

Fiber: Why It Matters More Than You Think

It's famous for improving regularity and helping lower cholesterol.

But dietary fiber also performs other key roles that might surprise you, affecting everything from your skin to your gallbladder, heart and immunity.



By Experience Life Staff

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There's one ingredient that should be part of every meal. There's no need to make a trip to a special store to find it: Nature has already thoughtfully prepackaged it in a cornucopia of vegetables, legumes, fruits and nuts. The special ingredient? Fiber.

No huge surprise there. We've known for decades that fiber-rich foods are good for us. Many experts have observed that as people in other cultures have given up their traditional diets and adopted Western eating habits (dominated by processed foods much lower in fiber and higher in sugar), they've become susceptible to weight gain and a host of illnesses.

Meanwhile, a torrent of studies have shown that fiber-rich foods work wonders in the body, regulating blood-sugar levels, reducing the risk of coronary heart disease, stroke, hypertension, diabetes, obesity, breast cancer, colon cancer and gastrointestinal disorders such as reflux, duodenal ulcer, irritable bowel and diverticulitis (inflammation of abnormal pouches in the wall of the large intestine or colon), and also supporting weight loss.

Today, though, scientists are using newer tools to better understand the various ways fiber interacts with our bodies' basic systems. Some of this new work shows that fiber plays an essential role in a little-known (and critically important) system in our body called enterohepatic circulation.

Entero is Latin for relating to the intestines, or gut; *hepatic* is Latin for pertaining to the liver. This system, which has the key job of clearing all fat-soluble waste from the bloodstream, governs the progression of bile — from the liver, through the small intestine, and back again.

If we don't eat enough soluble fiber, our bile, instead of being ushered out of the body and then replaced with fresh bile produced by the liver, is repeatedly recirculated in our system. In the process, it becomes more concentrated with toxins, which, in turn, can lead to all sorts of inflammatory diseases such as gallbladder disease, intestinal inflammation, and even skin conditions like acne, eczema and psoriasis.

Ultimately, a low-fiber diet can contribute to elevated levels of toxicity throughout the body, explains Alejandro Junger, MD, director of Integrative Medicine at Manhattan-based Lenox Hill Hospital and author of ***Clean: The Revolutionary Program to Restore the Body's Natural Ability to Heal Itself*** (HarperOne, 2009).

“When we don't eat fiber, the toxins that we should be eliminating through our bowels get reabsorbed into the bloodstream — and that can cause many problems,” Junger says. “Unfortunately, Western medicine is toxic-blind,” he says. “In the Western medical world, toxicity means an acute problem like alcohol toxicity or someone who took too many pills. This more diffuse toxicity that I am talking about is rarely acknowledged at all in the Western medical world. And, the end effect of all this toxicity is inflammation — virtually everybody is inflamed today — which negatively affects various organs in many different ways.”

Recent research has also focused on the way fiber boosts the immune system. It turns out that a wide variety of fiber-dependent processes are key to maintaining our resistance both to infections and to immune-related diseases like cancer. Yet few of us understand → the mechanisms by which dietary fiber works, and why our vitality — not just our regularity — suffers so much when our fiber intake is inadequate.

Hauling the Body's Trash

Dietary fiber is the part of our plant foods that can't be digested. Traditionally, dietary fiber has been divided into two groups: insoluble and soluble. (For a list of foods in each category see "More Fiber, Please!" below.)

Both bind with the body's waste products and help move them through proper channels. Insoluble fiber comes from the hard structural part of a plant, such as wheat bran, the tough husk around a popcorn kernel or the skins of many fruits and vegetables. Insoluble fiber makes its way through the digestive system relatively intact, acting as a sort of sweeping compound and making the stool softer and bulkier.

Soluble fiber, on the other hand, comes from structures within the cells of the plant. As soluble fiber enters the digestive tract, it absorbs water and dissolves into a thick, viscous gel. Although both types of fiber affect the body's ability to circulate bile effectively, soluble fiber is doing the bulk of the work.

When we eat a meal containing fat, our liver — the largest glandular organ in the body — begins to produce bile, a liquid comprising acids, cholesterol, lecithin and other substances. The liver produces around 4 cups of bile every day, all of which is eventually secreted into the duodenum — the first section of the small intestine — where it helps break down fats into smaller pieces.

Wisconsin-based nutritionist Karen Hurd, who specializes in resolving chronic digestive disorders, explains it this way: "Bile works in the small intestine much as a strong dish soap works in dishwater — to help break up grease and food particles."

Once broken down into pieces, most nutrients are absorbed in the upper part of the small intestine. In the ileum — at the lower end of the small intestine — the bile, broken down into its constituent parts, makes its way back to the liver, carried by the bloodstream.

The liver filters our blood, removing drugs, toxins, fats and fat-soluble waste, and disposes of these substances by depositing them in newly created bile.

Because the bile that has been absorbed in the ileum enters the bloodstream in its constituent parts, it reverts back to fats, toxins, drugs and fat-soluble waste — all the little pieces that made up the bile. The liver must again filter these components out of the bloodstream. They are added to the waste that has been newly collected from the bloodstream. The old bile, in its constituent parts, is combined with the new bile carrying

its toxic load, which makes for an increasingly toxic bile that is secreted once again into the small intestine.

As long as you have adequate fiber in your diet, this doesn't pose a problem for your body: That fiber forms a tight bond with the bile in the intestine, binding up all the harmful toxins, cholesterol and fat that it contains. Since the soluble fiber cannot be absorbed by the intestinal wall, neither can the bile attached to it. This fiber-bound bile ultimately leaves the body in a bowel movement, with its load of toxins, cholesterol and fat in tow.

But if we're eating a fiber-poor diet, our supply of bile can become increasingly concentrated with toxins and fats as it recycles back to the liver.

"I call bile the body's trash truck," says Hurd. "It's as if the truck dumps its load in the bloodstream and the liver has to clean it all up again. Then you have old trash mixed in with the new."

Among other problems, inadequate fiber consumption can contribute to elevated blood cholesterol levels, notes Todd Rideout, PhD, adjunct professor at the University of Manitoba and research scientist at the university's Richardson Centre for Functional Foods and Nutraceuticals.

When bile is being properly escorted by fiber and carried out of the body by our stool, he explains, "there are fewer bile acids recycling to the liver and being stored in the gallbladder." That means the next time we eat a meal with fat in it, the liver has to make fresh new bile. It manufactures this new bile by pulling cholesterol (one of the key components of bile) out of the blood, thereby reducing blood cholesterol levels. Under low-fiber conditions, though, that process doesn't happen as readily, and thus cholesterol has an opportunity to increase in the bloodstream and accumulate in our arteries.

A Dangerous Sludge

Another problem with inadequate fiber intake, Hurd says, is that it results in a change of consistency in our bile. As bile becomes more polluted, she explains, "the physical state of bile is not as liquid as before," she says. "It becomes sludgy, like mud. Eventually, it can turn into a solid substance we call gallstones."

Moreover, Hurd explains, the trashier and sludgier your bile becomes, the more acidic and irritating it becomes to your tissues. This can lead to a host of problems, including

swelling and inflammation in your colon, duodenum and all the way up in your esophagus.

“Inflammation in the esophagus includes all kinds of things like Barrett’s esophagus, where you have this thickening of the opening, so things feel like they get stuck in your throat,” says Hurd.

Sludgy bile causes not only various diseases of the gallbladder, explains Hurd, but also tertiary skin conditions, such as acne, eczema and psoriasis, which depend upon a properly functioning gallbladder to help bile break down into little pieces, or emulsify, the fats. The results, says Hurd, are predictable: “If you don’t have the right types of fats in your skin, you’ll have skin problems.”

Worse, if the fats are not successfully emulsified via the bile, the body falls back on a second, less desirable chemical process capable of breaking these long-chain fatty acids into usable short-chain fatty acids. That process is called oxidation, and it can lead both to premature aging and to inflammatory diseases of all kinds, including heart disease.

“If your bile is so sludgy that you cannot adequately emulsify the fat, and it dumps back in your body these long chains that have not been broken down properly, they will enter into your bloodstream by way of the ileum, travel through the lymphatic system and deposit into the circulatory system behind the heart,” explains Hurd. “The heart is one of the most oxygen-rich environments in the human body, and what happens is you will have immediate fat oxidation, which makes nasty little foam cells that are extremely sticky and build up inside the arteries. And then your arteries can become 50 percent blocked or 80 percent blocked or 100 percent blocked,

for example. When you have 100 percent blockage, you have what’s known as a myocardial infarction — a fancy phrase for heart attack.”

The idea that a lack of dietary fiber can be a root cause of atherosclerosis and heart attack is shocking to many people, notes Hurd. Yet there are other dire consequences of a faulty recycling system that may surprise us even more — like cancer, especially hormonally caused cancers such as estrogen types.

“Estrogen is made from fats. It’s an example of a fat-soluble waste that is cleared by the liver,” Hurd explains. “But if you don’t → properly eliminate polluted bile, that estrogen goes back into your bloodstream, and the estrogen levels in your bloodstream mount,” she continues. “Then those estrogens can stimulate the growth of abnormal cells, which

can lead to the growth of cancerous cells. And, then we have estrogen-type cancers, such as breast cancer, uterine cancer, fallopian tube cancer, ovarian cancer and vaginal cancer.

Why are these cancers being stimulated? Because estrogen is stimulating their growth. Why do we have so much estrogen? Because we never threw it away via elimination when we had the chance.”

The encouraging news, says Hurd, is that one of the most promising ways to help end this vicious cycle — and to eliminate many painful and frustrating conditions whose symptoms are commonly treated with drugs or surgery — is simply to eat an ample supply of fiber-rich foods.

Boosting Immunity

We’ve seen that dietary fiber plays a huge part in keeping our bodies’ filtration and elimination systems working properly, but that’s really only part of the story. Fiber also plays a vital role in improving the effectiveness of the gastrointestinal system, which contains more than half the body’s immune system.

After some dietary fibers pass through the small intestine undigested, they arrive in the large intestine, or colon, and serve as fuel for the friendly bacteria living there. These so-called prebiotic fibers help friendly bacteria grow and triumph over bad bugs in the colon.

“Fiber feeds good bacteria, so a lack of fiber actually kills the good bacteria in your gut — and the good bacteria in your gut is yet another thing that Western medicine does not clue into in terms of its importance,” says Junger. “In fact, very few gastroenterologists even deal with what *kind* of bacteria you have in your gut.”

According to some experts, a flourishing corps of friendly intestinal flora can help protect the lining of the intestine and prevent leaky gut syndrome, a condition that allows toxins, fungi and undigested proteins to get into the bloodstream. Leaky gut syndrome can cause a host of autoimmune diseases and allergies. (See “Good Bacteria Welcome” in the July/August 2007 archives at experiencelifemag.com.)

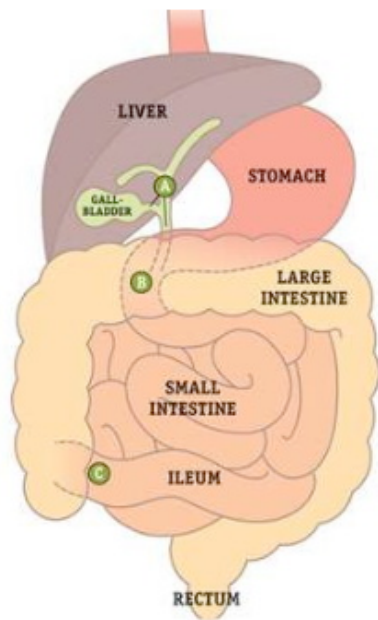
Of course, there’s one other benefit of a high-fiber diet. The foods that are naturally high in fiber — beans, vegetables, whole grains and fruits — are precisely the foods that are high in phytonutrients, vitamins, minerals and antioxidants.

They tend to be lower-glycemic foods, too — the kind that naturally support steady energy and good weight management.

Given fiber's multiple benefits, it's clear that many of us practice the wrong nutritional math. Instead of trying to subtract calories, we should concentrate on adding grams of fiber (Hurd recommends 5 grams of soluble fiber — the equivalent of a half-cup cup of beans — at each meal). The best part? You can see and feel the results from eating more fiber almost immediately. When introduced to a properly designed fiber-boosting regimen, says Hurd, many of her clients find that certain digestive troubles can vanish the same day. She's seen entrenched skin conditions clear up within a week and gallstones dissolve within six weeks. So, eat those beans! It's all part of a winning strategy for better health.

The Fiber-Bile Connection

Fiber and bile play little-understood but important roles in digestion and toxin elimination. Here's an overview of how they work together in your body.



Bile is an acidic substance made by the **liver**, primarily to aid your body's digestion of fats and to help transport heavy metals out of the body.

The bile travels down two **biliary ducts** [A].

One duct dumps directly into the **duodenum** [B] (first section of the small intestine), where there is a slow, constant dripping of relatively dilute bile.

The other duct leads to the **gallbladder**, where the bile is concentrated to 10 times its strength. When food moves from the **stomach** into the duodenum, the gallbladder contracts and squirts concentrated bile into the duodenum. There, the bile mixes with the fats you have consumed and helps break them down. Any gallbladder problems leading to reduction in bile quality or supply may lead to digestive troubles.

In the duodenum, recently consumed soluble fiber binds with the mixture of bile, toxins and other undigested material. This mixture then travels through the **small intestine** to the **ileum**.

Bile and waste products that are bound to fiber proceed through the **large intestine** and are eliminated through the rectum in a bowel movement. Bile not bound to fiber is reabsorbed into the bloodstream through the wall of the **terminal ileum** [C]. The bloodborne bile then returns to the liver for filtering.

The liver extracts the bile from the blood and re-secretes it back into the intestines for reuse. Any suspended toxins in the bile are carried back through the system, increasing the body's toxic burden. Bile goes through this recycling process several times a day. But when we don't eat enough fiber, we don't eliminate enough polluted bile or produce enough fresh bile. As our recycled bile grows sludgier, it introduces more inflammatory compounds into our bloodstream, contributing to a wide array of potentially serious health problems.

More Fiber, Please!

Recommendations for daily fiber intake range from 20 to 40 grams, but by some estimates, the average American eats only 8 grams. But we don't just need more fiber, experts say: We need more fiber distributed in small meals and snacks throughout the day.

"If you have all your fiber in one serving, it only acts on the food you eat then, not on the food you eat hours later," says Christine Gerbstadt, MD, RDRN, a spokesperson for the American Dietetic Association. "Fiber doesn't hang around waiting for the next meal. If you want fiber to regulate your blood sugar all day, you have to eat it all day."

Real, whole foods are your best source for fiber. Beans, in particular, are the richest source of soluble fiber we have, says Wisconsin-based nutritionist Karen Hurd, who recommends everyone eat three half-cup servings of legumes daily as part of a whole-foods eating plan. But if you're getting sick of beans, she suggests substituting 2 teaspoons of psyllium husk powder (for those who are not allergic to psyllium husk) mixed in a glass of water for one or more of those servings. Here are some other good fiber sources:

Soluble fiber: dried beans, lentils, oat bran, oatmeal, rice bran, barley, citrus fruits, strawberries and apple pulp.

Insoluble fiber: whole grains (including wheat, rye, rice, barley and most other grains), cabbage, beets, carrots, Brussels sprouts, turnips, cauliflower and apple skin.

Prebiotic fiber: legumes, wheat, barley, potatoes, rice, bananas, artichokes, onions and garlic.