

## Whole Grains

**Main objectives:** To introduce the concept of refined grains versus whole grains. To highlight the health benefits of whole grains. To learn how to identify whole grains using food packaging.

### Essential Discussion Topics:

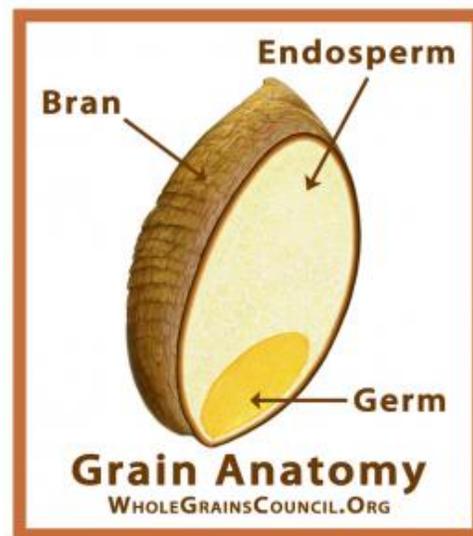
- *What is a grain?* It will most likely be difficult for the students to think of an actual definition, so encourage them to think of different examples of foods containing grains. The actual definition of a grain is the seed of a grass. Focus on the foods that contain grains, like cereals, breads, and pasta. Ask the students to think of examples of foods they eat that contain grains.
- *Examples of grains.* Set out samples of grains on a table for the class to see. Start with the simplest, like wheat, oats, and rice. Discuss the types of foods containing each grain:
  - Wheat - in bread, pasta, breakfast cereals
  - Oats - oatmeal, granola
  - Rice - can be eaten plain as a side or mixed with other things
  - Quinoa - can be eaten as rice or made into pasta
  - Corn - popcorn, corn flour tortillas
- *What is a whole grain?* Ask the class if they have ever heard about whole grains. Define a whole grain as the whole seed from the plant – nothing is removed before you eat it.
  - *What makes up a whole grain?* There are 3 parts, the bran, germ and seed. (See supplemental discussion topics for more information)
- *What are refined grains?* Refined grains are whole grains that have been processed (through milling) to remove the bran and germ from the seed. Thus, all that is left over is the starchy endosperm. This means much of the fiber and nutrients have been removed from the seed.
  - *What are some examples of refined grains?* White flour, white rice, white bread...all are examples of refined grains. In general, unless something is called “whole grain” or “brown rice” it is likely to be a refined grain.
- *How to pick out foods with whole grains.* Distinguishing whole grain foods at the supermarket can be very difficult due to deceptive packaging and marketing. By some technicality, “whole grain” products are those made with at least 50% whole grains (less than 50% refined grains). Many products may be ‘made with whole grains.’ but aren’t considered actually ‘whole grain’ since the amount of whole grains added will likely be a very small percentage of the total amount of flour or grains added. ‘Wheat’ alone, as in wheat bread, does not equal whole grain wheat. Color is also a poor indicator of whole grains. The best way to tell if a product is whole grain is to see either “100% whole grain” or “whole grain [name of grain]” on the label.
  - *Ask if they understand how a food label works.* The ingredient label should list “whole grain” as the first ingredient.
- *Serving Size*
  - Cooked rice, pasta = ½ cup (size of a tennis ball), pancake = size of a CD,

bread = 1 slice, cereal = 1 cup (the size of your fist)

- Recommended daily value: about 6 servings, at least half of all grains eaten should be whole grains

#### Supplemental Discussion Topics

- **What makes up a whole grain?** Use a diagram to demonstrate the different parts of a grain. Whole grains contain the **bran, germ, and endosperm**, the three main parts of a grain.
  - *What is important about the different parts of a grain?*
    - The **bran** is the part of the outer protective coat of the seed, like the skin on an apple. An apple is a decent analogy here – ask the class if they think an apple is healthier with the skin on or removed. Like an apple skin, the bran contains some nutrients and fiber. The bran in particular contains a lot of fiber, which is important, though it will be discussed in more detail in a later lesson. Discuss how it helps your digestive system work properly. When you eat whole grains, the bran and fiber takes your body’s digestive enzymes a longer time to digest than refined grains. It makes you feel full longer. It also helps keep your heart and arteries healthy.
    - The **germ** is the inner part of the grain that actually becomes a plant after the seed germinates (it is the embryo). The germ contains healthy fats, which we will also discuss in a later lesson. There are also important vitamins in the germ, such as different vitamin B’s and vitamin E. The B vitamins are important for your immune system, energy metabolism, skin health, and for the nervous system of babies. Vitamin E is also important for the nervous system and muscle function.
    - The **endosperm** is the starchy interior of a grain, which provides energy for the plant as it grows. It is a good source of carbohydrates and protein. The carbohydrates in whole grains are important because they are a good source of energy that we need to be active.



#### Activities:

- *Find the real whole grain:* Break the students into different groups and give them examples of good and bad “whole grain” packaging to see if they can pick out true whole grain foods
- *Draw a whole grain:* Pass out markers and blank paper, and have the students draw their own version of what makes up a “whole grain” as you talk about the

- different parts. Make sure the students label the drawing. Can have them use their drawing to teach the material to a partner, in order to reinforce the material.
- *Hangman Review Questions:* Ask each question as a hint for the hangman word. Have students guess letters to spell the word and answer the question correctly.
    - Whole grain bread has a variety of textures
    - The starchy interior of a grain is the endosperm
    - The inner part of the grain that eventually becomes the plant is the germ
    - The outer protective coat of the seed is the bran
    - White flour contains only the endosperm
    - Whole grains are rich in fiber and nutrients

#### Food Activities:

- *Why are refined grains less healthy?* Hand out Saltine crackers to class. Ask the class if they think it is a whole grain or a refined grain (ask if white flour is used or not). Ask the class to put a piece of the cracker on their tongue and let it sit until it starts to convert to sugar and turn sweet. Explain to the class that starch, like what is found in grains, is basically like long chains of sugar hooked together. When the enzymes in your body start to break it down, it becomes sugar, which is why the cracker tastes sweet. This is why it is not entirely healthy to eat a lot of refined grains – it is essentially eating sugar, without a lot of nutrients or other healthy components that can be found in the bran and the germ!
- *Feel the difference!* Place a slice of white bread and whole wheat bread into individual shallow trays. Moisten the slices with water, and allow the kids to smash each loaf into dense wet bread pieces to see all the different textured pieces in whole grain vs. refined grain bread. The white bread will pretty much disintegrate while the whole grain bread will retain more of its texture. The main difference is the fiber from the bran in the whole grain bread
- *What's in your cereal bowl?* Show students 3 bowls of cereal with various portion sizes and have them estimate the amount of cereal in each bowl. Have students write down their estimates and choose which bowl they think represents a true serving size. Provide the actual measurement of cereal in each bowl (or allow students to use measuring cups to determine themselves) and discuss any differences between their estimates and the actual amounts.

#### Snack Ideas:

- *Whole Grain English Muffins:* Let the students build their own healthy snack. First, allow them to look at the English muffin packaging to convince themselves that it is actually a good source of whole grain. Allow them to spread peanut butter, add pre-sliced apples and sprinkle dried fruit on the top of the English muffins.