



# Grains of truth about WHEAT NUTRITION

## Definitions

Nutrition is a new, ever-changing science. Continual research increases our knowledge about what nutrients in what amounts are needed to maintain the human body and help keep it disease-free.

In 2005, the U.S. Departments of Agriculture and Health and Human Services released the sixth edition of the "Dietary Guidelines for Americans." The new guidelines continue to emphasize balance, moderation and variety in food choices, with special emphasis on whole-grain products, low fat dairy, vegetables and fruits. The five basic guideline recommendations are:

### MIX UP YOUR CHOICES WITHIN EACH FOOD GROUP.

**Focus on fruits.** Eat a variety of fruits—whether fresh, frozen, canned, or dried—rather than fruit juice for most of your fruit choices. For a 2,000 calorie diet, you will need 2 cups of fruit each day (for example, 1 small banana, 1 large orange, and ¼ cup dried apricots or peaches).

**Vary your veggies.** Eat more dark green veggies, such as broccoli, kale, and other dark leafy greens; orange veggies, such as carrots, sweetpotatoes, pumpkin, and winter squash; and beans and peas, such as pinto beans, kidney beans, black beans, garbanzo beans, split peas, and lentils.

**Get your calcium-rich foods.** Get 3 cups of low-fat or fat-free milk—or an equivalent amount of low-fat yogurt and/or low-fat cheese (1½ ounces of cheese equals 1 cup of milk)—every day. For kids ages 2 to 8, it's 2 cups of milk. If you don't or can't consume milk, choose lactose-free milk products and/or calcium-fortified foods and beverages.

**Make half of your grains whole.** Eat at least 3 ounces of whole-grain cereals, bread, crackers, rice, or pasta every day. One ounce is about 1 slice of bread, 1 cup of dry breakfast cereal, or ½ cup of cooked rice, pasta or cereal. Look to see that grains such as wheat, rice, oats, or corn are referred to as "whole" in the list of ingredients.

**Go lean with protein.** Choose lean meats and poultry. Bake it, broil it, or grill it. And vary your protein choices—with more fish, beans, peas, nuts and seeds.

**Know the limits on fat, salt, and sugars.** Read the Nutrition Facts label on foods. Look for foods low in saturated fats and *trans* fats. Choose and prepare foods and beverages with little salt (sodium) and/or added sugars (caloric sweeteners).

The dietary guidelines stress the need for Americans to eat at least five to ten ounces of bread, cereal, rice and pasta each day (depending on age, gender and activity level), with half of them coming from whole grain. Grains are chosen as the foundation of a healthful diet because Americans should eat at least 45

percent of total calories in the form of carbohydrates. Grain products are also an excellent source of fiber, the major B vitamins (thiamine, niacin, riboflavin and folic acid) and iron.

## Carbohydrates

There are two types of carbohydrates: simple and complex. Simple carbohydrates are found in sugars such as table sugar, molasses, honey, lactose (in milk) and fructose (in fruits). They break down quickly during digestion and provide an immediate source of energy to the bloodstream.

Complex carbohydrates are starches such as those found in grain products and some vegetables (potatoes and corn). Complex carbohydrates break down slowly during digestion, giving the body a time-released source of energy. However, refined grain products and potatoes breakdown a little faster than whole grains.

Athletes often eat 55 to 65 percent of their diet as complex carbohydrates so they can store adequate energy in the muscles for endurance events. The brain also uses carbohydrates to function.

Experts recommend that athletes consume carbohydrates in the following amounts before, during and after endurance sports (Berning 2000):

### BEFORE EXERCISE:

**(3 – 4 hours before) – 200 – 350 grams**

**(1 hour before) 50 – 100 grams**

### DURING EXERCISE:

**(per hour) – 50 – 60 grams**

### AFTER EXERCISE:

**(within 30 minutes after) 100 grams**

ACSM has issued the following guidelines to help athletes stay hydrated (ACSM 2001):

### TWO HOURS BEFORE EXERCISE:

**Drink 16 ounces fluid**

### DURING EXERCISE:

**Drink six-eight ounces of fluid every fifteen minutes**

### AFTER EXERCISE:

**Drink 16-24 ounces of fluid for every pound lost during exercise.**



## Fiber

Fiber is a general term for the indigestible part of plant foods. It provides almost no energy or calories for the body. Grain products, fruits, vegetables and legumes are good sources of fiber. Dairy products, meat, poultry, fish, fats and sweeteners have virtually no fiber.

There are two types of dietary fiber: insoluble and soluble. White flour products contain some soluble fiber, which has been shown to lower blood cholesterol levels when eaten as part of a low-fat diet. Whole-wheat products and bran are sources of insoluble fiber, which acts as a bulk producer to help prevent constipation, relieve hemorrhoids and prevent diverticular disease.

Foods containing insoluble fiber may also reduce the risk of colon cancer, and according to recent studies, may help prevent breast cancer.

The National Academy of Sciences recommends a daily dose of 25 grams for women and 38 grams for men under age 50. As for adults 50 and over, 21 grams for women and 30 grams for men is a day's supply. According to a 1988 U.S.D.A. Nationwide Food Consumption Survey, Americans are eating far less than that amount—about 12 to 17 grams per day.

## Protein

The body needs about 12 to 15 percent of its calories in the form of protein. Proteins consist of amino acids and are essentials for tissue maintenance and growth. Eight essential amino acids must be obtained from food because the body cannot make them or convert them from nutrients.

Complete protein sources, such as egg, milk and meat products, contain all eight essential amino acids in the necessary proportion. Incomplete protein sources, such as wheat and other grains, may contain all eight essential amino acids, but not at adequate levels. Combining a variety of plant proteins will supply adequate complete proteins.

## Fat

Fats provide warmth, power to move, healthy skin and cushions for body organs. Fat is an essential nutrient, but should be no more than 20 to 35 percent of your total daily calories, with most fats coming from polyunsaturated and monounsaturated sources. Count less than 10 percent of calories coming from saturated fats, less than 300 mg per day of cholesterol and keep trans fats as low as possible. That means that some foods with more than 35 percent fat should be averaged with others that have less. Small amounts of polyunsaturated oils are found naturally in the germ of a grain kernel, so a few grams of fat in whole grain cereals are to be expected.

Wheat foods provide minimal amounts of fat unless eaten with high fat toppings. By exchanging wheat products for high fat foods, fat in the diet can be reduced.

## B-vitamins

**Thiamine (B<sub>1</sub>)** is needed daily for good appetite, digestion and healthy nerves. It also helps the body make better use of fat and carbohydrate. Wheat foods may provide as much as a third of the daily requirements for thiamine.

**Riboflavin (B<sub>2</sub>)** is found in many plant and animal foods. It is essential for the use of protein by the body.

**Niacin** was once called the "anti-pellagra" vitamin. Since the niacin enrichment of white flour products in the 1940's, pellagra has basically been eradicated in the United States.

**Folic Acid** is now a required nutrient in enriched grain products. It has been shown to prevent neural tube defects and may help reduce the risk of heart disease, strokes, Alzheimer's and some cancers.

## Iron

With the help of copper, iron combines with protein to form hemoglobin, a compound in red blood cells that transports oxygen to each cell in the body and carries carbon dioxide away to be exhaled.

Iron-deficiency anemia is a problem in United States, primarily among teenagers and women of childbearing age. Enrichment of white flour products with iron has lessened the occurrence of iron-deficiency anemia significantly in the United States. Wheat foods are all considered reliable sources of iron for normal dietary needs.

## Zinc

Recent medical research has demonstrated the importance of zinc in the diet; particularly for skin healing and growth properties. Many breakfast cereals are a good source of zinc.



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