

Report of Whole Grains Subgroup

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Recommendation

When planning and preparing meals, we should try to include grains, especially whole grains, in our recipes. Let us also consider new recipes for appetizers, soups, entrees, and desserts that use whole grains and that would be tasty and nutritious additions to Kendal menus.

BASIC INFORMATION ABOUT WHOLE GRAINS

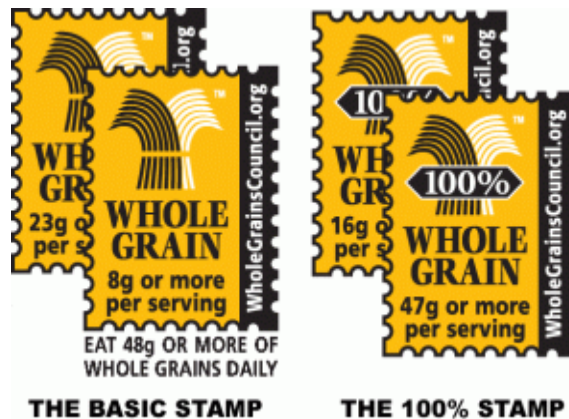
What is a whole grain? All grains start life as whole: the entire seed of the plant includes the germ, the endosperm, and the bran.

The **germ** (the embryo which when fertilized by pollen will sprout into a new plant) contains B vitamins, minerals, some protein and essential fatty acids. The **endosperm** (the largest portion of the kernel which is the germ's food supply) contains starchy carbohydrates, proteins and small amounts of vitamins and minerals. The **bran** (the outer skin which protects the endosperm and germ from assault from sunlight, pests, water and disease) contains antioxidants, B vitamins and is rich in fiber.

Whole grains are a significant source of fiber, in varying degrees, but contribute a lot more than fiber to our diet.

Identifying Whole Grains. Check package label; the word “whole” must appear and should be the first item listed (otherwise it could contain anywhere from 1% to 49% of the whole grain). The Whole Grains Council has created a Whole Grains Stamp to help consumers recognize whole grains. The stamp started to appear on food packages in mid-2005 and is becoming more widespread.

- If a product bears the Basic Stamp, it contains at least 8g – a half serving – of whole grain, but may also contain some refined grain.
- If a product bears the 100% Stamp, then all its grain ingredients are whole grains, and the product contains at least 16g – a full serving – of whole grain per labeled serving.
- Each stamp also shows a number telling you how many grams of whole grain ingredients are in a serving of the product.



When is a grain NOT a whole grain? Phrases that do NOT mean whole grain: “100% wheat,” “multigrain,” “stone ground,” “cracked wheat,” “seven-grain,” and “bran.”

Storing Whole Grains. Heat, light and air are the enemies of the oil in the germ which slowly becomes rancid if the grain is not stored properly. Processed grains should be refrigerated or frozen in tightly sealed containers.

How much is recommended? The U.S. Department of Agriculture's 2005 Dietary Guidelines recommend that adults over fifty eat at least half their grains as whole grains, i.e., 3 to 5 servings for women and 3 to 6 for men. The Mediterranean Diet Food Guide Pyramid calls for 8 servings daily. A serving (or ounce equivalent) is defined as one slice of whole wheat bread, a cup of whole grain cereal, and one half-cup of whole grain hot cereal, cooked pasta, rice or other whole grain; if a product is made with both whole and enriched flour, 16 grams is considered a serving. For those who are gluten intolerant, there are a number of grains that are gluten-free (see asterisked grains on following list).

W H O L E G R A I N S (* Indicates Gluten-Free)

***Amaranth.** Like its South American “compadre” quinoa, amaranth is considered a supergrain because it contains all the essential amino acids and therefore is an excellent source of high quality protein. It is high in fiber, rich in calcium, phosphorus, iron and vitamins E and B.

Barley doesn't quite qualify as a whole grain because much of the barley grown in this country has to be stripped of its inedible hull which is so tightly attached to the bran layer that some of the bran is rubbed off. This is called pearl barley. Because of its anatomy, barley contains fiber throughout the kernel so it still provides a good balance of nutrients.

***Buckwheat** (toasted buckwheat known as kasha in Eastern Europe; and soba in Japan). Fast cooking, high in protein (especially lysine, uncommon in most cereal grains) and fine source of minerals, including iron, phosphorus and potassium, and impressive amounts of B and E.

***Corn.** The only grain eaten both fresh and dried. Fresh corn is sweet corn, one of five varieties (popcorn, field, flint and flour). Protein in corn in most varieties lacks two essential amino acids, but when combined with beans, dairy, or meat they are supplied. It is interesting that some intuitive understanding has made corn and beans companions in so many parts of the world. Whole hulled kernels are called hominy; when hominy is cut into small bits, it is called grits which keeps better because the oil-rich germ goes with removal of the hull.

***Millet.** Good source of protein, B vitamins, iron, phosphorus, manganese and copper.

Oats. Higher in protein than whole wheat, contain B vitamins, and unique among commonly eaten whole grains because oats have substantial amounts of both soluble and insoluble fiber. Soluble fiber helps lower blood cholesterol and insoluble fiber promotes digestive regularity.

***Quinoa.** Called the “mother grain” by the Incas because it was their major protein source. It contains all the amino acids. Imported from Ecuador and Bolivia; small amount grown in Colorado.

***Rice family.** Whole grain rice is white rice with its bran and germ intact. The refining process destroys 67% of vitamin B3, 80% of the iron, and all of the dietary fiber and essential fatty acids.

Rye and Triticale. Rye contains more protein, phosphorus, iron, potassium and B vitamins than whole wheat. Triticale (name derived from Latin botanical names *triticum* for wheat and *secale* for rye) existed as a natural hybrid which was eventually replicated in the lab by plant scientists. It has both more protein and a better amino acid profile than either wheat or rye.

***Sorghum.** A staple food in parts of Africa and India. Most sorghum is a good source of protein and an excellent source of phosphorus and potassium.

Wheat family. The staff of life in many cultures because it contains a wide spectrum of vitamins and minerals, including B6 and E, magnesium, niacin, folacin, pantothenic acid, thiamin, chromium, manganese, iron and zinc. Family includes spelt, Kamut and farro (some people allergic to wheat can tolerate these). Bulgur is made by parboiling and cracking wheat kernels but in the process nutrients from the bran seep into the center and thus bulgur offers the range of nutrients available in the whole grain.

***Wild Rice.** Although an aquatic grass and not a true grain, wild rice has a nutritional profile similar to grains. Low in fat, therefore stores well.

N.B. Some seeds that are not members of the grain family in botanical terms are referred to as grains because they are cooked like them and have similar or even better nutritional profiles. These include buckwheat (a member of the rhubarb family), quinoa and amaranth (member of noncereal families of grasses), and wild rice.

HEALTH BENEFITS OF WHOLE GRAINS

The health benefits of whole grains that are most documented by repeated scientific studies are significant reductions of the risk of stroke, type 2 diabetes, and heart disease. Other benefits indicated by recent studies include a reduced risk of asthma, healthier carotid arteries, lower risk of colorectal cancer, healthier blood pressure levels, less gum disease and tooth loss, and better weight maintenance.

The article, “Whole grains and human health,” Nutrition Research Reviews, vol. 17 (May 2004), pp. 99-110, by Professor Joanne Slavin, Ph.D, R.D., Department of Food Science and Nutrition, University of Minnesota, reviews a large number of recent studies on whole grains and health and concludes as follows: “Whole grains are rich in many components, including dietary fibre, starch, fat, antioxidant nutrients, minerals, vitamins, lignans, and phenolic compounds that have been linked to the reduced risk of CHD [coronary heart disease], cancer, DM [diabetes mellitus], obesity and other chronic diseases. Most of the protective components are found in the germ and bran, which are reduced in the grain-refining process. Based on epidemiological studies and biologically plausible mechanisms, the scientific evidence shows that the regular consumption of wholegrain foods provides health benefits in terms of reduced rates of CHD and several forms of cancer. It may also help regulate blood glucose levels. More research is needed on the mechanisms for this protection” This article can be read and downloaded from the internet at

<http://www.gnufoods.com/downloads/WholeGrainsandHumanHealthSlavin.pdf>

There are many recent studies, including the following published in 2007:

“Whole-grain intake and carotid artery atherosclerosis in a multiethnic cohort: the Insulin Resistance Atherosclerosis Study,” American Journal of Clinical Nutrition, vol. 85 (June 2007), pp. 1495-1502, by Philip B. Mellen et al. (Over a five-year study involving 1178 men and women, those who ate more whole grains had less unhealthy arteriosclerotic hardening of the common carotid artery.)

“Whole-grain consumption is associated with a reduced risk of noncardiovascular, noncancer death attributed to inflammatory diseases in the Iowa Women’s Health Study,” American Journal of Clinical Nutrition, vol. 85 (June 2007), pp. 1606-1614, by David R. Jacobs, Jr., Lene Frost Andersen, and Rune Blomhoff. (Jacobs and his colleagues followed more than 27,000 post-menopausal women for 17 years and concluded that “oxidative stress reduction by constituents of whole grain is a likely mechanism for the protective effect” indicated by risk-reduction in mortality from inflammatory diseases.)

“Whole- and refined-grain intakes and the risk of hypertension in women,” American Journal of Clinical Nutrition, vol. 86 (Aug 2007), pp. 472-9, by Lu Wang, J. Michael Gaziano, Simin Liu, JoAnn E. Manson, Julie E. Buring, and Howard D. Sesso. (These researchers at Harvard studied nearly 30,000 enrolled in the Women’s Health Study and found that, over ten years, those who ate the most whole grains had an 11% lower chance of developing high blood pressure.)

“Whole Grain, Bran, and Germ Intake and Risk of Type 2 Diabetes: A Prospective Cohort Study and Systematic Review,” PLoS (Public Library of Science) Medicine, vol. 28 (August 2007), e261, by Jeroen S. L. de Munter, Frank B. Hu, Donna Spiegelman, Mary Franz, Rob M. van Dam. (At the Harvard School of Public Health, these researchers pooled data from six cohort studies including 286,125 participants, and found that a two-servings-a-day increment in whole grain consumption was associated with a 21% decrease of type 2 diabetes.)

ADDING WHOLE GRAINS TO MEALS

Easy Ways to Add More Whole Grains to your Diet

- Substitute half the white flour with whole wheat flour in recipes for cookies, muffins, quick breads and pancakes.
- Replace one third of the flour in a recipe with quick oats or old-fashioned oats.
- Add half a cup of cooked bulgur, wild rice, or barley to bread stuffing.
- Add half a cup of cooked wheat or rye berries, wild rice, brown rice, sorghum or barley to soup.
- Use whole corn meal for corn cakes, corn breads and corn muffins.
- Make risottos, pilafs and other rice-like dishes with whole grains such as barley, brown rice, bulgur, millet, quinoa or sorghum.
- Add 3/4 of a cup of uncooked oats for each pound of meat when you make burgers or meatloaf.
- Enjoy whole grain salads like tabbouleh.
- Try whole grain breads.
- Buy whole grain pasta, or one of the blends that's part whole-grain, part white.
- Stir a handful of oats in your yogurt, for quick crunch with no cooking necessary.

Whole Grain Ideas for Every Meal* (WG = Whole Grain)

| | BREAKFAST | LUNCH | SNACK | DINNER |
|-------|-------------------|-------------------------|--------------------|---------------------------------|
| MON | WG bagel | Stuffed WG pita | Popcorn | Brown rice with stir-fry |
| TUES | WG raisin toast | Sandwich on rye bread | WG crackers | WG pasta |
| WED | WG cold cereal | WG wrap | Oatmeal cookie | Tacos in corn tortillas |
| THURS | Oatmeal | Sub sandwich on WG roll | WG chips | Wild rice |
| FRI | WG English muffin | WG veggie burger | WG granola bar | Bulgur pilaf |
| SAT | WG waffles | Hamburger on WG bun | WG graham crackers | Homemade pizza on WG pita crust |
| SUN | WG pancakes | Barley mushroom soup | WG pretzels | WG cornbread |

* From "Whole Grains Made Easy," Fact Sheet, American Dietetic Association, 2007.

Some Examples of Recipes with Whole Grains*

Amaranth, Quinoa, and Corn Chowder

Barley Tabbouleh

Popcorn Crusted Catfish

Brown Basmati Rice Custard Pudding

* Recipes available upon request. (See also Section 3(2) below for more recipes.)

SOME HELPFUL SOURCES AND REFERENCES

1. The Whole Grains Council is a consumer advocacy group founded in 2003. Its principal purposes are:

- (a) Introduce consumers to the excitement, taste, and texture of whole grains;
- (b) Educate health professionals and consumers about the health benefits of whole grains;
- (c) Persuade chefs to feature the delicious tastes of whole grains not just in breads, but also in salads, main course dishes, and even desserts.

The Whole Grains Council website www.wholegrainscouncil.org contains a wealth of information about whole grains and is the source of much of the material in this report.

2. Further detailed information and references about the many published studies on various health benefits of whole grains can be found not only in the Slavin article referred to on page 3, but also at the website www.wholegrainscouncil.org/whole-grains-101/health-studies-on-whole-grains.

3. Two other valuable sources of much information about whole grains:

(1) <http://www.eatright.org> is the website of the American Dietetic Association. A search on this home page for “whole grains” produces 312 results with useful and practical information about whole grains. The Fact Sheet referred to on page 4 can be found here.

(2) The Wheat Foods Council is an industry-wide partnership dedicated to increasing wheat and other grain foods consumption through nutrition information, education, research and promotional programs. Its website <http://www.wheatfoods.org> includes much useful information about wheat (not always about whole wheat), but there is an interesting section on whole wheat recipes, including recipes for “Light-as-a-Feather Whole Wheat Pancakes,” “Whole Wheat Cinnamon Rolls,” “Quick Whole Wheat Pizza Crust,” and “Toasted Corn and Bulgur Salad.”

4. A recently published cookbook on whole grains: **Whole Grains Every Day, Every Way** by Lorna J. Sass, published by Clarkson Potter (Crown Publishing Group), November 2006, hardcover, 336 pages, ISBN: 0307336727.