

LESSON 2



Carb Smart

Background

The foods we eat contain many kinds of nutrients. Nutrients are the chemical substances in food that the body uses to keep healthy. Macronutrients (carbohydrate, fat, and protein) are the major food components. Micronutrients (vitamins and minerals) are the nutrients that we need in very small amounts and are present in many foods. Both groups of nutrients are important for a healthy body.

All foods contain one, two, or all three of the macronutrients, although some foods have more of one macronutrient than others. Let's look at the functions of each macronutrient.

- Protein provides the body with the building blocks for making and repairing tissue (such as muscle, bone, hair, and skin) and helps the body grow. Enzymes that control all the body processes from growth to digestion are also made of protein.
- Fat helps the body transport certain vitamins and is a rich source of energy.
- Carbohydrate provides the body with the quickest source of energy, which can be readily used in every cell in the body.

When people think about “carbs,” foods from the grain group are often what come to mind—bread, cereal, rice, and pasta. But carbohydrate is found in all of the five food groups, and not all types of carbohydrate are healthy choices. Some are better than others.

In the grain group, the healthiest carbohydrate choices are whole grains, which are high in fiber, vitamins, and minerals. Examples of whole grains are whole wheat, barley, brown rice, buckwheat, millet, whole oats, quinoa, and whole rye. These grains can be served on their own or made into whole-grain breads, cereals, pasta, and other products. Whole grains are a much better choice than refined grains (such as white bread, white rice, and white pasta) because the refining process breaks down the intact grain and strips away many beneficial nutrients. Even though refined grains are fortified with vitamins and minerals in the United States and many other countries, fortification is not standard everywhere, and fortification does not replace all of the lost nutrients. Another problem with refined grains is that they get digested and absorbed very quickly, which can cause blood sugar levels to spike. In response, the body quickly takes up sugar from the blood and puts it into storage (in muscle, fat, and the liver) to bring sugar levels down to normal. Working so quickly may cause the body to overshoot things, however, making blood sugar levels a bit lower than they should be. This can cause feelings of false hunger (even after a big meal), as well as tiredness.

Foods and drinks with added sugar, such as cookies, cakes, pastries, candy, soda, energy drinks, and punches, also provide carbohydrate but are not healthy sources. These foods typically have sugar as one of their main ingredients, and these drinks primarily contain sugar and water (for more information on sugary drinks, see lesson 7, Sugar Water). These sugary foods are filled with empty calories because they provide many calories but few of the nutrients the body needs to be strong and healthy. Eating too much of these foods makes it difficult to meet other nutrient needs without eating excessive calories. Like refined grains, these sugary foods are quickly absorbed by the body and cause blood sugar levels to spike. These foods are not the best carbohydrate choices, and they should be eaten rarely, if ever. Similarly, even whole-grain cereals and snack bars, fruit yogurts, and flavored milks may contain large amounts of added sugar. Regularly choose 100% whole-grain and unflavored or plain dairy products that have little or no added sugar.

WHERE CAN YOU FIND CARBOHYDRATE IN OTHER FOOD GROUPS ON THE KID'S HEALTHY EATING PLATE?

- **Fruits:** Naturally sweet, fruits are healthy sources of carbohydrate, because they contain fiber, vitamins, and minerals. Choose whole fruits instead of fruit juice.
- **Vegetables:** Brightly colored vegetables are also healthy sources of carbohydrate. Go for color and variety. Potatoes don't count as a vegetable; they are rich in carbohydrate but should be eaten only in small quantities, if at all, because they get digested and absorbed quickly (similar to refined grains).
- **Healthy protein:** Beans provide healthy, slowly digested carbohydrate and are rich in fiber and protein.
- **Dairy:** Unflavored milk and plain yogurt naturally contain "milk sugar" (lactose). Flavored milk and yogurt typically have a lot of added sugar, so it's best to choose plain, unflavored, and unsweetened dairy products.

In summary, the amount of carbohydrate in the diet—high or low—is less important than the type of carbohydrate in the diet, because some sources are healthier than others. To be carb smart, keep the following tips in mind:

- Choose a variety of whole grains over refined grains. When selecting foods made with whole grains (breads, breakfast cereals, crackers, pasta, muffins), choose products that list whole wheat, whole oats, whole rye, or other whole grains as the first ingredient and that keep the grain as intact as possible (e.g., choose coarsely ground steel-cut oatmeal rather than instant oatmeal for breakfast).
- Watch out for added sugar in the ingredients list, which can be labeled as fructose, glucose, sucrose, corn syrup, and honey, among other things. Many grain-based foods, especially cereals, are marketed as being "made with whole grains," and often list a whole grain as the first ingredient—yet added sugar is also included at the top of the ingredients list, or it appears multiple times throughout the list (for more on spotting sugar, see lesson 7, Sugar Water).
- Sugary drinks and foods made with refined grains and added sugar, such as cookies and doughnuts, are high in carbohydrate but are not healthy choices because they can cause blood sugar levels to spike and then fall to lower-than-normal levels. Foods such as these should be eaten only rarely, if ever.
- Brightly colored fruits and vegetables are also excellent carbohydrate choices, as are beans (for more on fruits and vegetables, see lesson 12 and the Eat Well card, Great Ways to Eat Beans, on the web resource).

Estimated Teaching Time and Related Subject Area _____

Estimated teaching time: 50 minutes

Related subject area: health

Objectives _____

- Learn about the role of carbohydrate in the diet.
- Understand that following the Principles of Healthy Living (particularly the guidelines to choose whole grains and limit foods and drinks with added sugar) will help in selecting healthy sources of carbohydrate.

Materials _____

- Worksheet 2.1, Getting to Know Your Whole Grains
- Worksheet 2.2, Going for the Whole Grain
- Worksheet 2.3, Fueling Up the Body
- Teacher Resource 2.1, Carb Smart With Whole Grains
- Worksheet 2.1 Solutions
- Worksheet 2.3 Solutions
- Overhead 2.1, Cereal Sleuth
- Overhead 2.1 Solutions
- Overhead 2.2, Kid's Healthy Eating Plate
- Overhead 2.3, Principles of Healthy Living

Procedure

1. Explain to the students that food gives us energy and that this lesson introduces a good energy source: carbohydrate. Carbohydrate is one of three kinds of nutrients found in foods that provide us with energy, and it is used by every cell in the body. Fat and protein are the other two sources of energy. Most foods contain a blend of nutrients, and some foods have more carbohydrate than others have. Although all of the groups have foods containing carbohydrate, people often associate carbohydrate with foods from the grain group. It's important to realize that even if they are high in carbohydrate, not all foods from the grain group are healthy choices—some are better than others.

Teacher Resource 2.1 reviews the difference between whole grains and whole-grain foods and foods made with refined grains. Use these lists to ensure that students properly sort whole grains and refined grains in their worksheets and in the classroom activity.

2. Have the class stand up and do the wave (raising and lowering the arms, as you might do at a sporting event). Explain that this is what happens in our bodies when we eat white bread or white rice (or other refined grains): There is a quick rise in blood sugar, giving us energy, but our bodies work quickly to pull that sugar out of the blood and into storage (in our muscles). That is why the quick boost of energy we feel after eating refined grains does not last.
3. Distribute Worksheet 2.1, *Getting to Know Your Whole Grains*. Briefly review the difference between whole grains and refined grains, citing a few examples of each. Have the students identify which of the foods listed on the worksheet are whole grains and which are refined grains by sorting them into the columns provided.
4. Review the worksheets to ensure that the foods are properly sorted. Recognize that the foods listed in the refined grains column do contain carbohydrate, but none of them are healthy everyday choices. Explain that refined grains such as these, as well as foods and beverages with added sugar (such as candy and sugary drinks), do contain carbohydrate and give the body energy. Discuss with the students why these foods do not make the healthiest choices and should be eaten only once in a while, if ever (see the background section at the beginning of this lesson).
5. Ask students what they ate for breakfast this morning. When cereal is mentioned, remind them that many grain-based foods, especially cereals, are marketed as being “made with whole grains,” even when they are full of sugar (if desired, bring in boxes of sugary cereal that display whole-grains marketing on the package). Display Overhead 2.1, *Cereal Sleuth*, and point out that although both cereals contain a whole grain as the first ingredient, they are very different. Ask students which cereal is the better choice and why. Then, see if they can spot the added sugar (in its different forms) throughout the Lucky Charms ingredients list. Mention to students that when it comes to Shredded Wheat and other unsweetened whole-grain cereals, fruit such as berries and sliced bananas can make a tasty addition for some extra flavor.
6. Distribute Worksheet 2.2, *Going for the Whole Grain*. Have students write a paragraph explaining why it is important to eat whole grains and naming a few whole-grain foods they like to eat or would like to try.
7. Display Overhead 2.2, *Kid's Healthy Eating Plate*. Point out that there are carbohydrate-containing foods in each food group (fruits, vegetables, beans in the protein group, and milk and yogurt in the dairy group), and that the groups contain different combinations of nutrients that fuel our bodies. No single food can supply all the nutrients needed to maintain good health. Briefly review what might make a food a healthy choice, and talk about which foods are not the best choices. Remind the

students of the Principles of Healthy Living (particularly the ones related to whole grains, added sugars, fruits and vegetables, and foods with healthy fat). If students still have their Eat Well & Keep Moving Fortune Tellers from lesson 1, use these as a reminder, or use Overhead 2.3, Principles of Healthy Living.

8. Have the students form groups and complete Worksheet 2.3, Fueling Up the Body, which involves planning a menu for a physically active person of their choice. They can choose an Olympic athlete, a professional dancer, a basketball star, a friend who plays a lot of sports, or even themselves. Instruct students to choose a variety of whole grains throughout the day, along with different foods from each group.

Extension Activity

1. Assess the types of snacks served at a school-based or community-based sporting event (e.g., a Little League, football, or hockey game). Snacks may be served at the concession stand or provided on the sidelines by team coaches.
2. Ask the students: “Do the athletes have access to a healthy variety of energy foods? Are they drinking water or some type of sugary drink? Do the spectators have healthy snack choices? What recommendations could you make to the coach?”

