

# What Is the Role of Carbohydrates?

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A person getting ready to embark on a weight loss or [exercise](#) program will undoubtedly be making some changes to her diet. These changes involve looking at the food she eats and its nutritional content, including its carbohydrates, fat and protein.

While the body uses carbohydrates for many functions, their primary purpose is for energy production. They supply fuel principally to the central nervous and muscular systems.

## How Carbohydrates Supply Energy

The carbohydrates in the diet can be simple, single molecules, called monosaccharides, or complex combinations, called polysaccharides.

Regardless of what's eaten, ultimately carbohydrates end up with the same fate: they are processed by the body to produce energy and water.

One of the simplest forms of carbohydrates is glucose. Glucose is found in a variety of [foods](#). During digestion, it is broken down by the small intestine, circulates in the blood and is delivered to the organs and tissues of the body. If the blood cannot provide enough glucose for the body's immediate needs, it can break down stored carbohydrates in the form of glycogen that is stored in the muscles and liver.

In situations where the body is not getting the carbohydrates that it needs (such as during fasting or long-term illness), it can break down fat and protein and convert them into glucose to supply energy.

## Carbohydrates and the Central Nervous System

The brain and nervous system depend on a ready supply of glucose. Anyone who's ever felt light-headed after fasting or skipping a meal has experienced one of the brain's signals that it needs more fuel.

## Carbohydrates and the Muscular System

Next to the nervous system, the muscular system is most dependent on a ready supply of carbohydrates in the form of glucose. There are two primary sources: the glucose circulating in the blood and the stored glycogen in the muscles.

If the muscles do not have enough glucose to meet their needs, they can process fats and proteins as a secondary fuel supply and convert them into carbohydrates, but only for short periods of time. Muscles that use fats and proteins produce nitrogen and ketone bodies as byproduct of energy production. An accumulation of nitrogen and ketones can be toxic to the body.

## Carbohydrates Supply Dietary Fiber

In addition to supplying fuel to the body, carbohydrates are also a good source of fiber. Fiber is available in many different types of fruits, vegetables and grains and has been shown to help reduce cholesterol levels and the incidence of many diseases.

Studies of populations whose diets are high in fiber have shown that they have lower incidences of colon cancer and other gastrointestinal diseases. Because it is indigestible, the cellulose in fiber carries away many toxins and harmful byproducts produced by the body.

## Carbohydrates in the Diet

While it's important to get adequate amounts of carbohydrate in the diet, it's also important that they're the right type. Many of the foods that Americans eat

are loaded with "empty calories," or foods that are high in fat and sugar content and low in fiber.

To maintain an ideal weight and ensure that the body is getting both the fuel and the fiber it needs, it's important to eat a diet that is a mixture of fruits, vegetables and grains--all good sources of carbohydrates. For a balanced diet, add an appropriate amount of fat and protein, using the USDA Food Pyramid as a guide.