

# California Food Guide

## Whole Grains

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### What's New:

The Dietary Guidelines for Americans 2005 includes key recommendations for consuming three or more ounce-equivalents of whole-grain products per day, with the rest of the recommended grains coming from enriched or whole-grain products. In general at least half the grains should come from whole grains. Similarly, children and adolescents should consume whole-grain products often; at least half the grains should be whole grains.<sup>1</sup> MyPyramid also includes information about grains. It can be viewed at [www.mypyramid.gov](http://www.mypyramid.gov)

The following each count as "1 ounce-equivalent" (one serving) of grains: ½ cup cooked rice, pasta, or cooked cereal; one ounce (oz) rice or dry pasta; one slice bread; one small muffin (one oz); one cup ready-to-eat cereal flakes.<sup>1</sup>

\*In addition, Gold and Black stamps, known as Whole Grain Stamps, started in early 2005 but revised in 2006, are packaging symbols designed by the Whole Grains Council to help consumers identify whole-grain products at a glance. The stamps are used only by companies who are members of the Whole Grains Council and are used on a voluntary basis. The 2006 version of the symbol indicates the level of whole-grain content:

- **100% Whole Grain Stamp:** designates products where all of the grain is whole grain, with 16 grams or more whole grain per serving.
- **Whole Grain Stamp:** designates products with at least 8 grams of whole grain per serving.<sup>2</sup>

(16 grams = a full MyPyramid serving 2)



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## Public Health Implications

- Healthy People 2010 Objective 19-7:  
(<http://www.healthypeople.gov/document/tableofcontents.htm>)  
Increase the proportion of persons aged two years and older who consume at least six daily servings of grain products, with at least three being whole grains. Target: 50 percent.

Other related health benefits related to whole grain consumption:

- Reduced risk of heart disease and stroke with increased whole grain consumption.<sup>3, 4, 5</sup>
- Reduced cancer mortality rate with increased whole grain consumption.<sup>6</sup>
- Whole grains and dietary fiber are increasingly shown to be important in preventing digestive disorders such as constipation, hemorrhoids, and diverticular disease.
- Reduced risk of developing diabetes with increased whole grain intake.<sup>7</sup>

## Definition

Grain is a member of the grass family that produces a dry edible one seeded fruit called the kernel, grain, or berry. Common grains found in the United States include wheat, oats, corn, rice, rye, barley, millet, sorghum, quinoa, flaxseed, and buckwheat. Grains are divided into two subgroups by amount of processing: whole grains and refined grains.

Whole grains or foods made from them contain the entire grain seed, usually called the kernel, which includes the bran, germ, and endosperm. If the kernel has been cracked, crushed, or flaked, it must retain nearly the same relative proportions of bran, germ, and endosperm as the original grain in order to be called whole grain.<sup>8</sup>

Refined grains have been processed to remove the bran and germ. This gives grains a finer texture and improves their shelf life, but it also removes dietary fiber, iron, minerals, many B vitamins, lignans, phytoestrogens, phenolic compounds, and phytic acid. Most refined grains are enriched or fortified with certain B vitamins (thiamin, riboflavin, niacin, and folic acid) and iron after processing. Fiber and other minerals and vitamins are not added back to enriched grains.

Often food companies will make a health claim about grains on a food label. A health claim is a statement on a food label that shows a relationship between a nutrient or other substances in a food and a disease or health-related condition. The U.S. Food and Drug Administration require that a food product contain at least 51 percent by

weight of whole grain in order to use the FDA approved whole grain health claim on the food label.

In 2005 the U.S. Department of Health and Human Services and the U.S. Department of Agriculture revised the Dietary Guidelines for Americans' recommendations for the Grain group. See Table 1 for the recommended number of daily servings for grains. See Table 2 for the definition of serving sizes for whole grains.

**Table 1: Recommended Number of Daily Servings of Grains:<sup>1</sup>**

Calorie Level	1,000	1,200	1,400	1,600	1,800	2,000	2,200	2,400	2,600	2,800
Grains All oz eq	3	4	5	5	6	6	7	8	9	10
Whole grains All oz eq	1.5	2	2.5	3	3	3	3.5	4	4.5	5
Other grains All oz eq	1.5	2	2.5	3	3	3	3.5	4	4.5	5

\*The following each count as 1 ounce-equivalent (1 serving) of grains: ½ cup cooked rice, pasta, or cooked cereal; 1 ounce rice or dry pasta; 1 slice bread; 1 small muffin (1 oz); 1 cup ready-to-eat cereal flakes.<sup>1</sup>

**Table 2: A Serving of Whole Grain Is:**

Product	Serving size
Whole grain cereal	1 oz dry cereal or ½ cup cooked
Whole grain bread	1 slice, 1 small roll or ½ medium bagel
Whole grain crackers	3-4 small crackers
Brown rice	½ cup cooked
Whole grain pancakes	4 inch pancake
Popcorn	3 cups popped
Whole wheat pasta	½ cup cooked

Grains are important foundations for a healthy diet. The grain group contributes complex carbohydrates, thiamin, riboflavin, niacin, folic acid, magnesium, and iron to the diet. Grains themselves are also low in fat, but sometimes fats or oils are added in processing or preparation of foods containing grains. Whole grains provide B vitamins, vitamin E, selenium, zinc, copper, magnesium, and fiber. Whole grain products provide more dietary fiber, calcium, niacin, magnesium, and potassium than enriched grain products. Whole grain products also contain a variety of nonnutritive substances known as phytochemicals which are thought to protect the body's natural defenses against chronic disease.

## **Burden**

Evidence from clinical trials, prospective cohort studies, and metabolic research has linked increasing intake of whole grains to a reduction in coronary heart disease; reduced risk of some types of cancer, and diabetes; and may help with weight management.<sup>9</sup> Approximately 70 million Americans are living with some type of cardiovascular disease. The cost of cardiovascular disease is estimated to be \$393.5 billion in 2005.<sup>10</sup> Cancer is the second leading cause of death in the United States. In 2005, approximately 570,280 Americans are expected to die of cancer, which are greater than 1,500 each day.

Scientific evidence suggests that about one-third of those deaths are related to nutrition, physical inactivity, obesity or overweight, and could be prevented.<sup>11</sup> Whole grains play a part in a low-fat diet for prevention of heart disease as a means to decrease serum cholesterol. Whole grains may reduce the cancer risk by providing fiber and starches that ferment in the colon to improve gastrointestinal health. Phytochemicals with anti-carcinogenic properties are found in whole grains. Whole grain and fiber along with a low-fat diet may be helpful in managing risk factors that are related to diabetes by improving glucose responses and decreased insulin resistance.<sup>12</sup>

## **Incidence and Prevalence**

Per capita grain consumption has increased nearly 50 percent since the early 1970s through 2000 which can mainly be attributed to increased refined grain consumption.<sup>13</sup> The average American eats less than one serving daily of whole grains, and over 30 percent of Americans never eat whole grains.<sup>14</sup> Increased intake of whole grains shows a positive correlation with age, education, and income level.<sup>15, 16, 17</sup> Although many Californians may be consuming significant amounts of grain products, they are not reaching the recommended daily intake of whole grain products. Only 52 percent of adults interviewed for the 1997 California Dietary Practices Survey reported eating at least one serving per day of whole grain bread or corn tortillas on the day preceding the survey.<sup>18</sup> More importantly, 44 percent of adults did not consume any whole grain breads, corn tortillas or high fiber cereals on the day preceding the survey.<sup>18</sup> Twenty-eight percent of California adolescents interviewed for the 1998 California Teen Eating, Exercise, and Nutrition Survey reported eating no serving of whole grain products on the day preceding the survey and 53 percent reported eating one to three servings.<sup>19</sup>

## **Trends/Contributing Factors**

The knowledge of the importance of grains in the human diet has spanned decades. Early processing of grains crushed the grain but kept the bran, endosperm, and germ. When the need for large scale processing increased, manufacturers developed methods that refined the grain to produce white flour which made the bread softer and lighter in color. The refinement process, unfortunately, removed the germ and the bran. In 1998, the Food and Drug Administration required enriched grain products be fortified with folic acid.

Intake of grain products has increased from record lows in the 1970s but intake of whole grains still remains low. There are a number of reasons to explain the low intake of whole grain foods. Based on focus groups and interviews, consumers reported problems in identifying whole grains foods and in familiarity with methods of preparation and cooking whole grains. In addition, the cost of whole grain rice, bread, and pasta tends to be greater than the cost of refined grain products, which is a deterrent for low income families.

### **Barriers to Implementation/Myths**

- All brown or dark colored bread/grain products are not necessarily whole grain. The color of a bread/grain product may be dark due to other ingredients such as molasses or brown sugar.
- Bran products are not whole grain. Bran is only one part of the whole grain.
- Words such as “multi-grain,” “stone ground,” “100% wheat,” “organic,” “cracked wheat” and “7 grain,” etc., are not necessarily whole grain products. Consumers should find the following words on the ingredient label of foods, if the food contains whole grains: whole wheat, wild rice, whole oats, whole-grain corn, oatmeal, bulgur, brown rice, and graham flour.

### **Common Concerns/Strategies**

Ease of identification of food products that are good sources of whole grains is a challenge. Adoption of universal labeling, similar to the Whole Grain Stamp used by the Whole Grains Council is a possible strategy. It is important to emphasize the role of whole grains as part of a healthful diet. Contributing strategies could include development of positive, practical, and simple key educational messages similar to those used in the USDA’s 5 A Day fruit and vegetable campaign. In a nationwide survey, Nutrition and You: Trends 2000, conducted by the American Dietetic Association found that 90 percent of people who completed the survey believed whole-grain breads and cereals were “healthier” than regular products. Despite this, it is not clear why this knowledge is not being translated into higher consumption of grains. Industry should be encouraged to continue to develop high quality, tasteful whole grain food products so that consumers will more frequently choose whole grains over processed grain products. Excessive intake of processed grain products and by products such as high fructose corn syrup may contribute to the current obesity epidemic.

Common strategies for consumers to increase whole grain intake include:

- Eat whole grain cereals for breakfast.
- Purchase whole grain breads, grain tortillas, grain bagels, and grain pasta.
- Use whole grain foods such as brown rice, cracked wheat, or quinoa as a side dish.

- Make pancakes and muffins with whole grains by using half whole wheat flour and half white flour. Also add oats and other whole grains to your batter mix.

### **Opportunities for Improvement**

- Promote consumption of whole grain products through nutrition education in the Food Stamp Program.
- Encourage Food programs, such as Child Care Nutrition Programs, School Nutrition Programs, and Adult Nutrition Programs, to provide whole grain products daily.
- Develop a universally accepted standardized seal for packaging indicating the amount of whole grain in each product such as the Whole Grain Stamp.
- Encourage the food industry to increase the number of products on the market that promote increased use of whole grains.
- Implement a social marketing campaign to promote increased whole grain consumption.

### **Resources/Web Sites**

- 2005 Dietary Guidelines, <http://www.health.gov/dietaryguidelines/dga2005/document/>
- American Association of Cereal Chemists, <http://www.aaccnet.org>
- American Cancer Society, <http://www.cancer.org>
- American Heart Association, <http://www.americanheart.org>
- Healthy People 2010, <http://www.healthypeople.gov>
- The American Dietetic Association, <http://www.eatright.org>
- The Bell Institute of Health and Nutrition, <http://www.bellinstitute.com>
- The Popcorn Institute, <http://www.popcorn.org>
- The Whole Grains Council, <http://www.wholegrainscouncil.org>
- United States Department of Agriculture, MyPyramid, <http://www.MyPyramid.gov>
- University of Minnesota, The Whole Grain <http://www.thewholegrain.com>
- Wheat Foods Council: The Grain Nutrition Information Center, <http://www.wheatfoods.org>

### **Clinical Implications**

- Consumption of whole grains contributes to bowel health, preventing constipation and possibly reducing the risk of colon cancer.
- Whole grains provide protein, which is essential for growth, maintenance and repair of tissue.
- Folic acid found in fortified grains and whole grains helps to reduce neural tube defects and appears to be a factor in reducing homocysteine, which may be a risk factor in coronary artery disease.
- Zinc, found in whole grains, helps the body fight infection.
- Vitamin E and selenium, found in whole grains, can protect cells from damage from free radicals.
- Whole grains provide bulk which aids satiety and, therefore; may facilitate weight control.
- Whole grains provide complex carbohydrates as an energy source for active lifestyles.

## **References**

\* Photo source: Courtesy of Oldways Preservation Trust and the Whole Grains Council, [www.wholegrainscouncil.org](http://www.wholegrainscouncil.org)

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