

### *Keeping It Clean— Fiber and the Digestive Tract*

*Keeping the digestive track healthy helps prevent illness.  
One way to do this is by eating fiber.*

“**T**he pathogen is nothing, the terrain is everything.” What did Dr. Louis Pasteur, the French scientist, mean when he said this? Simply put, he meant that our terrain—our body—is the most important factor in fighting disease. If our body systems are working efficiently, we won’t have much trouble with pathogens—harmful viruses, bacteria, fungi, protozoa, and parasites—or other medical problems. However, if our body systems are not working well, we open the door to



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***More than 100 million Americans have digestive problems. This translates into \$50 billion a year in lost work, lost wages, and medical expenses. Americans pay \$3 billion a year for over-the-counter and prescription drugs for digestive problems.***

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pathogens and a host of other problems. One of the most important systems to keep healthy, and one we often ignore, is the digestive system.

Our digestive system is responsible for unlocking the nutrients that foods provide. The nutrients, in turn, provide us with the energy needed to perform all of the functions of living: from producing body tissue, to healing wounds, to breathing. If this important system is not working well, it becomes a fertile field for disease.

There are a number of reasons why the digestive

system can be welcome ground for disease. One, and perhaps the one we have less control over, is our intake of toxins. Every day pollutants assault us, and additives and pesticides sneak in via our foods. We also create toxins “naturally.” Waste products are produced through the natural metabolic process, and when the balance between good and bad bacteria is lost, toxicity may build up. Toxins make it difficult for our digestive systems to effectively rid our bodies of wastes. And if the

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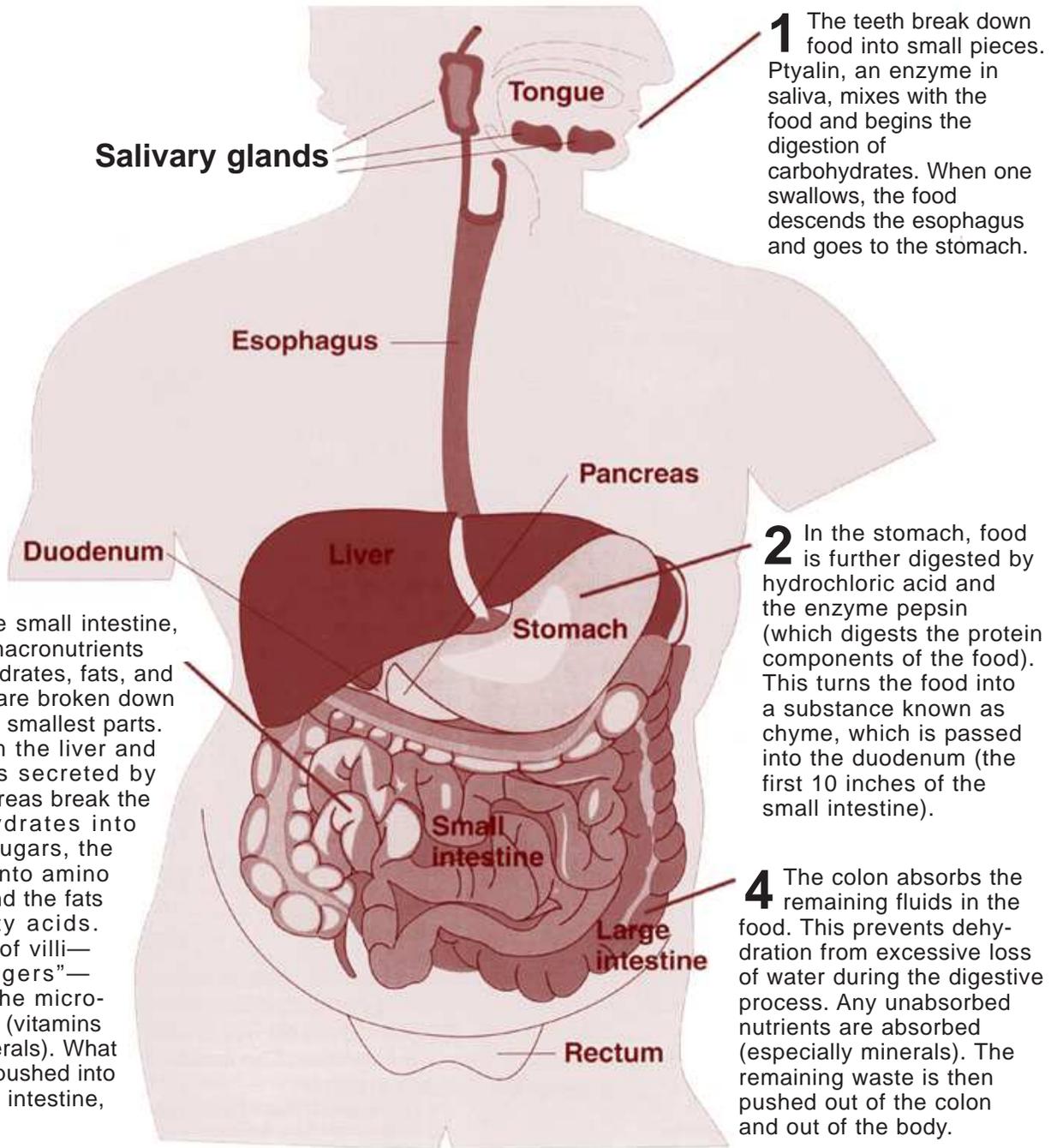
***To get the best of fiber, one should get at least 25 grams of fiber per day***

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digestive tract is not functioning as well as it should, the residue of partially digested foods can irritate mucosal walls and clog our bodies’ transportation systems. This, of course, is a greenhouse

# ...●●The Digestive Process ●●...

For greatest efficiency, the digestive process must proceed in 35 or fewer hours, with fewer than 24 hours being the most desirable. If food remains in the digestive tract for long periods of time, there is a risk of the food fermenting or putrefying. This may result in carcinogenic toxins.



where disease can thrive.

Even if we are eating “healthy foods,” we may not be eating healthily; that is, we may be eating too much and overloading our digestive systems. Our digestive processes also can be adversely affected by stress, other illnesses, lack of exercise, and inadequate liquid intake.

What is the result of toxins, inefficient digestion, and pathogens? First of all, inconvenience, if nothing major. Burping, gas, heartburn, and indigestion are all symptoms of a disturbed digestive system. But it gets more serious. Constipation, diverticular disease, hiatal hernia, irritable bowel system, and colon cancer can all be the result of malfunctioning digestion.

One way to try to prevent all of this—bacterial imbalance, minor problems such as indigestion and heartburn, and more serious problems—is through diet. Surprisingly enough, diet appears to

be one of the major causes of all that can go wrong with our digestive processes. And you can help a lot by making a simple addition to your diet: fiber.

### **FIBER**

In simpler times fiber was called roughage. It was “rough” in that it was not easily digested and seemed to clear up and prevent constipation. This still holds true, but interest in fiber has greatly expanded, as has our knowledge of how it helps us. Evidence from clinical and epidemiological (disease and population) studies could be used to put fiber’s effects into four categories: laxation, regularity, effects on blood sugar, and effects on blood cholesterol. Others have extrapolated these effects and linked increased fiber consumption with fewer occurrences of heart disease, cancer, obesity, and diabetes. Indeed, a Surgeon General’s Report on Nutrition and Health says “...dietary patterns

## ●●● Fiber: Where to get it ●●●

Food	Serving size	Total fiber (g)	Soluble fiber (g)	Insoluble fiber (g)	Sodium (mg)	Fat (g)
Oat bran, dry	1/3 cup	4.2	2.0	2.2	0.0	2.0
Brown rice	1/2 cup cooked	2.4	0.2	2.2	1.0	0.8
Whole wheat bread	1 slice	1.4	0.3	1.1	148	0.7
Rye bread	1 slice	0.9	0.3	0.6	139	0.3
Spaghetti	1/2 cup cooked	0.8	0.3	0.5	< 1.0	0.5
White bread	1 slice	0.5	0.2	0.2	127	0.8
Apple	1 whole	2.8	0.8	1.9	1.0	0.5
Banana	1 medium	2.1	0.6	1.4	1.0	0.6
Grapefruit	1/2 medium	1.7	0.6	1.1	0.0	0.1
Kidney beans	1/2 cup cooked	5.8	2.5	3.3	2.0	0.4
Pinto beans	1/2 cup cooked	5.3	2.0	3.3	2.0	0.4
Lima beans	1/2 cup cooked	4.4	1.2	3.2	2.0	0.4
Onions, cooked	1/2 cup	2.2	0.8	1.4	2.0	0.1
Broccoli	1/2 cup cooked	2.0	0.9	1.1	20	0.3
Carrots, raw	1/2 cup	1.3	0.6	0.8	45	0.2

**Crude fiber and dietary fiber are different. Crude fiber is what is left after treating any food with a strong solvent. It destroys everything except some cellulose and lignin. Dietary fiber resists digestion by enzymes. Most food labels list crude fiber, and crude fiber contents are always lower than dietary fiber volume. The amount of dietary fiber may be 200 percent greater.**

Any discrepancies are due to rounding

Sources: Fiber—*Dietary Fiber*, Keats Publishing, Inc.; Sodium and Fat—*Prevention Magazine's Nutrition Adviser*

emphasizing foods high in complex carbohydrates and fibers are associated with lower rates of diverticulosis and some types of cancer...some evidence from clinical studies also suggests that water-soluble fibers...are associated with glucose and lipid levels.”

There are two types of fiber: insoluble and water-soluble

### **INSOLUBLE FIBER**

Insoluble fiber cannot be dissolved in water, meaning that our bodies cannot digest it. This type of fiber includes the insoluble parts of plant walls and is found in greatest amounts in cereals, brans, and vegetables. Its primary function is to collect water that increases stool bulk in the large intestine. As this bulk works through the intestine, it scours the intestinal walls of waste matter, reducing the risk of colon-related problems.

Many claims are made for what this scouring does. It is a laxative, and does help regularity. Some studies have shown that it can help reduce instances of diverticulosis (pouches that form in the wall of the colon). According to W. Grant Thompson, a gastroenterologist at the University of Ottawa, the bulkier stool “gives you a larger colon. The wider the colon, the less pressure, so it’s less likely to pop pouches out” (as quoted in *Nutrition Health Newsletter*, September 1994). However, evidence is inconclusive that this type of fiber can actually reverse diverticulosis.

It is this “scouring” action that also may protect against colon cancer. This may be because insoluble fiber dilutes cancer-causing bile acids, or because it speeds up elimination, so that carcinogens may not have time to develop or are excreted before they cause trouble. However, studies at this time are inconclusive. We also must remember that we are not sure if it is the fiber, other parts of fiber-rich foods, or both that aid our bodies.

### **WATER-SOLUBLE FIBER**

Water-soluble fiber dissolves in water. This type of fiber includes oat bran, legumes, and psyllium. It forms a bulky gel in the intestine that regulates the flow of waste materials through the digestive tract, and is believed to help cholesterol levels and the circulatory system.

Water-soluble fiber may lower cholesterol because it prevents the reabsorption of bile acids. Bile acids are made out of cholesterol, and after they aid fat digestion, fiber binds with them and escorts them out of the body. The liver then has to pull more cholesterol from the blood. However, it should be mentioned that not all water-soluble fiber does this; fiber that does includes oat bran, legumes, and psyllium.

*Studies on disease and population show that appendicitis is practically nonexistent in countries with high-fiber diets; in the U.S. there are 300,000 cases per year. In the West, one-third of the population over 40 develops diverticulosis; in Africa one researcher did not see a single case in 20 years.*

Water-soluble fiber may also stabilize blood sugar by slowing down the absorption of carbohydrates into the blood. This in turn might be one of the reasons why a high-fiber diet benefits diabetes. Dr. Brian L. G. Morgan, the author of *Nutritional Prescription*, says “Good scientific data show us that a diet high in complex carbohydrates and fiber will improve the glucose tolerance of diabetes. This new type of diet has been credited with lowering insulin needs in diabetics by an average of 35 to 50 percent” (as quoted in *Let’s Live*, February 1990).

Finally, both types of fiber may help you with weight problems. Insoluble fiber absorbs water as it goes through your system. This might create a “full” feeling, curbing hunger. Fiber’s blood sugar stabilizing property might also prevent huge fluctuations in blood sugar and the desire for snacking that goes with it.

Be aware that, except for constipation and regularity, most of the claims for fiber need further research and testing. Little, as yet, is conclusive, and, as mentioned, the health benefits may be due to the synergistic work of everything found in high-fiber foods. Be that as it may, everything points to making fiber an indispensable part of your diet. □

—Partners