

# Nutrition Wars: Choosing Better Carbohydrates

## What are carbohydrates?

- There are 2 main types of carbohydrates:
- **Simple carbohydrates** include sugars found naturally in fruit, some vegetables, milk and milk products, and also in table sugar, honey, and syrup.
- **Complex Carbohydrates** include starch and fiber. Starch is made of hundreds of sugar units. Fiber is the structural part of plants. It is not digested in the body's digestive tract, so fiber provides 0 calories.



## Why are carbohydrates important?

- Carbohydrates most important job is to provide energy (4 calories per gram) for the body. Your body can also use fat for energy, but your brain and nerves prefer carbohydrates as their fuel.
- Carbohydrates should always be available for the body to use for energy so the body doesn't use protein for energy. Protein should be "spared" or saved for its more important job of growth and repair of the body since this is the only nutrient that can do this.
- Fiber is important for the health and function of your GI tract. It can help control your blood cholesterol, blood sugar, and reduce your risk of heart disease and cancer.
- Diets high in complex carbohydrates promote health because they are usually lower in fat and calories and higher in fiber, vitamins, minerals, antioxidants, and phytochemicals.

## How much carbohydrate does my body need?

Carbohydrate needs can vary depending on your personal calorie goal. The following are current carbohydrate recommendations:

- Your body needs a **minimum** of 50-100 grams (200-400 calories) of carbohydrate per day for protein sparing and for complete metabolism of fat.
- The National Academy of Sciences recommends consuming at least 130 grams (520 calories) of carbohydrate per day. This is the minimum amount of carbohydrates needed to produce enough glucose for the brain to function.
- The Institute of Medicine (IOM) recommends that 45-65% of your total calories should come from carbohydrates, **mostly complex carbohydrates** (i.e., not cakes,

pies and candy). The IOM also suggests that added sugars (added to foods and beverages during production) should not exceed 25% of total calories consumed. This does not include natural sugars from milk and fruits.

- The World Health Organization recommends limiting “free” sugars (added sugar in soft drinks, candy, and other sweets, and the concentrated sugar in fruit juice) to no more than 10% of your daily calories. For example, if you are eating a 1500 calorie diet, 10% would be 150 calories per day from sugar. **One 12-ounce can of soda provides approximately 150 calories (almost ten teaspoons of added sugar) and can have a negative impact on blood sugar levels.**
- The Food and Nutrition Board makes the following fiber recommendations (per day):
  - ✓ Adults < 50 years: 25 grams for women; 38 grams for men
  - ✓ Adults > 50 years: 21 grams for women; 30 grams for men

### Where do I get carbohydrate in my diet?

- The majority of carbohydrates in your diet come from plant foods like grains, fruits, and vegetables. Milk is the only animal product that contains significant carbohydrate. Lactose is the sugar naturally present in milk.
- **Simple carbohydrates** are found naturally in fruit, some vegetables, and milk. Other sources include table sugar and sweeteners like honey, maple syrup, and corn syrup. Foods that contain added sugar and sweeteners (soft drinks, cakes, pies, cookies, ice cream, etc.) also supply simple carbohydrates.
- **Complex carbohydrates** include starch and fiber.
  - ✓ **Starch:** Grains (wheat, rice, oats, corn, barley) are the richest source of starch. Starch is also found in legumes (dried beans and peas) and the starchy vegetables like corn, peas, lima beans, and potatoes.
  - ✓ **Fiber:** Fiber is only found in plant foods such as grains, fruits, vegetables, legumes, nuts and seeds. There are two types of fiber, soluble and insoluble. If you eat a wide variety of plant foods, you will get plenty of both types. It is best to get the fiber you need from eating a variety of foods, rather than from fiber supplements because food also provides vitamins, minerals, phytochemicals, and antioxidants that the supplements do not.

#### Food Pyramid or Exchange System Carbohydrate Counts (per serving)

Starches/ Fruits/Legumes	15 grams
Milk Group	12 grams
Vegetable Group	5 grams

#### Food Pyramid or Exchange System Fiber Counts (per serving)

Fruits/ Vegetables/Starches	2 grams
Legumes (dried beans and peas)	5-8 grams
Baked beans	10 grams

## What if I eat more or less carbohydrates than is recommended?

- **If you eat more carbohydrate than your body needs:**
  - ✓ your body will store some carbohydrate in your liver and muscles
  - ✓ the rest is converted to fat and stored as fat.
  - ✓ too many calories, whether from protein, fat, or carbohydrate, contribute to weight gain
  - ✓ negative impact on blood sugar levels.
- **If you do not eat enough carbohydrate:**
  - ✓ your body is forced to make glucose from protein
  - ✓ you miss out on healthful vitamins, minerals, fiber, and phytochemicals
  - ✓ you may end up eating more fat
  - ✓ you may experience bad breath, dizziness, fatigue, and/or nausea
- **If you eat less fiber than recommended:**
  - ✓ studies show an increased risk for heart disease
  - ✓ you may experience constipation

## How do carbohydrates affect my blood sugar?

- Of all the nutrients, carbohydrate (from both sugar and starch) has the greatest effect on your blood sugar level. For individuals with diabetes, it is best to follow a meal plan that limits the number of carbohydrate servings per day.
- All carbs, whether they come from fruit, vegetables, starch, or added sugar, are digested/broken down into sugar, absorbed into the blood stream, and converted into glucose by the liver. All the sugar in your blood is glucose.

## What is the glycemic index or GI?

- The glycemic index (GI) is a system to rank carbohydrate foods based on their predicted effect on blood sugar levels. Foods with a high GI (greater than 70) are typically highly processed foods such as cornflakes, white bread, jelly beans, and pretzels. Foods with a low GI (less than 55) are usually high fiber foods such as legumes, fruit, oatmeal, bran cereal, and nuts.
- Although the World Health Organization endorses the glycemic index, it remains controversial in the United States. The American Diabetes Association does not recommend it as a primary strategy in food/meal planning.
- Many popular diets (Atkins and South Beach, for example) use the glycemic index as a basis for choosing or eliminating carbohydrate foods.
- The glycemic index shows promise in helping to control blood sugar levels, but it is hard to put into practice. There is no standard listing for the GI; every list is different. There is much individual variability in blood sugar response to a food.

- Many things affect your blood sugar response to a particular food. It depends on your blood sugar level before the meal, how the food is processed or prepared, what else is eaten with the food, the amount of food you eat, fat and fiber content of the meal, degree of ripeness of the fruit, how quickly the food passes through your digestive system, time of day, your activity level, and any diabetes medications you may be taking.
- **A healthy diet can be planned without using a complicated glycemic index. A diet that includes lean meat, fish, poultry, low-fat or fat-free dairy products, legumes, nuts, fruit, vegetables, and whole grains will have a lower GI.**

### How can I choose “better” carbohydrates?

#### Choose whole foods close to nature and with minimal processing:

- ✓ Whole grains, fruits, vegetables, and legumes are high in fiber and low in added sugar.
  - ✓ Select whole grain breads. Make sure the first ingredient is “**whole wheat flour.**” Some bread manufacturers add ingredients to make their bread brown in color and list **wheat flour** as the first ingredient, which is just plain white flour.
  - ✓ Use whole grain products like oatmeal, barley, and brown rice.
  - ✓ Choose high fiber, unsweetened low sugar breakfast cereals.
  - ✓ Select whole fruits more often than fruit juices. Canned fruit should be packed in juice and fruit juices should be unsweetened.
- **Limit:**
    - ✓ Adding excess sugar
    - ✓ Limit foods with high amounts of added sugar such as soft drinks, candy, cookies, cakes, etc. These foods provide calories without many vitamins, minerals, or fiber.

#### Determine your carbohydrate “battle plan” in Nutrition Wars.

##### Do you need to:

- \_\_\_\_\_ include more high fiber foods
- \_\_\_\_\_ include more fruits/vegetables to reach 5 servings/day
- \_\_\_\_\_ try a high fiber breakfast cereal
- \_\_\_\_\_ experiment with legumes
- \_\_\_\_\_ try whole grain bread
- \_\_\_\_\_ decrease intake of sugar, desserts, candy, soft drink
- \_\_\_\_\_ other \_\_\_\_\_

## Looking at Carbs on the Nutrition Facts Label (Cheerios)

Carbs are listed on the food facts label as “Total Carbohydrate.”

Total Carbohydrate equals:

“grams of fiber” + “grams of sugar” + “grams of other carbohydrates.”

Grams of sugar include sugar that is naturally present and also what has been added during production.

4 grams of sugar = 1 teaspoon

“Other carbohydrates” usually refers to starches.

Read the ingredient list for added sweeteners. These include:

- ✓ Sugar
- ✓ Any word that ends in “-ose” such as dextrose, sucrose (which is table sugar), fructose, glucose, and lactose.
- ✓ Brown sugar, corn sweetener, corn syrup, fruit juice concentrate, high-fructose corn syrup, honey, invert sugar, malt syrup, molasses, raw sugar, honey, and syrup.
- ✓ Words that end in “-ol” are sugar alcohols. Examples include sorbitol, mannitol, and xylitol. They are not completely absorbed, so provide 2-3 calories per gram. Too much can cause diarrhea.
- ✓ “Sugar-free” does NOT mean calorie free!

<b>Nutrition Facts</b>			
Serving Size 1 cup (30g)			
Children Under 4 - ¼ cup (20g)			
Servings Per Container About 19			
Children Under 4 - About 28			
Amount Per Serving	Cheerios	with % cup skim milk	Cereal for Children Under 4
<b>Calories</b>	110	150	70
Calories from Fat	15	20	10
<b>% Daily Value**</b>			
<b>Total Fat</b> 2g*	<b>3%</b>	<b>3%</b>	1g
Saturated Fat 0g	<b>0%</b>	<b>3%</b>	0g
Polyunsaturated Fat 0.5g			0g
Monounsaturated Fat 0.5g			0g
<b>Cholesterol</b> 0mg	<b>0%</b>	<b>1%</b>	0mg
<b>Sodium</b> 210mg	<b>9%</b>	<b>12%</b>	140mg
<b>Potassium</b> 200mg	<b>6%</b>	<b>12%</b>	130mg
<b>Total Carbohydrate</b> 22g	<b>7%</b>	<b>9%</b>	15g
Dietary Fiber 3g	<b>11%</b>	<b>11%</b>	2g
Soluble Fiber 1g			0g
Sugars 1g			1g
Other Carbohydrate 18g			12g
<b>Protein</b> 3g			2g
<b>% Daily Value</b>			
Protein	-	-	9%
Vitamin A	10%	15%	10%
Vitamin C	10%	10%	10%
Calcium	10%	25%	8%
Iron	45%	45%	50%
Vitamin D	10%	25%	6%
Thiamin	25%	30%	35%
Riboflavin	25%	35%	35%
Niacin	25%	25%	35%
Vitamin B <sub>6</sub>	25%	25%	45%
Folic Acid	50%	50%	60%
Vitamin B <sub>12</sub>	25%	35%	30%
Phosphorus	10%	25%	8%
Magnesium	10%	10%	10%
Zinc	25%	30%	30%
Copper	2%	2%	2%
*Amount in cereal. A serving of cereal plus skim milk provides 2g total fat (0.5g saturated fat, 1g monounsaturated fat), less than 5mg cholesterol, 270mg sodium, 400mg potassium, 28g total carbohydrate (7g sugars) and 7g protein.			
**Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.			
Calories: 2,000 2,500			
Total Fat	Less than	65g	80g
Saturated Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Potassium		3,500mg	3,500mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

1½ Starch  
calculations based on the *Exchange Lists for Meal Planning*.  
American Dietetic Association, the American Diabetes Association.