

Baking

Tracking down wheat intolerances

by GoodMills Innovation, Germany

Wheat makes you sick and fat. As provocative as this statement is, it's not an uncommon one. For the last decade, in popular science books and the media, wheat's once untarnished reputation has been progressively eroded.

Many consumers now attribute digestive complaints, malaise or headaches to the wheat in bread and increasingly opt for gluten- and wheat-free products. As an alternative to the much-maligned grain, GoodMills Innovation offers 2ab Wheat.

The supermarket shelves offering gluten-free or wheat-free alternatives are getting longer and longer. The UK market for gluten-free products has experienced double-digit growth since 2008 and, in Germany, according to the Federal Association of German food trade (BVLH), the number of gluten-free products launched into the retail sector almost doubled between 2010 and 2014.

About a third of these new products were baked goods. However, these growth rates are disproportionate to the number of people with gluten intolerance: only one percent of the population actually suffers from celiac disease and Mintel market research shows that 82 percent of consumers who choose gluten-free products have not been diagnosed.

The fact that many consumers still consider wheat-free and gluten-free bakery products to be a healthier alternative may partly derive from current food and lifestyle trends. However, it has been proven that wheat products can cause discomfort in people who do not have celiac disease if irritable bowel syndrome

(IBS) or non-celiac wheat sensitivity (NCWS) are present. According to recent studies, the number of people falling into these categories is anywhere from 6–13 percent.

When it comes to wheat intolerances, there's no universal panacea. The cause is neither wheat in general nor gluten, so it's not just a simple matter of removing these. To make the beloved breakfast roll enjoyable again for sensitive eaters, GoodMills Innovation, together with grain breeders and nutritionists, has selected an ancient grain that meets the needs of wheat sensitive and IBS consumers: 2ab Wheat.

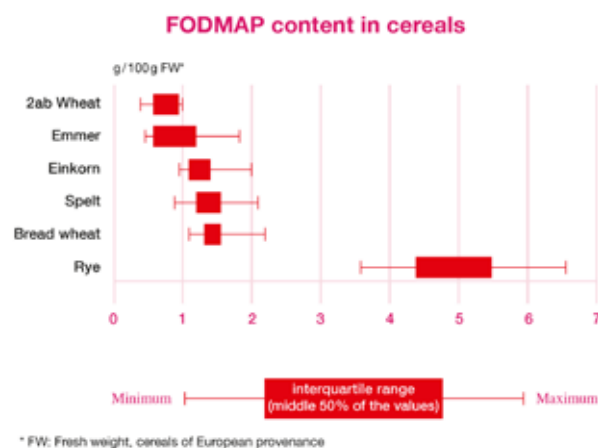
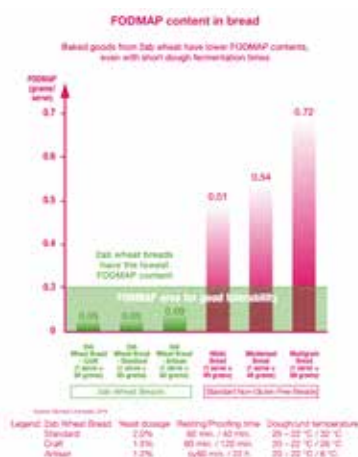
To understand the differences between 2ab Wheat, modern wheat and other ancient grains, it's important to have a close look at the types and triggers of gastrointestinal symptoms.

Wheat-related intolerances: Various triggers

Whether and to what extent wheat is compatible with a person's digestive system involves a complex interplay of different grain components, all of which stimulate the immune cells in the intestine and trigger complaints in sensitive individuals.

Nutritionist Sybille Kautz explains, "Consumers affected by gastrointestinal issues often turn to gluten-free baked goods as they feel that these are more compatible. However, this is not the case: the fact that sensitive consumers have fewer complaints after they eat gluten-free products is more likely to be associated with lower levels of substances called FODMAP than a lack of gluten. Bread based on oats, rice or corn, for example, is gluten-free and also has a very low FODMAP content."

FODMAP are short-chain carbohydrates and sugar alcohols such as fructans, fructose, lactose, sorbitol or maltitol. They are present in bread wheat, spelt and rye, as well as in many fruits and vegetables and are rarely or even not digested in the small intestine.



In sensitive individuals, FODMAP can cause diarrhea or cramps through bacterial fermentation and their osmotic action. In a study conducted by Monash University in Australia, a low FODMAP diet for patients with IBS led to a significant improvement in their symptoms.

Gluten proteins, essential for producing an appealing texture in breads and rolls, are often cited as the bad boy when it comes to digestive issues after bread consumption. But for IBS and NCWS this now seems to be an over-generalisation.

In fact, it's the genetic code of the gluten that's the decisive factor. This code determines the number of celiac epitopes in the gluten, which stimulate the immune cells in the gut. Ancient grains carry either the A genome (AA) – as is the case with einkorn – or the A and B genome (AABBB) – as in emmer. Modern bread wheat also contains the D genome (AABBDD) and therefore carry the harder-to-digest D gluten.

When NCWS first appeared on the medical radar in the 1980s, it was also linked to gluten. But current studies are now highlighting the connection between the condition and ATIs (amylase tryptin inhibitors), proteins found in the endosperm of plant seeds.

ATIs stimulate certain immune receptors and thus trigger or boost inflammatory processes in the gut. In some ancient grains, the bioactivity of these proteins is lower than it is in modern grains.

Ancient Grain 2.0: Well tolerated and indulgent

Michael Gusko, Managing Director at GoodMills Innovation, comments, “Our work on ancient grains was inspired by the apple. Scientific studies show that the protein structures of old apple varieties are often less problematic for allergy sufferers. This not only applies to old varieties, but also to new breeds, which are genetically similar.”

The fact that 2ab Wheat is well tolerated is all down to its genes: it only contains the two original genomes (AA and BB) and is naturally free from the D gluten contained in modern wheat varieties; its FODMAP and ATI content is also low.

2ab Wheat also convinces in terms of taste and technology. Ancient grains have been in vogue for years. However, it has never actually been possible to produce pure ancient grain baked goods with a good sensorial profile.

Einkorn, for example, is perfect for muesli bars or biscuits, but when it comes to bread, it needs to be combined with modern grains and baking agents to achieve appealing results. In contrast, 2ab breads and rolls have a soft, juicy crumb and a pleasant taste without the need to add conventional wheat, gluten or other auxiliaries to the mix.

GoodMills Innovation extended the 2ab concept with another ancient grain: Tartary Buckwheat.

In Asian countries, this prehistoric pseudocereal has a long tradition of use to stabilise blood glucose levels and plays an important role in daily nutrition.

The idea was to create a type of bread that is both easy for sensitive eaters to digest and promotes a balanced metabolism at the same time.

“At GoodMills Innovation, we have developed a thermal treatment that reduces the bitterness of Tartary Buckwheat, making it the ideal ingredient for baked goods such as 2ab bread. Currently, the bread is part of a research study into Personalised Nutrition at the University of Lübeck in Germany and we're more than excited about the potential results,” explains Gusko.

The wheat pedigree

When looking for a genuine wheat alternative for sensitive eaters, it's genetics that count. According to the somatic chromosome number, wheat comprises three groups: the diploid series (genome AA), the tetraploid series (genome AABB, such as emmer) and the hexaploid series (genome AABBDD), which also includes spelt and modern bread wheat.

Brad wheat has a relatively high FODMAP content and is therefore on the “red list” of products to be avoided. The D genome in bread wheat is suspected to irritate the intestinal immune cells. Although spelt has slightly lower FODMAP than bread wheat, it is not generally low in FODMAP. Like bread wheat, spelt contains the modern D genome.

As the original form of wheat, einkorn may be a solution for wheat allergy sufferers because of its protein structure. However, it has high FODMAP values and is therefore not suitable for wheat-sensitive people. The ancient wheat 2ab (*Triticum turgidum* var. *sanus*) has the lowest known FODMAP content of all varieties of wheat, does not have a D genome and is easier to bake with. Before delivery to bakers, the flour is fermented again to further reduce the FODMAP content.