

We Need Our Intestinal Bacteria by Ann Gerhardt, MD, subscribe @ www.drsgsmedisense.com
(06/2008)

Bottom line at the top: Keep the bacteria in your colon healthy and they will help to keep you healthy.

Stool contains mostly bacteria, not undigested food. My hospital patients say, “I can’t have a bowel movement, since I haven’t eaten in days”, but this is wrong. As long as bacteria can grow in the colon, we make stool. Granted, bacteria do grow better if we feed them our undigested food, which occasionally appears in the stool, but stool is mostly bacteria.

Frequent stools, bulky with bacteria, are a good thing. Many Americans don’t drink enough water to prevent rock hard stools, eat enough fiber to feed our colonic bacteria to bulk up the stool, or exercise enough to stimulate bowel movements. Correcting these three things would cure most constipation.

We really need our bacteria. From the time we are born, we share our bodies with bacteria. As we pop into the world, millions of bacteria transfer from Mom onto our skin, into various orifices and throughout our intestinal tract. The colon normally contains trillions of non-pathogenic bacteria, which keep us and the gastrointestinal tract healthy. Throughout the rest of our lives these microbes play a critical role in digesting food, metabolizing drugs and maintaining over-all health.

We, in turn, provide food to sustain our bacteria’s existence. Disruptions in this symbiotic relationship may lead to inflammatory bowel disease, vaginal infections, irritable bowel disease and possibly obesity.

Our symbiotic bacteria nourish us by making vitamins that we absorb into our system. Bacteria make B12, necessary for normal memory, balance and red blood cell production. Only animal foods (or vegetables contaminated with manure fertilizer and not washed very well) contain preformed B12. Strict vegan vegetarians need their colonic bacteria to prevent B12 deficiency.

Bacteria make vitamin K, necessary for clotting, bone formation and preventing stiff, calcified arteries. Critically ill patients, who are unable to eat vitamin K-rich vegetables and whose bacteria are knocked-out by broad-spectrum antibiotics, incur vitamin K deficiency after about a week.

Our bacteria feed the cells of our colon. Bacteria ferment fiber and undigestible sugars to very short-chain fatty acids. The cells lining the colon use these fatty acids to stay nourished. In fact, they nourish the colon far better than do any nutrients coming from the bloodstream or undigested food. Bacteria are actually the main reason that it is healthy to eat fiber. Without it we would have a puny population of bacteria and a poorly fed colon unable to function well.

Organisms in the gut usually do not injure it or cause disease. A mucus layer, the barrier cells lining the colon, and patches of immune cells interspersed just under this cell layer protect the colon from bacterial infection. These defense mechanisms do not completely block out all bacteria – Healthy intestinal bacteria penetrate the barrier layer to a modest extent. Being non-pathogenic, they don’t cause disease, but do evoke a “tolerogenic” immune response, which tells the immune system that these bacteria are OK and don’t need to be killed. This allows our colonic bacteria to reside in harmony in the colon.

Our bacteria help to keep the immune system ‘primed’, at the ready to attack pathogenic (really bad) bacteria. If our bacteria and colon are kept healthy, the barrier cells and colonic immune system work well to prevent most infections, or at least keep them mild. Only when particularly invasive or toxin-producing bacteria enter the colon does sickness result.

Our colonic bacteria also influence the whole-body's immune responses, probably by stimulating 'cytokines'. These molecules circulate through the whole body to regulate cells to spur or squelch inflammation.

At times the normal balance of healthy bacteria gets upset, possibly because of food poisoning, excess laxatives, or having been treated with antibiotics, which can kill off healthy colonic bacteria. With an upset bacterial balance or a predominance of pathogenic bacteria, the bowel will not function well, possibly making us feel sick.

The 21 feet of gastrointestinal tract comprises distinct segments, each of which has its own bacterial residents. Our colons house the greatest and most diverse bacterial population. Some ferment fiber to gas, affecting our social popularity, but making us healthier. Some generate gases which smell worse than others.

A few bacterial interlopers, often acquired from contaminated food or unwashed hands, may grow unchecked and damage the colonic lining. Sometimes a severe, bloody diarrhea ensues. A bacterial imbalance in inflammatory bowel disease may cause the disease, not because of infection, but because of an immune response gone hay-wire.

Usually healthy bacteria out-number the unhealthy ones, keeping them in check. Predicting whether one has a healthy bacterial population may not be as simple as growing them in culture to see what's there. It is possible that the balance of bacterial types may be as or more important than any individual species. How the bacteria interact in the colonic community may be more important for health, and that will be very difficult to assess.

One of the major colonic bacteria species is *E. coli*. There are multiple strains of *E. coli*, and the common ones are healthy for us. However, some are pathogenic, as evidenced by recent food poisoning outbreaks involving a sometimes fatal strain (*E.coli* O157:H7) that produces a toxin. Other types are 'entero-adherent-invasive' and implicated in inflammatory bowel disease.

As overweight people lose weight, regardless of how they accomplish it, their colonic bacteria change. The *Bacteriodes* population declines in favor of *Lactobacillus* and other fermenters. Some scientists suggest that the change in bacteria contribute to weight loss, and others feel the association is the other way around.

Even if we could characterize our bacterial stow-aways in great detail today, that wouldn't tell us which types hung out in our colons last year and which will dominate next year. Each time we are sick, empty our colons with laxatives or take heavy-duty antibiotics, we incur the risk of altering the collective's composition, possibly affecting our health.