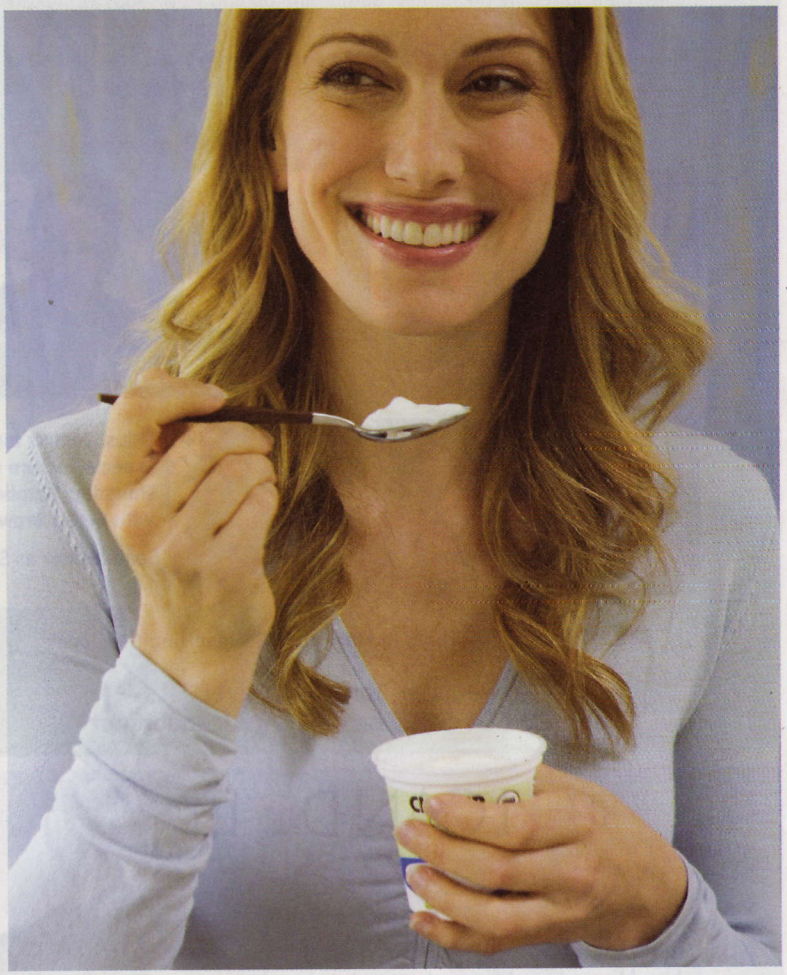
By Heather Boerner

Go with Your Gut

From GI distress to allergies, probiotics may help ease your health problems.



THROUGH HER CHILDHOOD and adolescence Jamie Koonce suffered from allergies and migraine attacks. By the time she was in her early 20s, the migraines had gone, but her maladies now included insomnia, stomach pain, and depression.

Over the years Koonce received medical attention for some of her ailments—she's used an inhaler for her wheezing, a sedative for her migraines, and an antidepressant. But the "why" behind her health problems was never answered. And she never imagined that these different symptoms might stem from the same cause: an imbalance of bacteria in her digestive tract.

Then, four years ago, Koonce made some changes in her life. She started doing vinyasa yoga daily and taking Chinese herbs for general health. But she found that the most profound improvements in her well-being came from the few bites of kimchi (pickled vegetables) she began eating before meals and the fermented kombucha tea she drank daily. To her surprise, not only did her stomach cramps disappear but she almost immediately had more energy and felt her mood lighten. She began sleeping through the night and awoke feeling refreshed.

The secret behind Koonce's miracle recovery? The probiotics, or beneficial bacteria, that are prevalent in foods such as kimchi, yogurt, kefir, and aged cheese. Koonce had stumbled upon what medical systems such as traditional Chinese medicine (TCM) and Ayurveda have found, and what Western medicine through science is now beginning to accept: A shortage of "good" bacteria in the gastrointestinal (GI) tract can affect nearly every system in the body, from your respiratory system to your digestion. And some scientists are discovering that replenishing the levels of certain beneficial strains of these bacteria may alleviate long-standing conditions whose roots have evaded diagnosis.

"It's amazing," says Koonce, 26, who is now a practitioner of TCM in Hot Springs, Arkansas. "I've seen a direct correlation between probiotics and better sleep and digestion."

BIOLOGY 101

To some people, the idea of intentionally ingesting bacteria to treat ill health may seem nonsensical. After all, don't we try to rid our environments of bacteria to avoid getting sick? Turns out that bacteria have gotten a bad rap. "One of the things that's come to light recently

is that the health of the body depends very much on the type of bacteria and the other microbes that live inside of it," says Gary Huffnagle, author of *The Probiotics Revolution* and a professor of internal medicine, microbiology, and immunology at the University of Michigan Medical School. "Bacteria are not only the causes of disease but also the cause of good health. It is a very different view of bacteria and germs than you usually hear about."

Trillions of microorganisms of various strains reside in the GI tract, from the stomach to the colon. According to Huffnagle, this is also where the immune system, the body's seat of overall well-being, is based. Here, deep in your gut, is where the power struggle for health occurs. When the body first detects harmful bacteria, either an overgrowth of harmful bacteria or invaders from the outside, it generates an immune response that both makes you sick and, ideally, kills the offenders. The body's reaction to beneficial bacteria is the opposite. Huffnagle says these good microbes calm the immune response not just in your stomach but all over your body, increasing your well-being and protecting you, in some cases, from harmful bacteria.

An imbalance in your GI flora occurs when the bad bacteria proliferate and crowd out the beneficial ones. Preliminary research has found that specific strains of beneficial bacteria, introduced in the form of probiotic-rich foods or supplements, can help correct an imbalanced bacterial environment and alleviate a range of symptoms associated with it.

For example, studies are investigating how probiotics may help treat maladies ranging from irritable bowel syndrome (IBS) and urinary tract infections to depression and diabetes. The National Institutes of Health is funding research on whether probiotics improve immunity. Meanwhile, other studies are looking at whether specific strains can alleviate eczema, reduce the symptoms of asthma, or even prevent cavities.

"There are 10 times as many bacteria in the human gut as you have cells in your body," says Steven Solga, an assistant

bug food PROBIOTICS AND PREBIOTICS FOR A HEALTHFUL DIET

Your diet is a key player in a healthful bacterial balance. Foods rich in *probiotics*, or beneficial bacteria, support digestion and possibly help with a range of ailments. And *prebiotics*, or indigestible foods such as soluble fiber, stimulate the growth and activity of these healthy bacteria in the colon, according to researcher Gary Huffnagle. Since prebiotics usually also contain insoluble fiber, which creates bulk in your digestive tract and helps move harmful bacteria out, you get even more benefit.

Foods high in starch and sugar, on the other hand, feed harmful bacteria, causing them to proliferate and crowd out the beneficial strains.

PROBIOTIC-RICH FOODS	PREBIOTIC FOODS
Aged cheese	Berries
Fermented vegetables (pickles, sauerkraut, kimchi)	Legumes
Kefir	Oats and oat bran
Miso	Unpeeled fruit and vegetables
Yogurt	

professor of medicine at Johns Hopkins School of Medicine. "Half of the immune system, or maybe more, resides in the gut or circulates through it. So it stands to reason that there's a whole universe of potential importance to health in probiotics."

BALANCING ACT

A common cause of bacterial imbalance is the use of antibiotics—powerful medicines that kill not only their targets but almost everything else in their path, including beneficial intestinal bacteria. And since antibiotic use is so prevalent—scientists have found low levels of antibiotics in commercially raised meat and drinking-water supplies—you don't even have to take them to be affected.

"Think of your gut as a garden," says Dawn Motyka, a physician in Santa Cruz, California, who's had great results using probiotics for patients with IBS. "When you give antibiotics, you clear the ground and create fresh soil. If you aren't careful, the weeds—harmful bacteria—will move in. But if I add a ground cover—probiotics—on the bare dirt, weeds don't have a chance. If I keep feeding the ground cover, the weeds can't get in, and you have a healthy garden."

Another culprit in an imbalanced bacterial environment is the typical Western diet, which is rich in the things harmful bacteria feed on—refined carbohydrates and sugar—and often lacking in the soluble fiber that helps beneficial bacteria thrive. The result is an overabundance of harmful bacteria that can cause gastrointestinal problems such as constipation and, over time, bowel inflammation, as seen in conditions like Crohn's disease.

In addition, Huffnagle says that long-term bacterial imbalances act as irritants to the immune system in general, triggering extreme responses to normal stimuli. In fact, over time, a bacterial imbalance in your gut can lead to an overactive immune system and may contribute to the development of allergies or asthma, says Barry Goldin, professor of public health and family medicine at Tufts University School of Medicine.

Probiotics researchers, including Huffnagle, believe that in a generally healthy person, reducing those foods that feed the harmful bugs and adding more of the beneficial kinds can usually correct minor bacterial imbalances. Yogurt, fermented vegetables, and fermented cheese are all considered "high probiotic" products because they contain strains of beneficial bacteria that can help balance your intestinal flora.

Traditional health systems, such as Ayurveda and TCM, incorporate these good-for-you foods. Kimchi and miso,

which are both high in probiotics, are staples of some Asian diets. And lassi, an Indian drink made from fresh yogurt, is commonly taken after Ayurvedic meals as a digestive, according to Nancy Lonsdorf, a medical doctor and Ayurvedic physician in Vedic City, Iowa. "In Ayurveda, good digestion is the key to health," she says. "And probiotics are an important part of the diet for the role they play in supporting good digestion."

Huffnagle believes we could all benefit from daily doses of probiotics. For most of us, one or two servings of yogurt or any probiotic-rich food should suffice (*see "Bug Food," page 51*). But if you struggle with chronic GI or other problems, food sources may not be enough. That's where probiotic supplements come in.

With supplementation, identifying the right strain for your needs is essential. Also, make sure that you choose a product with a high colony-forming unit (CFU) number; between 3 billion and 15 billion CFUs are necessary to affect the course of many illnesses. And choose freeze-dried capsules that are kept refrigerated to extend the product's shelf life, Huffnagle says. Also, beneficial bacteria aren't interchangeable. There are dozens of strains of *Lactobacillus* for instance, and each is believed to be helpful for a different condition, depending on what other bacteria are dominant in your body. However, it's unclear whether bacterial strains that alleviate a condition in one person will work for another, Huffnagle says.

"That's where the research is at right now," he says. "So experiment: Try a probiotic for a few weeks, and if it doesn't work, try another." ■

Heather Boerner is a health writer in San Francisco who takes probiotics daily.

super heroes

THESE GOOD-FOR-YOU BACTERIA SHOW MEDICAL PROMISE.

Research suggests probiotics may be useful for treating conditions ranging from diarrhea to urinary tract infections. Here are the most-studied uses of specific bacterial helpers:

Lactobacillus reuteri and *L. rhamnosus*: When combined, these bacteria can reduce bacterial vaginosis and prevent urinary tract infections.

Lactobacillus rhamnosus GG or *Saccharomyces boulardii*: These probiotics restore healthy bacteria to the intestines after a course of antibiotic treatment. When taken with *Bifidobacteria* strains, they can combat the development of atopic dermatitis and eczema, primarily in infants.

Bifidobacteria: Strains of these bacteria can help with irritable bowel syndrome, and researchers are now studying how they can help treat inflammatory bowel disease.