

## Fiber Recommendations

The lack of dietary fiber and fluids is a contributing factor to the development of hemorrhoids and anal fissures. We recommend consuming 25-35 grams of fiber and drinking 7 glasses of fluids per day. Fiber can improve the form, bulk, and size of the stool. The addition of 10-20 grams of fiber per day will improve bowel habits and colon health. This may be done by modifying your diet or adding fiber supplements. Fiber will also help decrease your cholesterol, improve your glucose control, and may reduce your risk of diverticulosis, colon cancer, heart disease, and stroke.

Water soluble fiber is preferred and is found in oats, beans, cabbage, squash, carrots, apples, citrus fruits, prunes, strawberries, pears, etc. Soluble fiber forms a viscous gel that increases the amount of water that stays in the colon and coats the intestinal walls which decreases cholesterol absorption and serves as a substrate for fermentation by colonic bacteria. Insoluble fiber passes through the digestive system largely intact. They improve bowel consistency by increasing the water in the stool. Cellulose and lignin are forms of insoluble fibers that increase stool bulk by increasing the microbial mass. The cells are 80% water and this is the main way fruits and vegetables increase the stool size and make them softer. Cellulose is found in whole wheat, bran, cabbage, peas, green beans, wax beans, broccoli, cucumber skins, peppers, apples, and carrots. Lignin is found in cereals, bran, strawberries, eggplant, pears, green beans, and radishes. Brussel sprouts and beet root contain hemicellulose that also increases water holding capacity. They improve stool consistency by increasing the amount of water that stays in the colon and by increasing viscosity. These viscous solutions decrease the rate of gastric emptying, which leads to a slowing of digestion and increased absorption of nutrients.

Increase the amount of fresh fruit and leafy vegetables in your diet. Oatmeal, oat bran, nuts, dried peas, beans, lentils, apples, pears, strawberries, blueberries should be added to your diet for soluble fiber. Use more whole fiber grains, breads, and cereals. It may take up to six weeks to see a benefit. The amount and type of fiber that benefits you the most is variable and must be determined by trial and error. Many sources contain both soluble and insoluble fiber.

### DIETARY SOURCES

Fruits	Fiber grams		Fiber grams		Fiber grams
Figs (3)	5.3	Orange	3.1	Applesauce	1.5
Apple w/skin	4.7	Kiwi	2.6	Peach	1.4
Pears	4.3	Strawberries (6)	2.0	Cantaloupe (1/4)	1.1
Dates (5)	3.7	Raisins (1/4 cup)	1.9	Pineapple (1/2 c.)	0.9
Apricots (10)	3.6	Banana	2.4	Grapefruit (1/2)	0.8
Prunes (5)	3.5	Blueberries (25)	1.7	Watermelon (1 c.)	2.0
Cranberries (1/4 cup)	2.0	Blackberries (1/2 cup)	4.4	Grapes (20)	1.0
Plums	1.0				

(serving size is one piece or as noted)

Vegetables	Fiber grams		Fiber grams		Fiber grams
Baked Potato w/skin	4.2	Broccoli	4.0	Green beans	2.1
Sweet Potato	3.4	Spinach (1c.)	3.5	Tomato (1/2)	0.8
Corn	5.0	Turnip	2.0	Celery	3.0
Peas	2.9	Beets	2.5	Green pepper	1.2
Winter squash	2.9	Cabbage	1.5	Lettuce (1 c)	0.8
Carrot (1)	2.3	Cauliflower	1.4	Mushrooms	1.5
Asparagus	1.7	Brussel Sprouts	2.0	Celery	3.0
Okra	1.6				

(serving size is 1/2 cup unless noted)

Legumes	Fiber grams		Fiber grams		Fiber grams
Pinto beans	14.2	Lima beans	10.3	Lentils	5.6
Kidney beans	13.8	Navy beans	9.0	Split peas	4.1
Black-eyed peas	12.3	Chickpeas	7.1	Tofu	1.4
(serving size is 3/4 cup of cooked beans)					
Almonds (1tbsp)	0.6	Baked Beans (4oz)	8.0		

Grains	Fiber grams		Fiber grams		Fiber grams

Barley	8.6	Quinoa	4.6	Wheat	3.1
Bulgur	8.1	Brown rice	3.3	White rice	1.3
Bran meal (1tbsp)	2.0	White Bread (2)	1.9	Wheat Bread(2)	6.0
All-Bran (1/2 cup)	10.4	Cornflakes	2.6	Raisin Bran	3.0
Oatmeal	7.0				

(serving size is 1 cup unless noted)

Fiber is a polysaccharide, which are carbohydrates found in plants that can not be broken down all the way to simple sugars and thus pass through the intestine partially undigested. The fiber is broken down into short-chain fatty acids, hydrogen, methane, and carbon dioxide. A particular food item will be a combination of nutrients and fiber that will determine how fast it is digested and how much will be quickly turned into simple sugar versus how much will be undigested and serve to increase the stool bulk. The various soluble and insoluble fibers have more specific names. There's **bran, cellulose, gum, hemicellulose, lignin, mucilage** and **pectin**. Each specific fiber serves a specific function as a soluble and/or insoluble fiber type:

- **Bran, gums and mucilages**—help to regulate blood glucose, aid in lowering cholesterol and help in the removal of toxins.
- **Cellulose**—an indigestible carbohydrate that is found in the outer layer of fruits and vegetables, so eat the peel and savor the stems. Cellulose absorbs toxins in the intestine and is especially helpful in preventing constipation, hemorrhoids, varicose veins and colitis.
- **Hemicellulose**—an indigestible complex carbohydrate that also absorbs water. This fiber type is good for promoting weight loss, relieving constipation, preventing colon cancer and controlling carcinogens in the intestinal tract.
- **Lignin**—an insoluble, woody substance that comes from the stems and seeds of fruits and vegetables and in the bran layer of grains. Lignins help lower cholesterol and help prevent the formation of gallstones by binding with bile acids and removing cholesterol before stones can form. It's helpful in preventing and managing diabetes and colon cancer and perhaps other cancers as well.
- **Pectin**—Soluble fibers that form highly viscous solutions that decrease the rate of gastric emptying, slows the intestinal absorption of food, increases absorption of nutrients along a greater length of the small intestine, reducing blood glucose and consequent insulin spikes.

## INSOLUBLE FIBER SOURCES

<b>Cellulose</b>	<b>Hemicellulose</b>	<b>Lignin</b>	<b>Bran</b>
Whole grains	Cereals	Cereals	
Whole wheat flour	Bran	Mature vegetables	Bran
Bran	Whole grains	Whole grains	Whole grains
Vegetables	Apples	Fruits with edible seeds	
Apples	Bananas	Brazil nuts	
Beets	Beans	Carrots	
Brazil nuts	Beets	Green beans	
Broccoli	Cabbage	Peaches	
Carrots	Corn	Peas	
Celery	Leafy greens	Potatoes	
Green beans	Pears	Strawberries	
Lima beans	Peppers	Tomatoes	
Pears	Brussel Sprouts	Radishes	
Wax Beans		Pears	
Cucumber skins		Eggplant	
Peppers		Bran	
Peas			
Cabbage			

## SOLUBLE FIBER SOURCES

<b>Gums</b>	<b>Pectin</b>	<b>Mucilage</b>
Oatbran	Apples	Psyllium
Guar gum	Bananas	
Legumes	Beets	
Barley	Cabbage	

Dried Beans

Carrots  
Citrus  
Peas  
Okra

### **Warnings**

We recommend rotating the food and fiber types. Avoid foods to which you have food allergies, intolerances or sensitivities. Gradually increase the fiber in your diet until your bowel movements are optimum for you (consult your physician for information and guidance). A temporary increase in intestinal gas is to be expected. Fennel seed may help reduce flatulence. Diabetics should not change their diet without consulting their physicians as fiber may affect your blood sugar. Excessive fiber via supplements may decrease the absorption of iron, zinc and calcium. Finally, be patient as it may take 6 weeks to see the ultimate benefit of adding fiber to your diet. For persistent constipation or change in the caliber of your stool see your doctor.

### **Supplements**

You can add 10 grams of fiber with two tablespoons of whole oat bran or wheat bran, psyllium (a seed native to Iran and India), Metamucil, Citrucel (methylcellulose), Konsyl, Benefiber or Fibersure.