

Excerpt from “Total Recovery: A Revolutionary New Approach to Breaking the Cycle of Pain and Depression,” by Gary Kaplan, D.O.

Bacteria in the Gut

There are 10 times more bacteria in our intestinal tract than cells in our body. Within our digestive system, there are 100 trillion (100,000,000,000,000) bacteria. Among those trillions are 400 to 500 different types, but only 20 types of bacteria make up 75 percent of the grand total.¹

While we’re used to thinking of bacteria as the agents of devastating diseases, their other abilities may be unexpected.

- **Bacteria ward off infection.** A 1988 report by the U.S. surgeon general announced: “Normal microbial flora provide a passive mechanism to prevent infection.”
- **Bacteria produce vitamins.** The B-complex vitamins - biotin, thiamine (B1), riboflavin (B2), niacin (B3), pantothenic acid (B5), pyridoxine (B6), cobalamin (B12) - along with folic acid and vitamin K are produced by bacteria in the gut.
- **Bacteria improve nutrient absorption.** *Lactobacillus acidophilus* and bifidobacteria are bacteria that improve our ability to absorb calcium, copper, iron, magnesium, and manganese, among other vitamins and minerals.
- **Bacteria help fight food poisoning.** In 1993, the Centers for Disease Control reported 20 million to 40 million cases of food poisoning. The FDA estimated the number to be even higher:

¹ Lipski, *Digestive Wellness*

- 80 million. A healthy gut, teeming with bacteria, can help counteract the effects of food poisoning.²
- **Bacteria manufacture antibiotics.** Acidophilin, an antibiotic that fights off streptococcus and staph infections, is produced by acidophilus.³

On the other hand, bacteria learn. After years of our ingesting antibiotics, pain pills, and NSAIDs that kill them off, these colonies of microscopic creatures are beginning to defend themselves. They have learned which antibiotics to expect and, if need be, they undergo rapid mutations to compensate. Already there are antibiotic-resistant strains of strep, gonorrhea, staph, and tuberculosis around the world.

Harmful bacteria, in some people, have adapted by literally removing their cell walls, in order to move through our bodies unimpeded. When they are exposed to certain antibiotics, bacteria respond by turning on specific genes that create a more hospitable environment for the bugs. They may be microscopic, but they are living organisms. When one of their strategies meets with success, they transmit the information to other strains of resistant bacteria.

Every year, 40,000 North Americans die from infections that no longer respond to antibiotics. Dr. Elizabeth Lipski, author of *Digestive Wellness*, rightly states, “If microbes are becoming more resistant and virulent, we must increase our own resistance and strength to outsmart them. We must boost immune function so that people will be less receptive

² Ibid.

³ Ibid.

to infection.”⁴

Gut Integrity

One of the best ways to boost immunity is to improve the integrity of the gut. This can be achieved by adding live probiotics, when tests show they are needed. Avoiding things that cause leaky gut - like stress, toxic chemicals, poor nutrition, processed food, food additives, sugar, restructured fats, contraceptives, surgery, antibiotics, pain pills - is also vitally important.⁵

The typical American diet is desperately low on nutrients in the first place. The CDC surveys show that we are eating even fewer vegetables and fruits than we were 10 years ago. Not a single state in the Union had 50 percent of residents who were averaging two pieces of fruit a day. No state had 33 percent of residents who were eating three servings of vegetables a day.⁶

Poor food choices contribute to an imbalance of both probiotics and pH in the gut. When we don't eat enough fiber, the entire digestive process slows down. Without fiber to move things along, the by-products of digestion can concentrate and become toxic, irritating the gut mucosa.⁷

As Dr. Lipski points out, “Even foods we normally think of as healthful

⁴ Ibid.

⁵ Ibid.

⁶ Michael Greger, MD, “SAD States: Standard American Diet State-by-State Comparison,” NutritionFacts.org, May 22, 2012, <http://nutritionfacts.org/video/sad-states-standard-american-diet-state-by-state-comparison>.

⁷ Lipski, *Digestive Wellness*.

can be irritating to the gut lining. Milk, an American staple, can be highly irritating to people with lactose intolerance.” Gluten and other food allergens have a similar effect. Steroid drugs can feed fungi in the body and damage the mucosal lining.⁸

NSAIDs simultaneously reduce pain and prevent healing. The lining of the intestines is repaired and replaced every 3 to 5 days. NSAIDs dangerously interrupt and block that process. Once the intestinal tract has been damaged, free radicals are often produced in quantities too large for the body to process. This causes inflammation and irritation, which exacerbate a leaky gut.⁹

The tiny villi in the mucosal wall of our intestines not only allow nutrients to move into our bloodstreams, but they also prevent the absorption of toxins. When the villi are damaged, they lose the ability to discern between nutrients and toxins. As a result, they inadvertently allow toxins, microbes, undigested food, waste, or larger-than-normal macromolecules to leak through an abnormally permeable gut wall. These substances can affect the body directly or initiate an immune reaction.¹⁰ We call this intestinal permeability (aka leaky gut).

According to Alessio Fasano, MD, one of the leading experts on celiac disease, when leaky gut became known, some doctors were too

⁸ Ibid.

⁹ Ibid.

¹⁰ D. Kiefer and L. Ali-Akbarian, “A Brief Evidence-Based Review of Two Gastrointestinal Illnesses: Irritable Bowel and Leaky Gut Syndromes,” *Alternative Therapies in Health and Medicine* 10, no. 3 (May–June 2004): 22–30; quiz 31, 92.

eager to identify it “as a possible mechanism leading to many problems. The problem, though, is that most of these statements were not based on factual evidence, to the point in which we went to the extreme to develop an entire field called leaky gut syndrome that had very few facts and a lot of fantasies, and that’s the reason why the traditional medicine establishment has been so skeptical for many years.”¹¹

Today PubMed lists nearly 5,000 articles on intestinal permeability.¹²

The term *leaky gut* may be associated with the former controversy, but it also offers a vivid representation of the process at work.

¹¹ “Pioneering Researcher Alessio Fasano MD on Gluten, Autoimmunity & Leaky Gut,” interview by Chris Kresser, *Revolution Health Radio*, August 8, 2012, <http://chriskresser.com/pioneering-researcher-alessio-fasano-m-d-on-gluten-autoimmunity-leaky-gut>.

¹² Lipski, *Digestive Wellness*.