Nutrition: Whole Grains

**Whole grains and health**

Whole grain intake can improve digestive health and help with weight management. Individuals who eat at least 3 servings of whole grains per day reduce their risk of:

- Heart disease by 25-36 percent
- Stroke by 37 percent
- Type 2 diabetes by 21-27 percent
- Cancer of digestive system by 21-43 percent
- Hormone related cancer by 10-40 percent
- Obesity

**Whole Grain Intake is Low**

- Only 4 percent of U.S. adults and children over 12 are consuming sufficient whole grains.
- On average, children consume less than one serving of whole grain each day.
- About 20 percent of children ages 2-18 are not eating any whole grains.

**Whole grains and refined grains: what’s the difference?**

Every whole grain kernel consists of 3 parts: bran, endosperm and germ. Each part provides different nutrients and other components that contribute to the health promoting benefits of whole grains. Whole grain foods contain all of these parts in the same amounts originally present before processing.

- Bran- Outer layer of the grain that contains fiber, antioxidants, B vitamins, phytochemicals, and 50-80 percent of minerals in grains like iron, copper, zinc, magnesium
- Endosperm- middle largest layer containing mostly carbohydrates, protein, and small amounts of some B vitamins and minerals
- Germ- inner component containing healthy fats, B vitamins, phytochemicals, and antioxidants like vitamin E

Whole grains have similar amounts, and sometimes more, disease fighting chemicals than many typical fruits and vegetables.
Refined grains are mainly composed of only the endosperm portion of the grain. The milling process removes most of the bran and some germ, along with the majority of fiber, vitamins, minerals, antioxidants and phytochemicals. As much as 75 percent of phytochemicals (phytonutrients) are lost in the refining process.

**Phytochemicals fight disease**

Phytochemicals are naturally occurring chemicals in plants which give plant foods their color and flavor.

Interestingly, in humans phytochemicals can help to protect against chronic diseases like cardiovascular disease, type 2-diabetes and cancer.

Hundreds of different phytochemicals exist in whole grains.

**Enrichment replaces a few nutrients**

Refining flour gave bakery products a longer shelf life and a softer, more desirable texture. In the early 1940’s, the government started to require enrichment of refined flour with some B vitamins (thiamin, riboflavin, niacin) and iron due to these nutrient deficiencies found in servicemen.

Enrichment is the replacement of certain vitamins and minerals that were removed in processing. However, grain enrichment does not replace many of the health promoting components originally found in whole grains.

**How Much Food Counts as a Serving of Whole Grain?**

- 1 slice of 100 percent whole grain bread
- ½ cup cooked 100 percent whole wheat pasta, brown rice, quinoa, or oatmeal (1 ounce dry)
- 5 small whole wheat crackers
- 2 rye crisp breads
- 1 small 100 percent whole wheat flour tortilla or corn tortilla (6” diameter)
- 3 cups of popped popcorn
- 1 cup cold whole grain cereal flakes

**Some Whole Grains Include:**
- Amaranth
- Barley
- Brown Rice
- Buckwheat
- Corn (& Popcorn)
- Millet
- Quinoa
- Rye
- Oats
- Teff
- Titricale
- Wild Rice
- Wheat including: Bulgur, Kamut, &

**Recommended Servings**

- Eat at least 3 oz. or 48 grams
- (3 servings) of whole grain each day
- 1 serving = 16 grams or 1 oz. of whole grain

For more information

Nutrition: [http://www.health.state.mn.us/nutrition/](http://www.health.state.mn.us/nutrition/)
Overweight and Obesity Prevention: [http://www.health.state.mn.us/obesity/](http://www.health.state.mn.us/obesity/)