

## Fiber

### What is fiber?

Fiber is the structural part of plants that we do not digest. It acts like the internal “scrub brush” in our body and helps provide fuel for good bacteria in our gut. Fiber is found in whole grains, legumes, fruit, vegetables, nuts and seeds. It is not found in animal products such as meat, dairy, fish and poultry.

### What are the differences between soluble and insoluble fiber?

There are two types of dietary fiber: soluble and insoluble. Soluble fiber partially dissolves in water and insoluble fiber does not. Soluble fiber is commonly found in fruits, oats, barley and legumes. Insoluble fiber is found in wheat bran, corn bran, whole grain breads, cereals and vegetables. Most foods contain a mixture of soluble and insoluble fibers. When adding fiber-rich foods, you usually get the benefits of both types of fiber.

### Why should I eat fiber?

Both types of fiber have important health benefits including:

- Decreases blood fats, including cholesterol and triglycerides
- Allows for early feelings of fullness and decreased appetite which can help with weight loss
- Reduces high blood glucose
- Attracts water into the digestive tract, softening stools and preventing constipation
- Promotes healthy gut bacteria in the intestines
- Increases hormonal excretion rates
- Increases the amount of calories burned by the body
- May decrease risk of developing colon cancer
- Enhances immunity



## How much fiber should I eat?

- You should eat at least 25 – 35 grams of fiber each day. Some studies recommend up to 50 grams of fiber per day.
- It is important to slowly increase the amount of fiber in your diet if you are currently eating less than this amount in order to avoid discomfort and gas.
- Remember to drink plenty of water (at least 32 -64 ounces each day).
- At certain times during treatment, it may be hard to meet these fiber goals when you are not feeling well. Your dietitian can help you develop a meal plan to best meet your fiber needs.

## What are prebiotics?

A prebiotic is a type of fiber that helps the growth and/or activity of bacteria in the large intestine and improves health. These bacteria are beneficial or “friendly”. Having this type of bacteria in your body may help decrease the number of harmful or “unfriendly” bacteria. Fructooligosaccharides (FOS) are a type of prebiotic. Examples of prebiotic-rich foods include: wheat, onion, leek, asparagus, Jerusalem artichoke, garlic, banana, rye, and oatmeal.

**This table lists foods that are high in fiber.**

Foods high in fiber	Amount	Grams of fiber
<b>Fruit</b>		
Apple or pear with skin	1 medium	4
Banana	1 medium	2
Blackberries or strawberries	½ cup	4
Blueberries	½ cup	2
Figs or prunes, dried	2-3	2-4
Orange	1 medium	3
Raisins	¼ cup	2
<b>Vegetables</b>		
Broccoli, cooked	½ cup	2
Brussels sprouts, cooked	½ cup	3
Cabbage, raw	1 cup	2
Carrots, raw	1 cup, chopped	4
Collard or turnip greens, cooked	½ cup	2
Corn, cooked	½ cup	3
Green beans, cooked	½ cup	2
Green peas, cooked	½ cup	4
Potato or sweet potato, with skin	1 medium	4
Spinach, raw	1 cup	2
Tomato, raw	1 medium	2
Winter squash, cooked	½ cup	3

<b>Foods high in fiber</b>	<b>Amount</b>	<b>Grams of fiber</b>
<b>Legumes (cooked)</b>		
Baked or black beans	½ cup	7
Chickpeas	½ cup	6
Kidney beans	½ cup	8
Lentils	½ cup	7
Refried beans	½ cup	6
<b>Breads, grains, and pasta</b>		
Barley	½ cup	3
Brown rice, cooked	½ cup	2
Bulgur	½ cup	4
Cornmeal	½ cup	5
Quinoa	½ cup	3
Teff	½ cup	4
Wild rice	½ cup	2
Wheat bran	1 tablespoon	2
Whole wheat spaghetti	½ cup, cooked	8
Whole wheat bread	1 slice	2
<b>Breakfast cereals</b>		
100% bran cereals	½ cup	8
Oatmeal, cooked	¾ cup	3
Raisin Bran® cereal	¾ cup	6
<b>Snack foods</b>		
Almonds or peanuts	1 ounce	3
Hummus dip	2 tablespoons	2
Popcorn	1 cup	1
Sunflower seeds	¼ cup	2

## **Ways to increase dietary fiber intake**

- Include at least 3 cups of vegetables and 2 cups of fruit each day
- Choose whole grains (for example, brown vs. white rice)
- Eat legumes several times a week
- Snack on fresh fruit or vegetables instead of sugary or refined foods
- Replace creamy dips and spreads with bean dips and spreads such as hummus or black bean dip
- Snack on plain popcorn instead of potato or corn chips or pretzels
- Add oat bran, wheat germ or ground flaxseeds to cereals and yogurt
- Substitute whole grain flours for white flours in recipes
- At meal times, include a cooked vegetable and a raw salad

## High fiber recipes

### Santa Fe Black Bean Salad

1 red pepper, roasted and cut into small strips

2 cups cooked black beans

½ cup cooked corn

⅓ cup chopped cilantro

2-3 cloves garlic, minced

½ teaspoon salt

2 tablespoons extra-virgin olive oil

2 tablespoons lime juice

⅓ teaspoon cayenne

Combine pepper, black beans, corn, and cilantro into a medium size mixing bowl. Combine garlic, salt, oil, lime juice, and cayenne in a separate, small bowl. Pour dressing over beans and vegetables and toss gently. Makes 6 servings; approximately 5 grams fiber per serving.

Adapted from: Lair C. [Feeding the Whole Family](#). Moon Smile Press, Seattle, Washington, 1997.

### Creamy Apple Cinnamon Raisin Oatmeal

2 cups water

2 teaspoons brown sugar or 2 tablespoons maple syrup

1 teaspoon ground cinnamon

1 cup uncooked rolled oats

2 tablespoons raisins

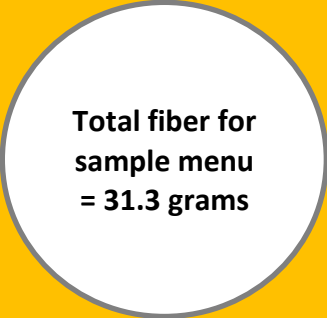
1 apple - peeled, cored and cubed

In a medium saucepan, combine water, brown sugar, cinnamon, and syrup. Heat mixture to a boil. When water is at a boil, reduce heat and add in oats. Cook for about 5 minutes, or until all water is soaked by the oats. Remove from heat, stir in apples and raisins and serve. Makes 2 servings; approximately 7 grams fiber per serving.

Adapted from Allrecipes.com

## Sample menu for one day (amount of fiber in parentheses)

- **Breakfast:**
  - 1 serving Creamy Apple Cinnamon Oatmeal (see above recipe) (7 grams)
  - 1 cup orange juice (0.5 grams)
- **Morning Snack:**
  - 1 medium orange (3.1 grams)
  - 2 ounces almonds (6.6 grams)
- **Lunch:**
  - Turkey, avocado and cheese sandwich on 2 slices whole wheat bread (3.8 grams)
  - Apple with skin (3.7 grams)
- **Dinner:**
  - 6 ounces halibut
  - Spinach salad: 1 cup spinach, ½ cup cabbage,  
1 shredded carrot, 2 ounces cheese,  
½ tomato (2.3 grams)
  - ½ cup cooked broccoli (2.3 grams)
- **Evening snack:**
  - 2 cups popcorn (2 grams)



**Total fiber for  
sample menu  
= 31.3 grams**

## Summary

Fiber has many health benefits. At times, it may seem overwhelming to make changes to increase dietary fiber content especially when going through cancer treatment. Talk with your dietitian to best develop a meal plan that will be nutritious, tasty, and well tolerated.

### References:

- Pennington JAT. Bowes and Church's Food Values of Portions Commonly Used. 17<sup>th</sup> Edition. Lippincott, Philadelphia, Pennsylvania. 1998
- Dietary Guidelines for Americans, Chronimed Publishing, Minneapolis, Minnesota. 2005.
- Bland, J. Clinical Nutrition: A Functional Approach, 2<sup>nd</sup> Edition. Helm Publishing. Lake Dallas, Texas. 2004.

### Resources

National Fiber Council: [nationalfiberCouncil.org/food\\_chart.shtml](http://nationalfiberCouncil.org/food_chart.shtml)

National Institutes of Health: [nlm.nih.gov/medlineplus/ency/article/002470.htm](http://nlm.nih.gov/medlineplus/ency/article/002470.htm)

Whole Grain Council: [wholegrainCouncil.org](http://wholegrainCouncil.org). Website provides information on cooking with whole grains.

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This education resource was intended to be given as a part of a nutrition consult by a Fred Hutch dietitian. Questions? Ask a Fred Hutch dietitian at [nutrition@seattlecca.org](mailto:nutrition@seattlecca.org)