

Grains, Pseudograins, and Legumes...

Amy Myer, MD - Extract from The Problem with Grains and Legumes

The title "The Problem with Grains and Legumes" is written in a large, bold, green, sans-serif font. It is centered within a white, rounded rectangular box that has a subtle drop shadow. The background of the entire page is a photograph of a field of wheat under a clear blue sky. A single wheat stalk is in sharp focus in the foreground on the right side, while others are blurred in the background. The text "AmyMyersMD.com" is visible in the bottom right corner of the image area.

The Problem with Grains and Legumes

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The **grains** that we eat are the seeds of the *Poaceae* family of grasses, commonly called cereal grains or cereal grasses. This family includes, among others, wheat, barley, rye, corn, millet, oats, sorghum, spelt, teff, rice, and wild rice.

Pseudograins are the seeds of broadleaf plants (non-grasses) that are used in the same way as grains. They are often promoted as gluten-free alternatives, and examples include quinoa, buckwheat, amaranth, and chia seeds.

Legumes are plants in the *Fabaceae* or pea family. The part that we eat is the bean or pea (the seed) and sometimes the pod as well. This family includes beans, clover, alfalfa, lentils, peanuts, chickpeas, lima beans, soybeans, and others.

The edible portion of these plants is the seed, which contains the embryo. A plant's mission is to pass on its genes, and because a plant can't move around, it relies upon animals to spread its seeds about. A seed, therefore, is designed to withstand digestion, moving through the body in order to be "planted" on different soil. There are several properties of a seed that allow it to survive the gastrointestinal tracts of the animals upon which it depends, all with potential to cause harm and an inflammatory response.

Certain chemicals within these foods make them inflammatory in our bodies.

Lectins

Lectins are plant proteins that bind to carbohydrates. There are many different types of lectins, and not all of them are harmful. The two types of lectins in particular that are known to cause a problem in humans are **agglutinins** and **prolamins**.

Agglutinins function as a natural insecticide and can be an aggravating factor in autoimmune disease. The effects of lectins within our bodies can be subtle and hard to recognize, but some agglutinins are incredibly dangerous. Ricin, a lectin in castor beans, is fatally toxic even in very small amounts.

Genetically modified organism (GMO) grains are especially harmful when it comes to agglutinins. They have been engineered to produce more of their natural insecticides, which may give us a heartier crop, but one that is more inflammatory. Because of this, if you do choose to include grains in your diet, I'd recommend going for non-GMO varieties.

Prolamins are necessary proteins for seed growth, and therefore they are not easily digested. Gluten is a prolamins, and most grains contain a prolamins similar in structure to gluten. For example, orzenin in rice or avenin in oats. Prolamins contribute to the cross-reactivity experienced by so many with a gluten sensitivity, and yet grains that contain them are often used as gluten-free alternatives.

Those with autoimmune diseases should also avoid vegetables in the nightshade family (Solanaceae), which includes tomatoes, peppers, and potatoes. These plants are very high in lectins that damage the gut lining, easily enter the bloodstream, and do not break down in cooking.

Phytates and Phytic Acid

Phytates and **phytic acid** occur naturally within the seeds of grains. Phytic acid inhibits digestion and binds to certain minerals (specifically zinc, iron, and calcium) which are vital for our immune system to function properly, preventing their absorption. Usually a small amount of phytates in your diet would not present a major problem, as long as you were getting adequate nutrients from the rest of your food. But when grains are the basis of your diet, mineral deficiencies can result. Again, GMO comes into play. GMO grains contain a greater concentration of phytic acid, and heirloom grains are a safer bet, should you choose to include them. You can break down some of the phytic acid in grains by slow cooking them, sprouting them, or soaking them overnight in water mixed with a little bit of lemon juice or apple cider vinegar. These methods activate phytase, an enzyme present in the plant that breaks down phytates. However, if grains are a major part of your diet they can still prevent digestion and contribute to a leaky gut.

Foods (like seeds) that are not easily broken down strain the digestive system.

When you eat, your body produces enzymes to break down proteins into individual amino acids. However, inhibited by the chemicals within a seed, the enzymes are unable to perform this essential task, causing a chain reaction. Your body then produces more enzymes, and in this process the body's nutrients are used while not getting any in return. Worse still, an overabundance of digestive enzymes in the gut will wear down the gut lining and contribute to a leaky gut.

Undigested and partially digested food in the gut leads to bacterial overgrowth.

An overabundance of partially digested food in the intestinal tract provides food for bacteria. A healthy balance of good bacteria is essential for your body's overall well being, and because some bacteria will feed on partially digested grains, and others won't, it's easy for an imbalance to occur. Bacterial overgrowth can lead to a wide array of problems and can even help to break down the gut lining.

Undigested grains, pseudograins, and legumes contribute to a leaky gut.

The gut is by design slightly permeable. The ability for some substances to pass through the gut lining is an essential function of our bodies, allowing us to absorb nutrients from our food, fight infection, and assemble the proteins and enzymes that are necessary for life. However, the gut can become hyperpermeable, and this can lead to autoimmunity.

Because they aren't completely digested, grains, pseudograins, and legumes pass through the gut barrier intact. This helps to increase the permeability of the gut barrier a) by damaging the cells that line the gut and b) by causing an inflammatory response once outside the gut. A cycle then begins where the body responds to the grain particles with inflammation, which then damages the gut lining, which in turn becomes even more permeable, allowing more undigested food, toxins, and bacteria to leak out. Your body can confuse these foreign "invaders" with your own tissues. Soon, the immune response gets out of control and begins to affect more tissues and systems within the body, and autoimmunity results.

When it comes to nutrition, quality is key.

Grains, pseudograins, and legumes are not nutrient-dense foods, and they can actually prevent you from absorbing the amino acids you need for a healthy immune system. It is much better to replace these inflammatory foods with healthier choices such as sweet potato, squash, and dark leafy greens.

Modern day grains have been bred so that they no longer resemble the grains that our ancestors consumed, so if you do choose to include grains, pseudograins, and legumes in your diet, opt for non-GMO, heirloom varieties whenever possible (and make sure to soak, sprout and slow cook them). Try not to make them the focus of your diet. Those with autoimmune diseases would be wise to omit grains, pseudograins, legumes and nightshades completely, and to avoid nuts and seeds as well, which for many of the same reasons can be inflammatory. Once you have healed your gut, reduced or eliminated your medications and are symptom free you may be able to indulge in these foods every once in a while.