

# Benefits of Fiber

## Introduction

I chose to write on this subject because nationally, people are not aware of the importance of dietary fiber in the diet, and of their own personal fiber gaps. Unfortunately, many people have been turned off by fiber products that did not deliver on taste, or fiber products that delivered side effects, such as gas, that they would prefer to avoid. As a result, some people are actively increasing dietary fiber in their diet, but others are not. Also, I am a diabetic and have a personal interest wanting to know more on how fiber is beneficial to this specific disease.

## Section 1: Background and Problem Statement

- **Web site #1 Name:** Healthy People 2020
- **Web address:** <http://www.healthypeople.gov/2020/topicsobjectives2020/overview.aspx?topicid=29>
- **http://healthfinder.gov/scripts/SearchContext.asp?topic=198**
- **Background Information:**

Americans with a healthful diet consume a variety of nutrient-dense foods within and across the food groups, especially whole grains, fruits, vegetables, low-fat or fat-free milk or milk products, and lean meats and other protein sources. Refined or processed foods — such as canned fruits and vegetables and pulp-free juice, white bread and pasta, and non-whole-grain cereals — are lower in fiber content. The grain-refining process removes the outer coat (bran) from the grain, which lowers its fiber content. Similarly, removing the skin from fruits and vegetables decreases their fiber content. Access to and availability of healthier foods can help people follow healthful diets.

- **Web site #2 Name:** Mayo Clinic
- **Web address:** <http://www.mayoclinic.com/health/fiber/NU00033>
- **Background Information:**

The problem of fiber gaps in the diet is that most Americans do not get enough fiber to realize its potential benefits. The typical American eats only about 11 grams of fiber a day, according to the American Dietetic Association. Health experts recommend a minimum of 20 to 30 grams of fiber a day for most people. The Food and Drug Administration has recognized fiber's importance by requiring it to be listed on the Nutrition Facts panel of food labels along with other key nutrients and calories. And, based on scientific evidence, the agency has approved four claims related to fiber intake and lowered risk of heart disease and cancer.

- **Web site #3 Name:** Benefitsoffiber.org
- **Web address:** <http://benefitsoffiber.org/health-benefits-of-fiber/health-problems-that-may-result-from-fiber-intake/>
- **Background Information:**

The way to avoid fiber-related gastrointestinal problems is to add fiber to your diet slowly and steadily. By adding fiber slowly and drinking plenty of water, your body will be able to avoid these problems. When we consume more fiber than our body is able to process and break down, food digestion will slow and sometimes become painful! If we consume too much fiber too quickly we sometimes are confronted with bloating and gas. This intestinal gas is a reaction to our bodies' bacteria meeting all of the fiber in our body. Sometimes people are eating a great fiber rich diet but forget to drink enough fluids. This failure to properly saturate the fiber in our body generally leads to a level of constipation. The most worrisome side effect of too much fiber can be intestinal blockages. Since fiber binds to bile, fat, and even nutrients, people who eat severe levels of fiber may find that they are not absorbing into their body all of the nutrients that they should. Fiber speeds up the process of moving food through our body, too much fiber can sometimes increase our digestive speed too much resulting in diarrhea.

## Section 2: Research

- **Web site #1 Name:** USDA Agricultural Research Services
- **Web address:**  
[http://www.ars.usda.gov/research/publications/publications.htm?seq\\_no\\_115=184608](http://www.ars.usda.gov/research/publications/publications.htm?seq_no_115=184608)
- **Summary of the research:**

Diabetes, obesity and the metabolic syndrome are major health problems in the United States. Consumption of soluble fiber has been reported to have beneficial health effects, especially the reduction of blood glucose and insulin after a meal containing soluble fiber. Consumption of starches that resist digestion in the upper intestine reduces blood glucose and insulin after a meal containing the resistant starch. Two studies carried out at the Beltsville Human Study Facility investigated whether the beneficial effects of soluble fiber and resistant starch on glucose and insulin response after a meal are additive.

The reduction in glycemic response was moderately enhanced by combining resistant starch and soluble fiber. These results indicate that both soluble fiber and resistant starch are an effective addition to a healthy diet to lower blood glucose and insulin after a meal. This information is important to the general public and to health care workers planning diets for individuals with type 2 diabetes or the metabolic syndrome since it increases the number of grains that can be consumed for beneficial reduction of blood glucose and insulin levels.

- **Web site #2 Name:** WebMD
- **Web address:** <http://www.webmd.com/diet/fiber-health-benefits-11/fiber-cancer>
- **Summary of the research:**

In theory, fiber protects against colon cancers like this: Insoluble fiber from foods such as wheat bran adds bulk to stools and moves them through the GI tract swiftly, reducing the contact time with potential toxins in the colon. A bulky stool high in water can also dilute potential carcinogens. Fiber can also discourage growth of harmful bacteria and encourage healthy bacteria in the colon. Studies on fiber have been inconclusive, however. Some show that higher fiber intakes are linked to a reduced colon and colorectal cancer, while others have not. The first

setback for this theory came in 1999 from the Nurses' Health study. Nurses who ate more dietary fiber did not have a lower incidence of colon cancer. The following year, a study indicated that eating a large amount of fiber each day (the recommended 25 to 38 grams) could reduce the risk of colon cancer by 40%. But in 2005, another observational study concluded that high dietary fiber intake *was not* associated with a reduced risk of colorectal cancer. Since then, more studies continue to show that colorectal cancer risk can be lowered with higher fiber intakes from fruit and vegetables.

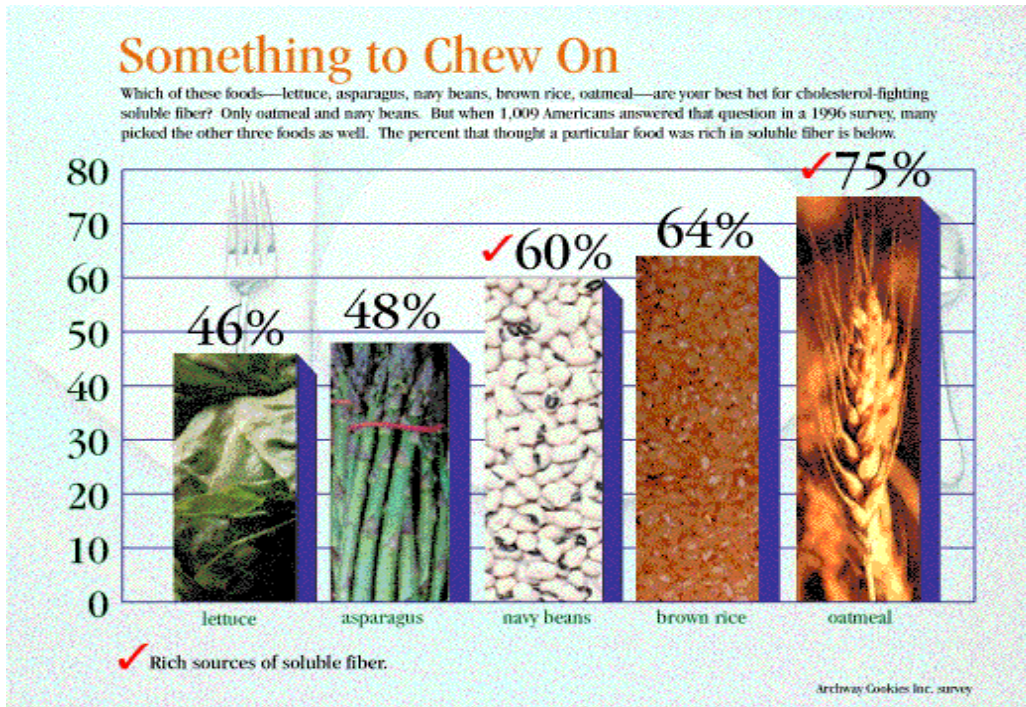
- **Web site #3 Name:** Life Extension Magazine
- **Web address:** [http://www.lef.org/magazine/mag2005/may2005\\_report\\_fiber\\_01.htm](http://www.lef.org/magazine/mag2005/may2005_report_fiber_01.htm)
- **Summary of the research:**

A more precise definition of fiber was established in 1969, as prevailing nutritional habits were linked with the prevalence of various diseases. In their study of traditional foods consumed by different cultures, Drs. Hugh Trowell and Dennis Burkitt noted that cultures with diets rich in plant foods rarely suffered from illnesses like diabetes, cancer, and cardiovascular disease. By contrast, these diseases had become widespread in developed Western societies in the late 1800s with the advent of a milling technique that produced a new, fiber-depleted dietary staple: white flour. Fiber, they therefore reasoned, might offer protection against many of the diseases prevalent in modern Western societies.

These early nutrition research findings have been borne out by countless subsequent studies. One recent study found that every additional 10 grams of fiber consumed on a daily basis cuts the risk of coronary heart disease death by 27%. Modern medicine recognizes fiber—the edible parts of plants that are resistant to digestion and absorption in the human small intestine—to be an essential component in maintaining a healthy body. Today, a growing body of research is examining one of fiber's least-publicized benefits: its ability to help reduce caloric intake and thus maintain a healthy weight.

### Section 3: Statistics

- **Web site #1 Name:** US Food and Drug Administration
- **Web address:** [http://www.cooks.com/rec/nutrition/fiber\\_cooks.html](http://www.cooks.com/rec/nutrition/fiber_cooks.html)
- **Summary of the statistics:**



- **Web site #2 Name:** Trends in Dietary Fiber
- **Web address:** <http://www.cnpp.usda.gov/Publications/FoodSupply/FiberFactSheet.pdf>
- **Summary of the statistics:**

Many leading food industries are making efforts to manufacture products that are healthier for Americans. The Whole Grains Council reports that a continued emphasis on new and innovative education programs will persuade consumers that whole grains are readily available and simple to incorporate into everyday meal planning (Whole Grains Council, 2007a). Research has shown that such efforts are translated into increased food sales. USDA wants to help consumers understand how foods can help them meet the recommendations of the 2005 Dietary Guidelines. This can be accomplished through a collaborative working relationship. When data on fiber-enriched products are included in the Nutrient Content of the U.S. Food Supply series, the dietary-fiber benefits of grain-based foods are more precisely recognized for their contributions and reflect the industry's responses to federal nutrition policies regarding the components of healthful diets. The U.S. food fiber industry earned revenue of \$193.1 million in 2004 and could earn \$495.2 million in 2011 (Frost & Sullivan, 2005). As interest in dietary fiber increases, economic incentives will drive the development and subsequent marketing of more fiber products. For example, sales of whole-grain products have increased in recent years—more than 18 percent from June 2004 to 2005. This figure eclipsed the less-than-1-percent growth in the whole-grain market from 2000 to 2004 (Fernau, 2006). As food manufacturers reformulated recipes for baked goods in response to the 2005 Dietary Guidelines.

- **Web site #3:**
- **Web address:** <http://digestive.niddk.nih.gov/ddiseases/pubs/constipation/#who>
- **Summary of the statistics:**

People who eat a high-fiber diet are less likely to become constipated. The most common causes of constipation are a diet low in fiber or a diet high in fats, such as cheese, eggs, and meats. Fiber—both soluble and insoluble—is the part of fruits, vegetables, and grains that the body cannot digest. Soluble fiber dissolves easily in water and takes on a soft, gel-like texture in the intestines. Insoluble fiber passes through the intestines almost unchanged. The bulk and soft texture of fiber help prevent hard, dry stools that are difficult to pass. Americans eat an average of 5 to 14 grams of fiber daily,\* which is short of the 20 to 35 grams recommended by the American Dietetic Association. Both children and adults often eat too many refined and processed foods from which the natural fiber has been removed. A low-fiber diet also plays a key role in constipation among older adults, who may lose interest in eating and choose foods that are quick to make or buy, such as fast foods, or prepared foods, both of which are usually low in fiber. Also, difficulties with chewing or swallowing may cause older people to eat soft foods that are processed and low in fiber.

National Center for Health Statistics. Dietary Intake of Macronutrients, Micronutrients, and Other Dietary Constituents: United States, 1988–94. Vital and Health Statistics, Series 11, Number 245. July 2002.

## Section 4: Consumer Information

- **Web site #1 Name:** Mayo Clinic
- **Web address:** <http://www.mayoclinic.com/health/fiber/NU00033>
- **Summary of the information:**

Dietary fiber — found mainly in fruits, vegetables, whole grains and legumes — is probably best known for its ability to prevent or relieve constipation. But fiber can provide other health benefits as well, such as lowering your risk of diabetes and heart disease. Dietary fiber, also known as roughage or bulk, includes all parts of plant foods that your body can't digest or absorb. Unlike other food components such as fats, proteins or carbohydrates — which your body breaks down and absorbs — fiber isn't digested by your body. Therefore, it passes relatively intact through your stomach, small intestine, and colon and out of your body. It might seem like fiber doesn't do much, but it has several important roles in maintaining health. High-fiber foods are good for your health. But adding too much fiber too quickly can promote intestinal gas, abdominal bloating and cramping. Increase fiber in your diet gradually over a period of a few weeks. This allows the natural bacteria in your digestive system to adjust to the change. Also, drink plenty of water. Fiber works best when it absorbs water, making your stool soft and bulky.

- **Web site #2 Name:** Nutrition and Healthy Eating
- **Web address:** <http://www.mayoclinic.com/health/fiber/NU00033>
- **Summary of the information:**

Dietary fiber increases the weight and size of your stool and softens it. A bulky stool is easier to pass, decreasing your chance of constipation. If you have loose, watery stools, fiber may also help to solidify the stool because it absorbs water and adds bulk to stool. For some, fiber may

provide relief from irritable bowel syndrome. A high-fiber diet may lower your risk of developing hemorrhoids, and small pouches in your colon (diverticular disease). Some fiber is fermented in the colon. Researchers are looking at how this may play a role in preventing diseases of the colon. Soluble fiber found in beans, oats, flaxseed and oat bran may help lower total blood cholesterol levels by lowering low-density lipoprotein, or "bad," cholesterol levels. Epidemiologic studies have shown that increased fiber in the diet can reduce blood pressure and inflammation, which is also protective to heart health. Fiber, particularly soluble fiber, can slow the absorption of sugar, which for people with diabetes can help improve blood sugar levels. A diet that includes insoluble fiber has been associated with a reduced risk of developing type 2 diabetes. High-fiber foods generally require more chewing time, which gives your body time to register when you're no longer hungry, so you're less likely to overeat. Also, a high-fiber diet tends to make a meal feel larger and linger longer, so you stay full for a greater amount of time. And high-fiber diets also tend to be less "energy dense," which means they have fewer calories for the same volume of food.

- **Web site #3 Name:** National Digestive Diseases Information Clearinghouse (NDDIC)
- **Web address:** <http://digestive.niddk.nih.gov/ddiseases/pubs/constipation/#who>
- **:Summary of the information:**

Constipation is defined as having a bowel movement fewer than three times per week. With constipation stools are usually hard, dry, small in size, and difficult to eliminate. Some people who are constipated find it painful to have a bowel movement and often experience straining, bloating, and the sensation of a full bowel. Some people think they are constipated if they do not have a bowel movement every day. However, normal stool elimination may be three times a day or three times a week, depending on the person. Constipation is a symptom, not a disease. Almost everyone experiences constipation at some point in their life, and a poor diet typically is the cause. Most constipation is temporary and not serious. Understanding its causes, prevention, and treatment will help most people find relief. Constipation occurs when the colon absorbs too much water or if the colon's muscle contractions are slow or sluggish, causing the stool to move through the colon too slowly. As a result, stools can become hard and dry. People who have problems with constipation should try to drink liquids every day. However, liquids that contain caffeine, such as coffee and cola drinks will worsen one's symptoms by causing dehydration. Alcohol is another beverage that causes dehydration. It is important to drink fluids that hydrate the body, especially when consuming caffeine containing drinks or alcoholic beverages.

## **Section 5: Solutions to the Problem (or Issue)**

- **Web site #1 Name:** Mayo Clinic
- **Web address:** <http://www.mayoclinic.com/health/fiber/NU00033/NSECTIONGROUP=2>
- **Summary of the information:**

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developing hemorrhoids, and small pouches in your colon (diverticular disease). Some fiber is fermented in the colon. Researchers are looking at how this may play a role in preventing diseases of the colon. Soluble fiber found in beans, oats, flaxseed and oat bran may help lower total blood cholesterol levels by lowering low-density lipoprotein, or "bad," cholesterol levels. Epidemiologic studies have shown that increased fiber in the diet can reduce blood pressure and inflammation, which is also protective to heart health. Fiber, particularly soluble fiber, can slow the absorption of sugar, which for people with diabetes can help improve blood sugar levels. A diet that includes insoluble fiber has been associated with a reduced risk of developing type 2 diabetes. High-fiber foods generally require more chewing time, which gives your body time to register when you're no longer hungry, so you're less likely to overeat. Also, a high-fiber diet tends to make a meal feel larger and linger longer, so you stay full for a greater amount of time. And high-fiber diets also tend to be less "energy dense," which means they have fewer calories for the same volume of food.

- **Web site #2 Name:** Health.Learning
- **Web address:** <http://health.learninginfo.org/fiber.htm>
- **Summary of the information:**

Recent medical research has proven several physiological benefits of consuming fiber, among which are: Improved absorption of Calcium, magnesium, and iron; reduction of blood cholesterol and triglyceride levels; stabilization of blood glucose levels after meals, i.e., a low glycemic index food source; maintenance of an optimal intestinal environment; and stimulation of immune responses.

- **Web site #3 Name:** Harvard School of Public Health
- **Web address:** <http://www.hsph.harvard.edu/nutritionsource/what-should-you-eat/fiber-full-story/index.html>
- **Summary of the information:**

Current recommendations suggest that children and adults consume at least 20 grams of dietary fiber per day from food, not supplements. The more calories you eat each day, the more fiber you need; teens and men may require upwards of 30 to 35 grams per day or more. Yet the average American eats only 15 grams of dietary fiber a day.

## Conclusions

Fiber has a multitude of benefits, including: helps to prevent and remove constipation, prevent diverticulosis, stabilizes glucose level in blood, prevents formation of colon cancer and rectal cancer, helps in washing out of toxins and by-products of metabolism in the digestive tract, lowers cholesterol level, prevents against tumors and gallstone formation. I am now motivated to include and keep fiber in my diet, especially since it will help to lower my blood sugar.

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