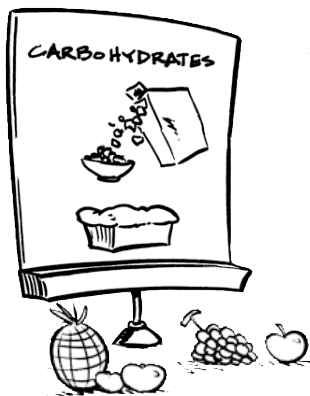


Carbohydrates are an important source of energy for your body. There are two types of carbohydrates: simple and complex.

What's the Difference Between Complex and Simple Carbohydrates?

Complex carbohydrates are energy yielding nutrients that are put to good use in the body. Technically, they are long chains of sugar molecules arranged as starches. Foods rich in complex carbohydrates are often good sources of vitamins, minerals, and fiber. Simple carbohydrates are sugars such as fructose (fruit sugar), sucrose (table sugar), and lactose (milk sugar). Certain sugar-containing foods, such as sodas, are referred to as "empty calories" because they provide energy but little nutritional value.



Where Can I Find Complex Carbohydrates in My Food?

You can find abundant complex carbohydrates in whole grain breads and cereals, brown rice, whole wheat pasta, beans, and vegetables. Because the sugar in whole fruit is combined with fiber and the sugar in milk is combined with protein, these simple carbohydrates are also considered more complex in nature. Milk products and whole fruit are also rich in nutrients, unlike other foods high in sugar.

Are Complex Carbohydrates High in Calories?

Contrary to popular belief, the calorie content of foods that contain complex carbohydrates is relatively low.

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Jumbo portion sizes and/or added fats, such as butter and cream sauces, are what increase the calorie content of these foods. Calorie comparisons of food items with and without added fats follow.

<u>Food Item</u>	<u>Calories</u>
Wheat Bread (1 slice)	80
With 1 tsp. butter	125
Macaroni (1 cup cooked)	150
With 1/4 cup cheese sauce	285
Bagel (4 oz.)	165
With 2 Tbsp. cream cheese	265
Baked Potato (1 small)	125
With 2 Tbsp. sour cream	175

Benefits of Complex Carbohydrates

Complex carbohydrates can be an excellent source of fiber, which provides you with several benefits:

- Decreased blood cholesterol levels and reduced risk of heart disease.
- Decreased constipation and other gastrointestinal disorders.
- Improved weight control by promoting a feeling of fullness with fewer calories.
- Improved diabetes control by slowing the entry of sugar into the blood.

Sources of Simple Carbohydrates

Simple sugars are found naturally in fruit, vegetables, and milk. But most of the sugar we eat is added to foods, such as candy, cake, ice cream, many breakfast cereals, sports bars, and soft drinks. One 12 oz. can of cola actually contains ten teaspoons of pure added sugar!

What Is the Function of Simple Carbohydrates?

The main purpose of simple carbohydrates is to enhance flavor and act as a preservative in processed foods. Since most of the food sources of simple carbohydrates contribute no protein, vitamins, or minerals to your diet, they are called "empty calorie" foods. To illustrate this point further, a nutritional comparison between a complex carbohydrate (whole wheat bread) and a simple carbohydrate (soda) is given below:

	<u>2 Slices Whole Wheat Bread</u>	<u>12 oz. Soda</u>
Calories	160	160
Protein (gm.)	6	0
Fiber (gm.)	4	0
B Vitamins/Iron (% of daily value)	2-6	0

To find out more about carbohydrates, please visit www.snac.ucla.edu.



The Complexities of Carbs

KNOW YOUR CARBOHYDRATES

Carbohydrates are the preferred source of energy for our bodies. There are two types of carbohydrates: (1) simple carbohydrates and (2) complex carbohydrates. All carbohydrates are ultimately broken down into glucose (blood sugar) to fuel the cells in our bodies.

What is the Difference Between Simple and Complex Carbohydrates?

Simple carbohydrates, or sugars, include table sugar (sucrose), honey, corn syrup, molasses, and the natural sugars found in fruit (fructose), and milk (lactose). When sugars are added to foods, they provide a very concentrated form of carbohydrate, with many calories but few nutrients. Thus, they contribute many “empty calories” when added to foods such as soft drinks, cookies, candies, and other sweets. The average American consumes 20 teaspoons of added sugars each day, which amounts to 300 calories - the amount of sugar found in just two 12-oz. cans of soda. Added sugar should be limited to 10% of total energy intake, or 12 tsp. of sugar (48g) a day based on a 2,000-calorie diet.

Complex carbohydrates, or starches, are comprised of long chains of simple sugars. They can be found in whole grain breads and cereals, brown rice, whole-wheat pasta, whole fruits, vegetables, and beans. These foods not only provide calories, but they are also packed with essential vitamins, minerals, and fiber, which makes them more filling and more nutritious.

Fact or Fiction: Candy Bars and Sodas Are Good Sources of Energy

Because of the way the body metabolizes sugary, processed foods, a candy bar or soda is not an ideal energy source. Most sugary, processed foods are converted immediately to glucose after consumption. This creates a rapid increase in blood sugar levels and a sudden burst of energy. But this energy is only temporary. The high blood sugar levels cause the pancreas to secrete large quantities of insulin. Insulin is a hormone that works to promote fuel storage in the body. When sugary, processed foods enter the body, a high concentration of insulin is secreted which causes glucose to be rapidly removed from the blood, leaving you without energy and craving more sugar. Thus, people who eat candy bars and soda for quick energy are actually defeating their purpose.

Most high-fiber, complex carbohydrates are digested more slowly than sugary, processed foods. As a result, blood sugar levels rise more slowly and steadily, and insulin is secreted in lower concentrations. This means that glucose leaves the blood more gradually, giving you more sustained energy.

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CHOOSING WHOLE GRAINS

Not all complex carbohydrates carry the same nutritional benefits. “Refined,” starchy foods like white rice, white pasta, white bread, and cereals made from “enriched wheat flour,” lack the fiber and several of the nutrients that “whole grain” foods provide. In a sense, refined, starchy foods act more like simple sugars in the body and provide mostly empty calories.

What Is a “Whole Grain?”

A whole grain has four parts: the germ (the nutrient-rich inner part), the endosperm (the soft white, starchy inside portion), the bran (the fibrous coating around the grain), and the husk (the outer inedible shell).

What Is “Refinement?”

Refinement is the process that removes all but the endosperm portion of the grain, leaving a white, nutrient-poor, refined flour.

What Is “Enrichment?”

Enrichment is the process that adds back five nutrients to white, refined flour: iron, thiamin, riboflavin, niacin, and folic acid. All the other nutrients from the whole grain are still lost (magnesium, zinc, vitamin B6, chromium, vitamin E, and fiber).

What’s Considered “Whole Grain” and What Isn’t?

Use the following guidelines to make sure you are really getting whole grain products:

Wheat: “Wheat Flour” is the generic term for any flour made from wheat.

- Cracked wheat, stoned wheat, wheatberry, 100% wheat, seven-grain, and multi-grain are all made from mostly refined grains, not whole grains.
- Look for the word “whole” before “grain” or “wheat” on product labels. It also should be the first ingredient listed.

Rye and Pumpernickel: These types of products usually contain little, if any, whole grains.

Oats: Oat products are generally whole grain, no matter how you slice it--instant, regular, fine-cut, or coarse-cut. The one exception is oatmeal bread where the first ingredient listed on the label is usually refined wheat flour. You’ll find oats way down on the ingredients list.

Rice: Brown and wild rice are whole grains. White rice is not.

Other Whole Grain Products: Try bulgar wheat, whole wheat couscous, whole wheat pastas.