

The Wheat We Eat

Safety, Quality, and Nutrition of Today's Wheat

NUTRITION CONNECTION



Whole wheat products can be a nutritious addition to the plate

Misconceptions in the media are rampant when it comes to wheat and nutrition. Wheat has become the big bad wolf of the food supply to many people, yet it's historically engrained in the diets of some of the world's healthiest populations. While there are valid concerns about excessive refined grains in the Western diet, whole wheat products can be a nutritious addition to the plate.

Let's break down some of the most common myths surrounding wheat and our health:

MYTH 1

Wheat is bad for you because it contains gluten.

Truth: *Gluten is only bad for you if you have celiac disease or non-celiac wheat sensitivity.*

Gluten is a group of proteins found in several grains, including wheat, rye, barley, and triticale. These proteins are responsible for the structure and elasticity in certain grain products. When you bite into a crusty piece of French bread, with its crisp outside and fluffy interior, you can thank gluten for helping develop that texture.

People with **celiac disease** must avoid all forms of gluten. In their bodies, the gluten proteins cause damage to the villi in the intestinal tract. Avoiding gluten completely is the only way to ensure digestive (and whole-body) health.

Other people may have a condition called **non-celiac wheat sensitivity**. In these cases, people do not test positive for celiac disease, but still have symptoms associated with consuming



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wheat. Symptoms may include gastrointestinal upset, headaches, skin irritation, or fatigue.

However, it's unclear whether these symptoms are caused by gluten or by other parts of the wheat. For example, wheat contains components called amylase-trypsin inhibitors (ATIs) and fructans, both of which may potentially be related to the sensitivity.

Unless you suffer from these conditions (or a wheat allergy), there is no harm in consuming gluten in wheat.

MYTH 2

Today's wheat is bad because it's genetically modified (GMO).

Truth: *There is no GMO wheat on the market in the United States.*

When people talk about "GMOs," they're generally referring to crops created with genetic engineering. This is a process where scientists are able to selectively turn off a genetic trait, or where a genetic trait from another source is inserted into that crop. For example, genes may be modified to make a plant more resistant to droughts or insecticides.

GMOs are a hot topic, and we're sure to see more research on them in coming years.

Regardless of your opinion on them, though, it's important to know that there are currently just 10 GMO crops in the United States.

Wheat is *not* one of these 10 crops. There is no commercial GMO wheat available.

Wheat *has* evolved since it was first domesticated about 10,000 years ago. However, this is the result of selective breeding, a natural farming method where plants are crossbred to achieve the best results. For example, wheat crops with larger grains or bigger yields were likely cross bred many years ago to try to maximize efforts.

The original species of wheat is known as einkorn. This is a diploid form of wheat—it

has one genome and the wheat contains two complete sets of chromosomes. As plant breeding occurred, tetraploid wheat arose. Examples include emmer and durum wheat, which have two genomes and four complete sets of chromosomes.

Through continued selective breeding, hexaploid wheat entered the picture—wheat with three genomes and six complete sets of chromosomes. This is the modern wheat that is most commonly found on the market today.

Most nutritional attributes of modern and ancient wheat are relatively similar. Some ancient wheat does have a higher protein content and may have a higher phytochemical content. For the most part, though, there have not been major changes to nutritional value.

MYTH 3

Wheat causes inflammation.

Truth: *This is a complicated topic, but there is no compelling evidence that whole wheat and ancient wheat cause ongoing inflammation.*

The body experiences inflammation when it's fighting off something it perceives as harmful. Sometimes, inflammation occurs longer than it's supposed to, or occurs outside of expected medical situations. Scientists believe ongoing inflammation may be linked to certain chronic and autoimmune diseases.

Dietary factors can impact inflammation, both positively and negatively. There have been a few studies that have suggested wheat may increase inflammation. For example, a study in *Gastroenterology* found that high levels of amylase-trypsin inhibitors in modern wheat led to increased intestinal inflammation.

However, it's tough to look at these in vivo experiments alone and draw conclusions. In reality, our everyday diet includes many

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different foods, often consumed together, along with other lifestyle factors that impact inflammation.

Two interesting randomized control trials offer a “real-world” perspective. One study, published in *Molecular Nutrition and Food Research*, looked at the impact of consuming a whole-grain-rich diet (compared to a diet that did not include whole grains) among obese girls. The diet rich in whole grains led to reduced inflammation after the six-week experiment. Another study in the *Journal of Nutrition* found similar results: reduced inflammation with a whole-grain-rich diet compared to a refined-grain-rich diet among overweight and obese adults.

Research that examines overall diet patterns draws similar conclusions. For example, one study found that a Mediterranean-style diet (which includes whole wheat) was linked to less inflammation.

Similarly, another study in the *Journal of Restorative Medicine* found that eating a diet in line with the American Diabetes Association guidelines (which includes whole grains) reduced inflammation among those with diabetes and pre-diabetes. Perhaps most interesting was that the ADA diet resulted in the same reduction in inflammation compared to the study’s anti-inflammatory diet that actually eliminated wheat.

What’s the take-home message? Research is limited, but right now it appears that whole wheat (and ancient wheat) as part of an overall healthy diet is not inflammatory. Several studies do suggest that *refined* modern wheat—such as that used to make white bread—may contribute to inflammation, so swapping those out for whole grains when possible is a wise choice.

MYTH 4

Wheat causes weight gain.

Truth: *There is no evidence to support this statement.*

There is nothing inherent to wheat that promotes weight gain. When someone without a medical condition embarks on a wheat-free diet and loses weight, it’s not due to the wheat itself but rather to selecting less processed, more nutritious foods.

Interestingly, when many people adopt a wheat-free diet in an attempt to lose weight, they may actually find the opposite true. Gluten-free processed goods (breads, snacks, etc.) are frequently higher in calories than their conventional counterparts, which can lead to weight gain.

INCLUDING WHEAT ON YOUR MENU

Hopefully this myth-busting helps clear up some of the confusion around the wheat we eat. Whole wheat can be a nutritious choice to include on a menu in any foodservice setting. These foods provide fiber for digestive health and key micronutrients. Plus, research has shown that swapping out refined grains for more whole grains leads to less inflammation and improved health outcomes.

You probably already have a few whole wheat dishes in your menu rotation—but if you’re looking for more inspiration, consider these ideas:

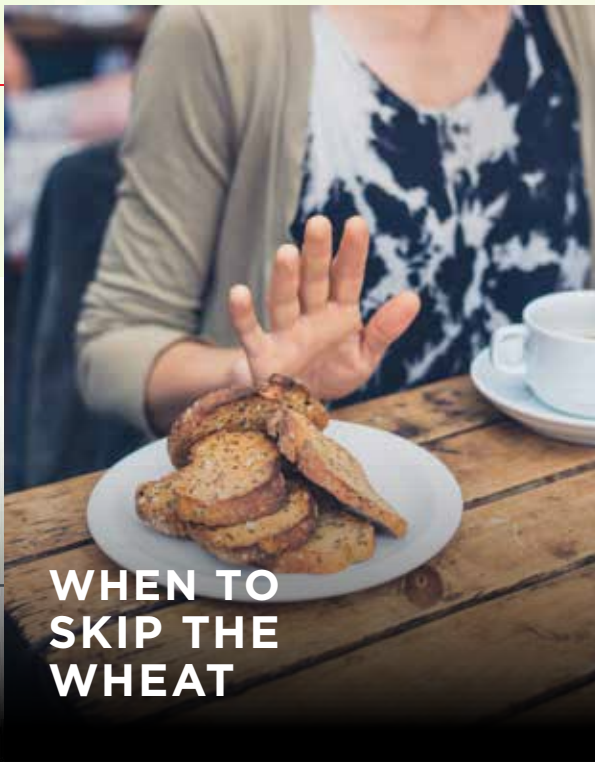
Swap it out: One of the easiest ways to include whole grains on your menu is to simply swap out refined wheat products, like white bread, for their whole wheat counterparts. Of course, client palatability can be an issue, so try looking for products that use partial blends of both refined and whole grains if you need a happy medium.

Build flavors for noodles: Whole wheat pasta has a different taste and texture compared to white pasta. If that presents an issue, try using whole wheat pasta specifically in dishes where sauces or broth really soak into the noodles – like lasagna or soups.

Try farro or wheatberries: These nutty grains of wheat are excellent to use in grain-based salads, or adding to soups and stews. Try mixing cooked farro with chopped tomatoes, fresh herbs like parsley and chives, and a little salt and pepper. Toss it with olive oil and balsamic vinegar for a tasty whole grain side dish.

Experiment with baking: If you bake from scratch at your facility, try using whole wheat flour in place of some of the all-purpose flour in recipes. Generally, you can substitute about half the flour before there are noticeable changes in the final product, but every recipe will be different. Some recipes can easily be made with all whole wheat flour – like whole wheat pancakes or banana muffins.

Try whole white wheat: It sounds like a misnomer, but whole white wheat (or white whole wheat) is actually a whole grain. This product comes from white wheat berries or spring wheat, rather than the more frequently cultivated red wheat berry. You can also find whole wheat pastry flour, which is milled from soft white wheat, and makes an excellent whole-grain option for baking. **E**



WHEN TO SKIP THE WHEAT

It's important to remember these three nutrition situations where eliminating wheat *is* advised:

1. Wheat Allergy

People with wheat allergies can have a life-threatening immune reaction to the proteins in the wheat grain. Wheat must be completely eliminated from the diet.

2. Celiac Disease

Gluten damages the intestinal lining in those with celiac disease, so it is essential to eliminate both wheat *and* all other gluten-containing products. This can be tricky as many processed foods contain unexpected sources of gluten. For example, some vegetarian burgers use seitan (wheat gluten), soy sauce contains wheat, and malt (used as an ingredient in many foods) is derived from gluten-containing barley.

3. Non-Celiac Wheat Sensitivity

While it's unclear exactly what causes this sensitivity, symptoms get worse when eating wheat. Some practitioners believe there may be a dose-response relationship between wheat and symptoms, so a person with this condition may be able to gradually reintroduce small amounts of wheat (i.e. soy sauce may be fine but a slice of bread is not). However, this is very individualized, and other people may need to completely cut out wheat.

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This Level II article assumes that the reader has a foundation of basic concepts of the topic. The desired outcome is to enhance knowledge and facilitate application of knowledge to practice.

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1. What medical condition requires eliminating gluten from wheat, barley, and rye?
 - A. Heart disease
 - B. Inflammation
 - C. Celiac disease
2. Which of the following statements about GMO foods and wheat is true?
 - A. GMO wheat is dangerous to eat
 - B. There is no commercial GMO wheat in the United States
 - C. GMO wheat is less healthy than regular wheat
3. Which species of wheat is known as the most ancient form, and contains just two sets of chromosomes?
 - A. Einkorn
 - B. Emmer
 - C. Modern wheat
4. Which species of wheat is the primary form cultivated today, and contains six sets of chromosomes?
 - A. Einkorn
 - B. Emmer
 - C. Modern wheat
5. How does a diet rich in whole grains affect inflammation compared to a diet rich in refined grains?
 - A. Whole grains lead to more inflammation
 - B. Whole grains lead to less inflammation
 - C. There is no difference
6. Compared to wheat-based breads and processed foods, gluten-free breads and processed foods often contain _____ calories.
 - A. More
 - B. The same
 - C. Fewer
7. Which of the following statements about whole white wheat flour is true?
 - A. It is a refined grain
 - B. It is made from red wheat
 - C. It is a whole grain

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