

The Whole Grain Hierarchy

UNDERSTANDING AND USING WHOLE GRAINS FOR MAXIMUM HEALTH

by Brenda Davis, RD



Grains are commonly viewed as dietary villains today, particularly by low-carb diet advocates. While the anti-carb movement is bang on when it comes to refined grains, they are dead wrong when it comes to whole grains. What are refined grains? Essentially, they are grains that have been stripped of much of their nutritional value prior to consumption. For example, when we refine wheat to make white flour, two of the three parts of the wheat kernel are removed: the germ and the bran. The germ is the storehouse of nutrients for the kernel of wheat; it is where most of the essential fatty acids, vitamins, minerals, and phytochemicals reside. The bran serves to protect the content of the grain, and its main claim to fame is fiber. What remains is endosperm, which is mainly starch, some protein, and a minuscule quantity of vitamins and minerals.

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Granted, some of the lost nutrients are added back. For example, when wheat is refined to white flour, it is commonly enriched with four B-vitamins (thiamin, riboflavin, niacin, and folic acid) and the mineral iron. However, other vitamins and minerals (e.g., vitamin B6, pantothenic acid, vitamin E, selenium, magnesium, zinc, potassium, manganese, and boron) that are lost in the refining process are not added back; nor are any of the phytochemicals or fiber.

Concentrated starches must be metabolized so they can be used for energy; this task requires many of the nutrients that were stripped away in the refining process. To add insult to injury, no one eats a bowl of white flour. Before flour is consumed, it is made more palatable by an infusion of sugar, salt, fat, artificial and natural flavors, colors, and preservatives. Unfortunately, the lion's share of grains consumed globally are refined. Thus, one can understand why grains are so often viewed in a negative light. The error in judgment occurs when all grains are uniformly condemned as harmful.

Whole grains serve as dietary staples for many of the world's healthiest populations. What distinguishes these populations from less healthy grain-dependent

populations is the degree to which the grains are processed. When whole grains are unprocessed or minimally processed, they are consistently beneficial to health, reducing the risk of mortality, cardiovascular disease, diabetes, cancer, and other chronic conditions.

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However, it is a mistake to believe that anything declared to be a "whole grain" is blessed with a health halo. While it is true that whole-grain products are nutritionally preferable to their refined counterparts, not all whole grains are created equal. I recall many years ago being impressed with lifestyle medicine programs that worked hard to reverse disease in their participants. Many of these programs allowed unlimited access to "whole grains." I noticed many of the participants did not lose as much weight as one might expect on a plant-based protocol, and in some cases, triglycerides shot up. After examining these diets, I realized that while participants were eating minimal white flour products, they were eating a LOT of processed whole grains—whole-wheat flour products like breads, crackers, pretzels, baked goods, flaked whole-grain cereals, and puffed brown rice cakes. I wondered how best to assist these individuals in understanding that even whole grains, when highly processed, may not be as health-promoting as one might expect. There are four key factors that influence the quality of whole grains:

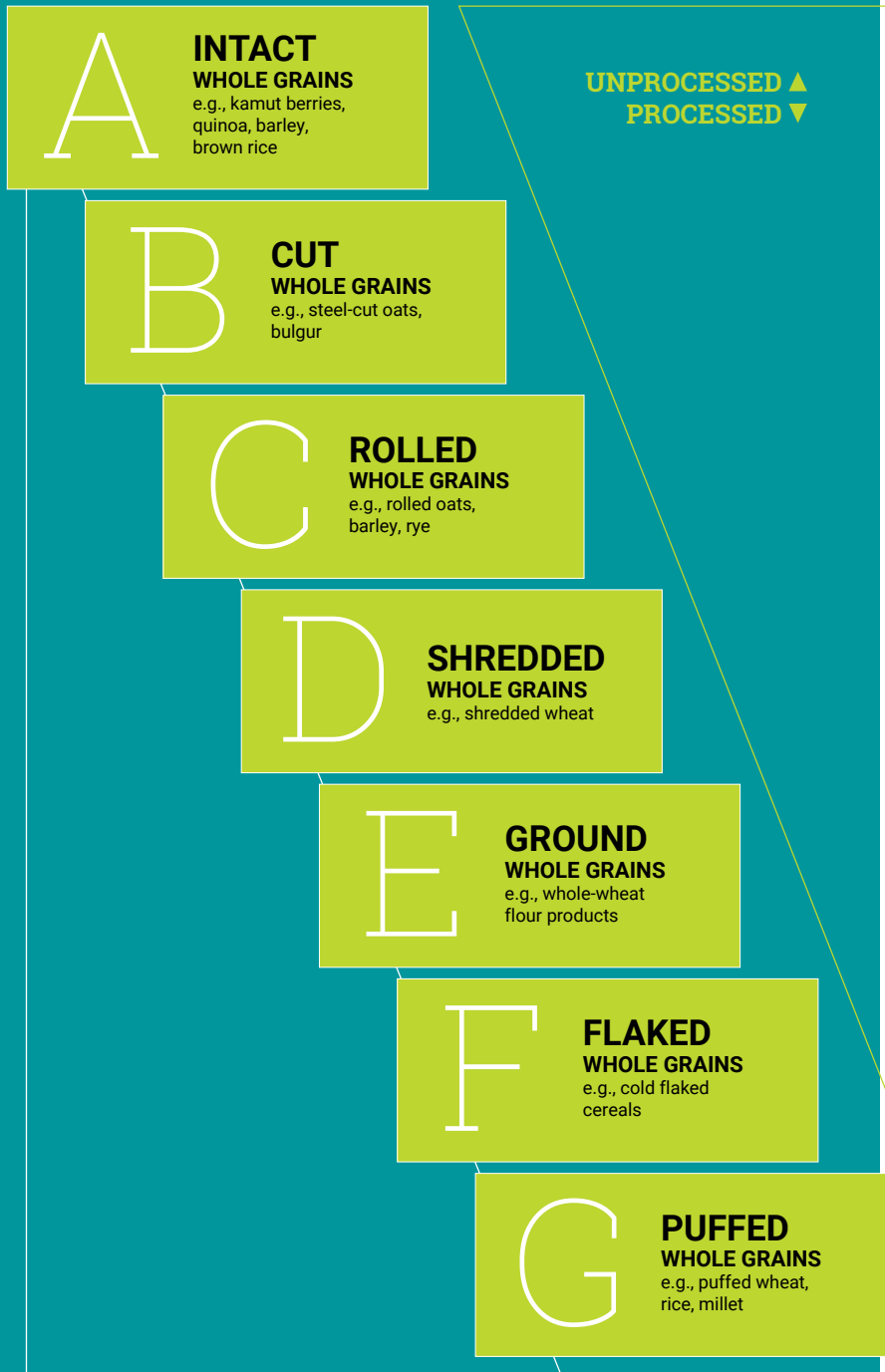
1. **Type of grain.** Like all foods, there are variations in the nutritional value of different grains. Of the true grains, oats, wheat, kamut, and spelt are the richest in protein. Whole-grain rice is higher in

vitamin E than most other grains, kamut is higher in selenium, spelt is higher in zinc, rye is higher in potassium, wheat is higher in magnesium, teff is higher in manganese, and wheat and oats are higher in iron. Pseudograins such as amaranth, buckwheat, quinoa, and wild rice are similar to grains in both their nutrition and culinary uses, but they are not in the same botanical family. These "grains" tend to be slightly higher in protein and minerals than true grains. For maximum benefit, include a variety of whole grains in your diet.

2. **Color of grain.** The more colorful whole grains generally contain more antioxidants and phytochemicals. For example, red or black quinoa or rice and black barley contain more phytochemicals than beige quinoa, brown rice, or regular barley.
3. **Pesticide and heavy metal content.** While we usually associate pesticide exposure with conventionally grown fruits and vegetables, grains can also be a significant source. Although the USDA tests for pesticides in grains, they do not include glyphosate in the testing. Glyphosate is often used in the drying of grains, and significant residues can be found in conventional oats, wheat (including kamut and spelt), buckwheat, and barley. To minimize exposure to pesticides, including glyphosate, select organic grains. Heavy metals, although most concentrated in fish and seafood, can also be found in certain grains. For example, rice is a significant source of inorganic arsenic. Unfortunately, purchasing organic rice does not reduce arsenic exposure. The origin of the rice matters most. For example, rice from California tends to be lower in arsenic than rice grown in Louisiana.
4. **Degree of processing.** Whole grains are used to make many popular food products such as bread, pasta, ready-to-eat breakfast cereals, crackers, cookies, and snack foods.

Generally, the more heavily processed the product, the lower the nutritional value, and the higher the glycemic index (a measure of how much a food affects your blood sugar after eating). The degree of processing matters—even for whole grains!

The Whole Grain Hierarchy



The Whole Grain Hierarchy (at left) is a tool that helps people choose the most healthful whole grains (refined grains are not included). This tool can make a significant difference in health outcomes for people who use it. The following list begins at the top of the hierarchy with the most healthful choices and goes step by step to the bottom of the hierarchy.

- A. Intact whole grains** (e.g., hulled barley; kamut, spelt, and wheat berries; quinoa; wild rice; brown, red, or black rice; buckwheat; teff; and sorghum) sit at the top of the whole-grain hierarchy. These grains have nothing healthful removed and nothing harmful added. Sprouting intact whole grains further improves their nutrition, reducing antinutrients, releasing stored forms of nutrients, and boosting phytochemicals.
- B. Cut grains** (e.g., steel-cut oats and bulgur) come next on the hierarchy. These are also healthful choices, as they are minimally processed and generally contain no additives such as sugar, fat, and salt.
- C. Rolled grains** (e.g., rolled oats and rolled barley) fall in right after cut grains. These are also nutritious, but because of their expanded surface area, they are more quickly absorbed into the bloodstream than intact or cut grains.
- D. Shredded whole grains** (e.g., shredded wheat) follow rolled grains on the list. These grains are more highly exposed to damage from processing than rolled grains, but generally have few additives.
- E. Ground grains** (e.g., whole-grain flours) appear next. The surface area of ground grains is high, so they are often rapidly absorbed into the bloodstream, especially if their texture is light and fluffy, as are many breads. Flours are never eaten on their own—instead, they are used in the preparation of baked goods such as breads, crackers, and cereals or other prepared products. Hence, they tend to be higher in sugar, salt, fat, and food additives than grains that appear higher up on the hierarchy.
- F. Flaked grains** (e.g., breakfast cereals) follow ground grains. Flaked grains often undergo a high degree of processing and often have many taste enhancers added.
- G. Puffed grains** (e.g., puffed cereals and brown rice cakes) are at the bottom of the whole-grain hierarchy. These foods are subject to extreme processing and are very rapidly absorbed into the bloodstream.

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Generally, as you go down the hierarchy, the glycemic impact of the food increases, and the nutritional value decreases. If you are trying to lose weight or fight a chronic disease such as type 2 diabetes, results will be best if you stick mainly to intact whole grains.



5 Top Tips for Boosting Intact Grains

- 1 Purchase a variety of organic intact grains and keep them labeled in Mason jars in your pantry.
- 2 Keep a batch of cooked whole grains ready to go in your refrigerator.
- 3 Add intact sprouted and/or cooked whole grains to your breakfast bowl, along with fresh fruit, nuts, seeds, and other toppings.
- 4 Use intact grains as a hearty topping on green salads or as a base for full-meal salads.
- 5 Use intact grains as the base for your dinner bowls or to make creative pilafs.



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Brenda is the lead dietitian in a diabetes research project in Majuro, Marshall Islands, and she is a featured speaker at nutrition, medical, and health conferences throughout the world. She is the author/coauthor of 12 nutrition classics, including *Nourish: The Definitive Plant-Based Nutrition Guide for Families*, *Kick Diabetes Essentials*, *The Kick Diabetes Cookbook*, and *Becoming Vegan (Comprehensive and Express Editions)*. Brenda has also authored and coauthored several articles for peer-reviewed medical and nutrition journals and magazines. For further information, visit brendadavisrd.com/videos to watch Vegan Breakfast Bonanza, and watch Brenda's Whole Grain Hierarchy video on YouTube.



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