

Nutrition and Your Health

# Dietary Guidelines for Americans

## Eat Foods with Adequate Starch and Fiber

### From the Editor

This is one of a series of bulletins with tips to help you use the seven Dietary Guidelines in choosing and preparing the foods you eat and serve to others. Following the Dietary Guidelines is a balancing act: getting the variety of foods necessary to supply the nutrients you need, but not too much of other food components—calories, fat and cholesterol, sugar, sodium, and alcohol. This bulletin shows how to “Eat Foods with Adequate Starch

and Fiber.” But remember, it’s important to consider all seven guidelines in building a healthful diet:

- Eat a Variety of Foods
- Maintain Desirable Weight
- Avoid Too Much Fat, Saturated Fat, and Cholesterol
- Eat Foods with Adequate Starch and Fiber
- Avoid Too Much Sugar
- Avoid Too Much Sodium
- If You Drink Alcoholic Beverages, Do So in Moderation

### What Are Starch and Fiber?

Starch and most types of dietary fiber are *complex carbohydrates*. Chemically they are chains of many sugar molecules.

Sugars such as table sugar (sucrose), honey, corn syrup and such, are *simple carbohydrates*. They contain only one or two sugar molecules.

During digestion, starch and sugars are broken down into single sugar molecules before being absorbed into the body and used for energy. The links between the sugar molecules in dietary fiber cannot be broken by human digestive enzymes. Thus, fiber passes down the intestinal tract and forms bulk for the stool.

### Check Your Diet for Starch and Fiber

How often do you eat:	Seldom or never	1 or 2 times a week	3 to 4 times a week	Almost daily
1. Several servings of breads, cereals, pasta or rice?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Starchy vegetables like potatoes, corn, peas, or dishes made with dry beans or peas?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Whole-grain breads or cereals?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Several servings of vegetables?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Whole fruit with skins and/or seeds (berries, apples, pears, etc.)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The best answer for all of the above is ALMOST DAILY. Breads, cereals, and other grain products and starchy vegetables provide starch. Whole-grain products, fruits and vegetables, especially those with edible skins and seeds, are good sources of fiber. Read on to find out why starch and fiber are important in your diet and to find new ways to eat more of these foods.

### Why Eat Foods with Starch and Fiber?

- They provide energy
- They provide vitamins and minerals
- Most are low in fat
- Fiber helps the digestive system work properly
- They taste good!

### Read On For...

- Good news about starch, page 2
- Facts on fiber, page 2
- Reading labels, page 3
- Recipes, page 4

## Good News About Starch

Major sources of energy (calories) in the American diet are carbohydrates and fats. When you cut down on fat and sugars as suggested by the Dietary Guidelines, you may need to increase the amount of starchy foods you eat to help supply your body's energy needs.

Unlike sugars and sweets, starchy foods provide many vitamins and minerals as well as energy.

### But Isn't Starch Fattening?

Many people think that starchy foods such as bread and potatoes are fattening. In fact, most of the calories come from the company they keep—calorie-rich additions such as butter or margarine, sour cream, gravies, jam or jellies.

Starches provide only 4 calories per gram, while fat provides 9 calories per gram. Eating more starchy foods is a good way to fill up with fewer calories, *if* you watch those additions.

## Foods for Starch and Fiber

### Some foods for STARCH:

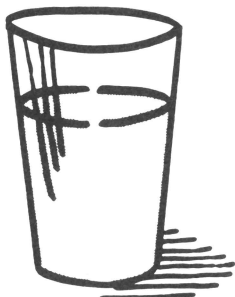
Breads  
Breakfast cereals  
Pasta, such as spaghetti and noodles  
Rice  
Dry beans and peas  
Starchy vegetables such as potatoes, corn, peas, lima beans

### Some foods for FIBER:

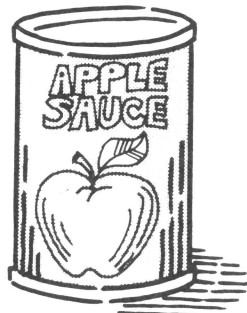
Whole-grain breads  
Whole-grain breakfast cereals  
Whole-wheat pasta  
Vegetables, especially with edible skins, stems, seeds  
Dry beans and peas  
Whole fruits, especially with edible skins or seeds  
Nuts and seeds

## Did You Know...

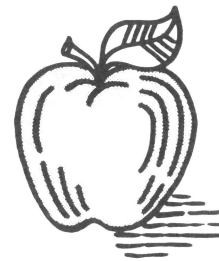
Form of the food will affect its fiber content



Apple juice, 3/4 cup: 0.2 g fiber



Applesauce, 1/2 cup: 2.1 g fiber



Whole apple with peel: 3.6 g fiber

## Facts on Fiber

- Dietary fiber is the parts of plants that humans can't digest.
- There are several types of fiber, such as cellulose, pectin, lignin, and gums. Plants differ in the types and amounts of fiber they contain.
- Different types of fiber function differently in the body. It is important to eat a variety of plant foods to benefit from effects of different kinds of fiber.
- Some types of fiber have a laxative effect, producing softer, bulkier stools and more rapid movement of wastes through the intestine. Fiber is helpful in preventing and treating constipation and diverticular disease.
- The possible benefits of dietary fiber for colon cancer, heart disease, diabetes, and obesity are being studied. Whether such benefits exist is not yet known.
- It is not clear exactly how much and what types of fiber we need in our diets daily. However, for most Americans, a moderate increase in dietary fiber by eating more fiber-containing foods like those listed on this page is desirable.
- There is no reason to take fiber supplements or to add fiber to foods that do not already contain it.

## What Are Whole Grains?

*Whole grains* are products that contain the entire grain, or all the grain that is edible. They include the *bran* and *germ* portions which contain most of the fiber, vitamins, and minerals, as well as the starchy *endosperm*.

Some examples are whole wheat, cracked wheat, bulgur, oatmeal, whole cornmeal, popcorn, brown rice, whole rye, and scotch barley.

**Whole grain doesn't have to mean bread or cereal. Try these:**

Brown rice	Scotch barley—in soups
Corn tortillas	Tabbouleh—a bulgur wheat salad
Popcorn, unbuttered	Whole-wheat pasta

# What's on a Label?

Starch and dietary fiber are not listed specifically on most food labels, but there are some clues you can use:

**Nutrition labels** list the amount of carbohydrate in grams per serving. This would include starch, sugars, and dietary fiber, if present. Some cereals also list these types of carbohydrates separately.

**Ingredient labels** list ingredients in the product in order by weight—from greatest to least. When a flour is listed first, most of the carbohydrate is probably starch. When sugar or other sweeteners are listed first, or several sugars are listed on the label, the product is probably high in sugar.

Most foods are not labeled for total dietary fiber content. "Crude fiber" values, shown in many tables of the nutrient content of foods, do not include all types of dietary fiber. Some cereals now provide both total dietary fiber and crude fiber values on the label.

<b>NUTRITION INFORMATION PER SERVING</b>		
Serving size: 1 oz. (2/3 cup)		
Servings per container: 14		
	1 oz. cereal	1 oz. cereal with 1/2 cup milk
Calories	90	170
Protein	3 g	7 g
Carbohydrate	23 g	29 g
Fat	1 g	5 g
Sodium	300 mg	360 mg

<b>CARBOHYDRATE INFORMATION</b>		
	1 oz. cereal	1 oz. cereal with 1/2 cup milk
Starch and related carbohydrates	13 g	13 g
Sucrose and other sugars	5 g	11 g
Dietary fiber	5 g	5 g
<b>Total carbohydrates</b>	<b>23 g</b>	<b>29 g</b>

**INGREDIENTS:** Wheat bran, milled yellow corn, sugar, malted cereal syrup, salt, coconut oil, sodium ascorbate (vitamin C), niacinamide, reduced iron, pyridoxine hydrochloride (vitamin B<sub>6</sub>), thiamine mononitrate (vitamin B<sub>1</sub>), BHA (a preservative), folic acid, and vitamin B<sub>12</sub>. BHT added to packaging material to help preserve freshness.

Each serving contains 5 grams of dietary fiber, including 1.4 grams (5 percent by weight) non-nutritive crude fiber.

## Recognizing the Real Whole Wheat

**All whole-wheat bread is brown, but not all brown bread is whole-wheat...**

By law, bread that is labeled "whole wheat" must be made from 100 percent whole-wheat flour. "Wheat bread" may be made from varying proportions of enriched white flour and whole-wheat flour. The type of flour present in the largest amount is listed first on the ingredient label. Sometimes a dark color is provided by "caramel coloring," also listed on the label.

The milling of wheat to produce white flour results in the loss of nutrients as the bran and germ are removed. *Enrichment* replaces four important nutrients: iron, thiamin, riboflavin, and niacin. But flours made from the whole grain contain more of other nutrients, such as folic acid, vitamin B<sub>6</sub>, vitamin E, phosphorus, magnesium, and zinc, than enriched white flour.

**You don't have to switch to whole-wheat bread to increase your intake of whole grains...**

Many products on the market are made of a mixture of whole-grain flours and enriched flour. Try those listed below for variety in taste and texture, as well as a bonus of fiber and nutrients. Or, try substituting whole-grain flour for half the amount of white flour when you bake quick breads or cookies.

- Bran muffins
- Cornbread, from whole, ground cornmeal
- Cracked wheat bread
- Graham crackers
- Oatmeal bread
- Pumpnickel bread
- Rye bread

# Recipes for Foods with Starch and Fiber...

Soup is a popular way to use cooked dry beans or peas. Try them in salads, dips, and main dishes, too.

## Capitol Hill Bean Soup

8 servings, about 1 cup each

Per serving:

Calories.....	165	Cholesterol.....	4 milligrams
Total fat.....	2 grams	Sodium.....	234 milligrams
Saturated fatty acids.	Trace		

Dry pea (navy) beans.....	1-1/2 cups
Boiling water.....	7 cups
Ham hock.....	1 small
Potato, pared.....	1 medium
Onion, chopped.....	1 cup
Celery, stalks and leaves, finely chopped.....	1 cup
Parsley, chopped.....	2 tablespoons
Garlic, finely chopped.....	1/2 clove
Salt.....	1/2 teaspoon
Pepper.....	1/8 teaspoon

1. Add beans to boiling water. Return to boil and boil 2 minutes. Remove from heat, cover, and soak overnight in refrigerator.
2. Add ham hock and potato. Bring to boil, cover, and boil gently 1 hour.
3. Remove potato; mash with a fork. Stir into beans with remaining ingredients. Cook 1 hour longer.
4. Remove ham hock and separate meat from skin, fat, and bone. Cut meat into small pieces; add to soup.
5. Heat to serving temperature.

The Pasta Primavera below combines a variety of vegetables with pasta in a colorful, lowfat side dish. Cooking the vegetables doesn't appear to decrease fiber content much. For added fiber, use whole-wheat noodles.

## Pasta Primavera

4 servings, about 3/4 cup each

Per serving:

Calories.....	155	Cholesterol.....	24 milligrams
Total fat.....	4 grams	Sodium.....	345 milligrams
Saturated fatty acids.	Trace		

Thin noodles, uncooked.....	4 ounces (about 2 cups)
Celery, thinly sliced.....	1/3 cup
Green beans, 1/2-inch pieces.....	1/3 cup
Carrots, 1/4-inch dices.....	1/3 cup
Red onion, sliced.....	1/3 cup
Green pepper, cut in short strips.....	2 tablespoons
Basil leaves.....	1/2 teaspoon
Salt.....	1/4 teaspoon
Garlic powder.....	1/8 teaspoon
Pepper.....	Dash
Oil.....	1 teaspoon
Frozen green peas.....	1/3 cup
Flour.....	2 teaspoons
Margarine.....	1 teaspoon
Skim milk.....	3/4 cup

1. Cook noodles according to package directions.
2. Stirfry fresh vegetables and seasonings in oil in frying pan for about 5 minutes, turning pieces constantly.
3. Add frozen peas, cover, reduce heat, and cook for about 2 minutes until vegetables are tender but crisp. Remove vegetables from frying pan; keep warm.
4. Mix flour and margarine in frying pan. Add milk slowly, stirring constantly; cook until thickened. Sauce will be thin.
5. Stir sauce into noodles. Add vegetables and mix gently.
6. Heat to serving temperature.

## Want More Information?

- Read the other bulletins in this series.
- Contact your local county Extension agent, public health nutritionist, or dietitian in hospitals or other community agencies.
- Contact the Human Nutrition Information Service (HNIS) for a list of current publications on guidelines topics. The address is U.S. Department of Agriculture, HNIS, Room 360, 6505 Belcrest Road, Hyattsville, Maryland 20782.

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