

# Understanding Carbohydrates

## Types of Carbohydrates

Did you know there are three main types of carbohydrate in food? There are

- Starches (also known as complex carbohydrates)
- Sugars
- Fiber

You'll also hear terms like naturally occurring sugar, added sugar, low-calorie sweeteners, sugar alcohols, reduced-calorie sweeteners, processed grains, enriched grains, complex carbohydrate, sweets, refined grains and whole grains.

No wonder knowing what kind and how much carbohydrate to eat can be confusing!

On the nutrition label, the term "total carbohydrate" includes all three types of carbohydrates. This is the number you should pay attention to if you are carbohydrate counting.

## Starch

Foods high in starch include:

- Starchy vegetables like peas, corn, lima beans and potatoes
- Dried beans, lentils and peas such as pinto beans, kidney beans, black eyed peas and split peas
- Grains like oats, barley and rice. (The majority of grain products in the US are made from wheat flour. These include pasta, bread and crackers but the variety is expanding to include other grains as well.)

The grain group can be broken down even further into whole grain or refined grain.

A grain contains three parts:

- bran
- germ
- endosperm

The bran is the outer hard shell of the grain. It is the part of the grain that provides the most fiber and most of the B vitamins and minerals.

The germ is the next layer and is packed with nutrients including essential fatty acids and vitamin E.

The endosperm is the soft part in the center of the grain. It contains the starch. Whole grain means that the entire grain kernel is in the food.

If you eat a whole grain food, it contains the bran, germ, and endosperm so you get all of the nutrients that whole grains have to offer. If you eat a refined grain food, it contains only the endosperm or the starchy part so you miss out on a lot of vitamins and minerals. Because whole grains contain the entire grain, they are much more nutritious than refined grains.

## Sugar

Sugar is another type of carbohydrate. You may also hear sugar referred to as simple or fast-acting carbohydrate.

There are two main types of sugar:

- naturally occurring sugars such as those in milk or fruit
- added sugars such as those added during processing such as fruit canned in heavy syrup or sugar added to make a cookie

On the nutrition facts label, the number of sugar grams includes both added and natural sugars.

There are many different names for sugar. Examples of common names are table sugar, brown sugar, molasses, honey, beet sugar, cane sugar, confectioner's sugar, powdered sugar, raw sugar, turbinado, maple syrup, high-fructose corn syrup, agave nectar and sugar cane syrup.

You may also see table sugar listed by its chemical name, sucrose. Fruit sugar is also known as fructose and the sugar in milk is called lactose. You can recognize other sugars on labels because their chemical names also end in "-ose." For example glucose (also called dextrose), fructose (also called levulose), lactose and maltose.

## **Fiber**

Fiber comes from plant foods so there is no fiber in animal products such as milk, eggs, meat, poultry, and fish.

Fiber is the indigestible part of plant foods, including fruits, vegetables, whole grains, nuts and legumes. When you consume dietary fiber, most of it passes through the intestines and is not digested.

For good health, adults need to try to eat 25 to 30 grams of fiber each day. Most Americans do not consume nearly enough fiber in their diet, so while it is wise to aim for this goal, any increase in fiber in your diet can be beneficial. Most of us only get about half of what is recommended.

Fiber contributes to digestive health, helps to keep you regular, and helps to make you feel full and satisfied after eating.

Additional health benefits, of a diet high in fiber — such as a reduction in cholesterol levels — have been suggested by some so may be an additional benefit.

### **Good sources of dietary fiber include:**

- Beans and legumes. Think black beans, kidney beans, pintos, chick peas (garbanzos), white beans, and lentils.
- Fruits and vegetables, especially those with edible skin (for example, apples, corn and beans) and those with edible seeds (for example, berries).
- Whole grains such as:
- Whole wheat pasta
- Whole grain cereals (Look for those with three grams of dietary fiber or more per serving, including those made from whole wheat, wheat bran, and oats.)
- Whole grain breads (To be a good source of fiber, one slice of bread should have at least three grams of fiber. Another good indication: look for breads where the first ingredient is a whole grain. For example, whole whe+at or oats.) Many grain products now have "double fiber" with extra fiber added.
- Nuts — try different kinds. Peanuts, walnuts and almonds are a good source of fiber and healthy fat, but watch portion sizes, because they also contain a lot of calories in a small amount.

In general, an excellent source of fiber contains five grams or more per serving, while a good source of fiber

contains 2.5 - 4.9 grams per serving.

It is best to get your fiber from food rather than taking a supplement. In addition to the fiber, these foods have a wealth of nutrition, containing many important vitamins and minerals. In fact, they may contain nutrients that haven't even been discovered yet!

It is also important that you increase your fiber intake gradually, to prevent stomach irritation, and that you increase your intake of water and other liquids, to prevent constipation.

## Carbohydrate Counting

Carbohydrate counting, or "carb counting," is a meal planning technique for managing your blood glucose levels.

Carbohydrate counting helps you to keep track of how much carbohydrate you are eating. You set a limit for your maximum amount of carbohydrate to eat for a meal, and with the right balance of physical activity and medicine, if you need it, can help to keep your blood glucose levels in your target range.

### How Much Carbohydrate?

How much carbohydrate you eat is very individual. Finding the right amount of carbohydrate depends on many things including how active you are and what, if any, medicines you take. Some people are active and can eat more carbohydrate. Others have trouble eating much carbohydrate.

Finding the balance for yourself is important so you can feel your best, do the things you enjoy, and lower your risk of diabetes complications.

A place to start is at about 45-60 grams of carbohydrate at a meal. You may need more or less carbohydrate at meals depending on how you manage your diabetes.

You and your health care team can figure out the right amount for you. Once you know how much carb to eat at a meal, choose your food and the portion size to match.

### What Foods Have Carbohydrate?

Foods that contain carbohydrate or "carbs" are:

- grains like rice, oatmeal, and barley
- grain-based foods like bread, cereal, pasta, and crackers
- starchy vegetables like potatoes, peas and corn
- fruit and juice
- milk and yogurt
- dried beans like pinto beans and soy products like veggie burgers
- sweets and snack foods like sodas, juice drinks, cake, cookies, candy, and chips

Non-starchy vegetables like lettuce, cucumbers, broccoli, and cauliflower have a little bit of carbohydrate but in general are very low.

### How Much Carbohydrate is in These Foods?

Reading food labels is a great way to know how much carbohydrate is in a food. For foods that do not have a label, you have to estimate how much carbohydrate is in it. Keeping general serving sizes in mind will help

you estimate how much carbohydrate you are eating.

For example there is about **15 grams of carbohydrate** in:

- 1 small piece of fresh fruit (4 oz)
- 1/2 cup of canned or frozen fruit
- 1 slice of bread (1 oz) or 1 (6 inch) tortilla
- 1/2 cup of oatmeal
- 1/3 cup of pasta or rice
- 4-6 crackers
- 1/2 English muffin or hamburger bun
- 1/2 cup of black beans or starchy vegetable
- 1/4 of a large baked potato (3 oz)
- 2/3 cup of plain fat-free yogurt or sweetened with sugar substitutes
- 2 small cookies
- 2 inch square brownie or cake without frosting
- 1/2 cup ice cream or sherbet
- 1 Tbsp syrup, jam, jelly, sugar or honey
- 2 Tbsp light syrup
- 6 chicken nuggets
- 1/2 cup of casserole
- 1 cup of soup
- 1/4 serving of a medium french fry

### **Protein and Fat**

With carbohydrate counting, it is easy to forget about the protein and fat in meals. Always include a source of protein and healthy fat to balance out your meal.

### **Using Food Labels**

Carbohydrate counting is easier when food labels are available. You can look at how much carbohydrate is in the foods you want to eat and decide how much of the food you can eat. The two most important lines with carbohydrate counting are the serving size and the total carbohydrate amount.

- Look at the **servings size**. All the information on the label is about this serving of food. If you will be eating a larger serving, then you will need to double or triple the information on the label.
- Look at the **grams of total carbohydrate**.
- Total carbohydrate on the label includes sugar, starch, and fiber.
- Know the amount of carb you can eat, figure out the portion size to match.
- If you are trying to lose weight, look at the **calories**. Comparing products can be helpful to find those lower in calories per serving.

- To cut risk of heart disease and stroke, look at **saturated and trans fats**. Look for products with the lowest amount of saturated and trans fats per serving.
- For people with high blood pressure, look at the **sodium**. Look for foods with less sodium.

## Make Your Carbs Count

The most popular comfort foods seem to contain lots of carbohydrate and fat (think macaroni and cheese) leaving one to wonder how to include them into a diabetes meal plan. You can include starchy foods, but make it count.

What do we mean?

When you reach for comfort foods, make your carbohydrate servings count by selecting the most nutrient dense choices and keeping your portions small.

Here are some tips to get the most from your carb foods:

- Avoid sugary drinks. This includes regular soda, sweet tea, fruit punch and sports drinks. Instead, drink water or diet drinks like diet soda, sugar-free lemonade.
- Eat whole fruit instead of drinking juice.
- Choose sweet potatoes instead of white potatoes.
- Try whole grain breads and whole wheat pasta instead of white bread and regular pasta.
- Eat whole grain oatmeal instead of processed cereals.
- Try brown rice or barley in soups, stews, and salads instead of white rice.
- Learn more about the different [types of carbohydrate](#).

Have a favorite white-flour-based recipe like zucchini bread or pancakes? Get creative with your own recipes and try substituting from 1/4 up to 1/2 the white flour with whole wheat flour to make your favorite comfort foods more wholesome. For healthier recipes, go to [diabetes.org/recipes](http://diabetes.org/recipes).

To gauge your portion size, [use the plate method to guide you](#):

- Keep only about 1/4 of your plate for starchy foods including starchy vegetables or grains like rice.
- Fill half of your plate with non-starchy vegetables.
- The last quarter is for your protein foods like fish or chicken.
- To keep portions smaller, keep the food to a depth of about the thickness of your palm.