

NEW-LIFESTYLES STEPS TO A HEALTHIER YOUSM CARBOHYDRATE FACTS

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With the recent popularity of low-carbohydrate diets like Atkins and South Beach, carbohydrates are in the media spotlight. Current debates ensue as everyone from diet-enthusiasts to health professionals weighs in as to the potential benefit or harm of carbohydrate consumption. Carbohydrates: friend or foe? Some consider carbohydrates to be the enemy in an effort to lose unwanted body weight. Others consider the possibility of a life without (or limiting) carbohydrates to be flat-out impossible. So, what are the facts surrounding carbohydrates?

What are carbohydrates?

Carbohydrates represent one of the four energy-containing food nutrient categories. The other three nutrient categories are protein, fat and alcohol. Frequently referred to as "carbs," carbohydrates are an important part of a healthy diet. Found in a variety of foods—rice, bread, beans, potatoes, corn, apples and milk (to name a few), carbohydrates are abundant in most diets around the world. The most common forms of carbohydrate are sugars, fibers and starches.

In its most basic form, a carbohydrate is a molecule of sugar containing carbon, hydrogen and oxygen (remember $C_6H_{12}O_6$ from chemistry class?). These simple sugar molecules join together to form complex chains and become the underlying chemical structure of starches and fibers.

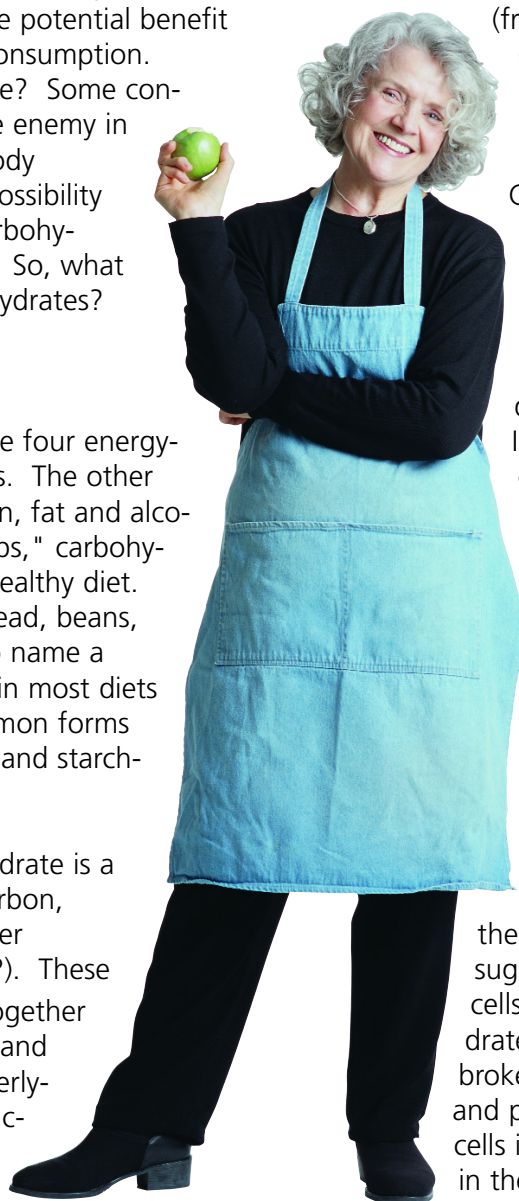
complex carbohydrates?

Carbohydrates used to be thought of as fitting into one of two groups: simple carbohydrates or complex carbohydrates. The first group, simple carbohydrates, is comprised of single molecule sugars such as fructose (fruit sugar), sucrose (table sugar), lactose (milk sugar) and dextrose (corn sugar). Simple carbohydrates are almost immediately converted to blood sugar.

Complex carbohydrates are three or more sugar molecules linked together. Foods high in complex carbohydrates are typically lower in cholesterol, saturated fat and calories. They also offer more fiber, vitamins and minerals to the diet, promoting many health benefits. In the past, it was suggested that simple carbohydrates were bad (to be avoided) and complex carbohydrates were good (to be encouraged). The new system of evaluating and categorizing carbohydrates is considerably more complicated.

Carbohydrates are fuel for the body, giving it the energy to be physically active and to allow the body organs to function correctly. The digestive system breaks down carbohydrates into their simple sugar components and then, with the help of insulin, sends this sugar through the bloodstream into the cells to be used as energy. All carbohydrates are processed by the digestive system, broken down into single sugar molecules and passed through the bloodstream into the cells in the same way. The main exception is in the case of fiber.

Fiber slows down the process considerably. Because fiber cannot be broken down into sugar, it passes through the



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**What is the
difference between simple and**

body undigested. Contrary to how it sounds, this is actually a good thing. Foods that rapidly change to sugar cause a spike in blood sugar. Fiber is one component of food that helps to moderate the change-to-sugar process, slowing it down to allow for a gentle rise in blood sugar levels.

What is the Glycemic Index?

The glycemic index is a new system of evaluating carbohydrates which measures how quickly and to what extent blood sugar rises after eating a food containing carbohydrate. This measure is important because a diet comprised of mainly high glycemic index foods has been associated with an increased risk of diabetes and coronary heart disease.

Generally, one of the main factors to determine if a food registers as high on the glycemic index is how processed its carbohydrates are. For example, a slice of highly processed white bread turns into sugar almost immediately, classifying it as a high glycemic index food. Whole grain wheat bread, on the other hand, contains a considerable amount of fiber, slowing down its conversion to sugar and giving it a low glycemic index. Thus, fiber plays an important role in determining a food's placement in the glycemic index.

Along with fiber content, some other factors that influence glycemic index include: fat and acid content (the higher the fat or acid content, the slower the food is converted to sugar), type of starch (the atomic configuration of the starch in potatoes is converted to sugar faster than other starches), ripeness (ripe fruits and vegetables have more sugar than unripe ones) and physical form (the more processed grain is, the higher its glycemic index).

What are some examples of high glycemic index foods?

White rice, spaghetti, watermelon, white bread, baked Russet potatoes, French fries, sugar-sweetened soda and candy bars are all examples of high glycemic index foods.

What are some examples of low glycemic index foods?

All-bran cereal, apples, asparagus, broccoli, low-fat yogurt, tomato soup, sweet potato, pearled barley, pinto beans, peanuts, peaches and oranges are low glycemic index foods.

What is the Glycemic Load?

What the glycemic index does not take into account is the amount of carbohydrate in the food. So, researchers developed a measure called glycemic load which classifies food according to its carbohydrate content as well as its impact on blood sugar. The glycemic load of food is calculated by multiplying its glycemic index by the amount of carbohydrate it contains.

The classic example of a food with a high glycemic index and a low glycemic load is watermelon. Consisting mostly of water, watermelon may be sweet, but it contains only a small amount of carbohydrate per slice. Both the glycemic index and glycemic load systems of classifying carbohydrates can be counterintuitive and complicated. The underlying message is to try and replace highly refined, processed white flours and starches with whole-grain, high fiber foods.

What is the current recommendation?

Because no one knows the long-term effects of eating a "low-carbohydrate" or "no-carbohydrate" diet, the current recommendation is a conservative one. As is true with many food choices in our diet, balance and moderation are important. Paying attention to the portion size we eat and choosing complex carbohydrates over simple carbohydrates is key. Consistently proving to be healthy choices, fruits, vegetables and whole grain carbohydrates provide many beneficial vitamins, minerals and phytochemicals (protective, disease-preventing compounds).

The popularity of whole grains has exploded in recent months as whole grain options become available in almost every grocery store and restaurant. As with any food fad, caution should be exercised when purchasing food items advertised as "whole-grain" to make sure they are the real deal and not just another marketing ploy on the part of food companies. How to spot whole grain products? Read food labels carefully and look for items which list whole-grain ingredients first like whole oats or whole wheat. Products that list "wheat flour" as a main ingredient may not have the same whole-grain health benefits because the "wheat flour" could be highly processed, refined cake flour disguised to sound healthy. When in doubt, look for 100 percent whole-grain products that are high in dietary fiber.



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