabetes and thyroid disease and family members of patients with CD for genetic markers and monitor them over time.

While the mechanisms of gene expression for

CD may not yet be defined, awareness of the genetic predisposition may aid in prevention, delay or early diagnosis of CD.

- 5) Gluten-free diets are not a prescription for weight loss.

For those with CD, gluten avoidance may improve health and lead to weight gain. In others, avoiding gluten may lead to the elimination of junk food and initially result in weight loss, but with the staggering amounts of new gluten-free products with little nutritional value, it is often short-lived.

- 6) There are potential nutritional shortfalls of a gluten-free diet.

At the conference, Pam Cureton, a clinical and research dietitian specializing in the treatment of CD at the Center for Celiac Research at MassGeneral, pointed out that a gluten-free diet can potentially be low in B vitamins, iron and fibre. Including a variety of gluten-free grains such as quinoa, buckwheat and millet can fill the nutrient gap.

Dr. Fasano stressed that physicians should have their patients work with a knowledgeable dietitian to plan a proper gluten-free regime, for both adequate gluten elimination, but also to avoid nutrient shortfalls.

Rosie Schwartz is a Toronto-based consulting dietitian in private practice and is author of *The Enlightened Eater's Whole Foods Guide* (Viking Canada). Join Rosie at [rosieschwartz.com](http://rosieschwartz.com) for her take on healthy eats.

Non-celiac gluten sensitivity may affect about 5% of the population, but diagnosing it is not simple.

## PMHx

### A public health pioneer treats New York City slums



**IN THE EARLY 20TH CENTURY**, there were streets on this continent as deadly as war zones. During the First World War, one of medicine's great public health crusaders, Dr. Sara Josephine Baker, famously remarked, "It's six times safer to be a soldier in the trenches of France than to be born a baby in the United States." Hyperbole, perhaps, but the New York City slums where she worked boasted some horrifying statistics: One-third of the children who started life there perished before reaching the age of five and, according to the *New York Times*, "1,500 babies routinely died of diarrhoea every week during the summer."

It was in this environment—where health officials commonly referred to the densely populated Lower East Side of Manhattan as the "suicide ward"—that Dr. Baker became the head of the country's first ever Bureau of Child Hygiene. Taking a (then novel) preventive approach to health care, Dr. Baker personally headed up programs that taught new mothers about germs, encouraged healthy practices such as breastfeeding and discouraged harmful acts such as allowing kids to drink beer or play in the gutter (seriously). In the three years that followed the initiative's onset,

the infant mortality rate dropped by 40%.

Throughout her 22-year career, Dr. Baker made innumerable efforts to help the destitute of America's biggest city, but one of her more impressive contributions was to "scientifically prove" that babies needed love to survive. Examining Dr. Baker's memoir, *Fighting for Life*, in a 2013 piece for the *New York Review of Books*, Helen Epstein shed light on the fact that the medical pioneer sent infants from the "hopeless ward"—a quarter for sickly newborns abandoned in alleyways and parks—to live with "gushing Italian mothers." The improved emotional care worked, cutting in half the death rate for these orphans.

On the whole, however, this was a dark time in pediatric care. Impoverished children were condemned by politicians crying Bolshevism over a bill put forth to expand Dr. Baker's public health programs nationwide. It was a time when many health inspectors would rather forge records than make rounds, and when moral decay was as rampant as disease.

Yet, despite the political and social resistance, Dr. Baker made incredible headway in preventive medicine. Some figures suggest she saved the lives of nearly 100,000 infants, and the changes she put in motion undoubtedly spared many more in urban America's derelict communities.—*Tristan Bronca*