

IN EVERY ISSUE

Intestinal Insight

BY KATY HUMAN

Probiotics may be good for the gut.

Trillions of microorganisms inhabit our gastrointestinal systems, and scientists are now learning just how tightly those communities of microbes are linked to our health. Got diarrhea from antibiotics or from chemotherapy? Research now suggests your suffering may be related to changes in intestinal flora, the unique community of microbes that normally inhabit your gastrointestinal system. Moreover, recharging your system with “good” bacteria just might provide some relief in the event that the normal flora are disturbed.

Probiotics are living microorganisms—usually bacteria or yeasts—found in yogurt, supplements, and some fermented foods. Interest in probiotics has been growing; Americans spent \$425 million on probiotic supplements in 2008, up 16 percent from 2007, according to the *Nutrition Business Journal*. Spending in 2007 was up 21 percent from 2006, *NBJ* reported.

The science is less clear than the enthusiasm, however. Researchers are both optimistic and cautious about the benefits and safety of probiotics, especially for cancer patients.

Human studies have shown that probiotics—usually in capsule form, but sometimes consumed as yogurt or taken as injections—can ease diarrhea associated with antibiotic use or from rotavirus infection by temporarily changing the makeup of microorganisms inhabiting the gastrointestinal system. Human and animal studies have also shown that probiotics can be used to treat chemotherapy-induced diarrhea in patients with colon cancer or breast cancer.

Intriguingly, researchers have also established that probiotic consumption can reduce the concentration of cancer-promoting proteins and other compounds in the gut—some produced by harmful bacteria.

But human experiments exploring the effects of probiotics on cancer have so far involved small numbers of patients and proved difficult to control, says Meredith Hullar, PhD, a microbial ecologist at the Fred Hutchinson Cancer Research Center in Seattle. Indeed, probiotic products being tested may contain different types or

numbers of microorganisms, or researchers may fail to confirm that the introduced probiotics actually took up residence in people's gastrointestinal systems, where they might cause an effect.

Moreover, it's not clear what risks probiotic consumption may pose, especially for cancer patients, says John Milner, PhD, chief of the nutritional science research group in the National Cancer Institute's Division of Cancer Prevention. Risk of infection or interaction with medication is not likely to be considerable with current products, he says. "But I'm not sure we have a monitoring system that would pick up some problems. And there are vulnerable individuals, people with compromised immune systems, and we don't know enough about them."

Another question of great interest is whether probiotics, or related prebiotics, prevent cancer, especially colorectal cancer. Prebiotics are nondigestible food items that stimulate the growth of bacteria, including beneficial probiotics, in the gut. Common prebiotics include inulin (in onions, leeks, and garlic) and other extracts from plants.

In animal studies, the link between probiotics and colorectal cancer appears to be strengthening: Rats fed fermented milk were more likely to survive chemically induced colon cancer than were controls, and feeding probiotic bacteria to mice inhibited tumor growth. "But even in animals, these are small effects," Milner says.

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—John Milner, PhD

In humans, researchers have shown that the simultaneous use of probiotics and prebiotics may reduce some of the "biomarkers" associated with colon cancer. But fewer biomarkers do not necessarily translate into lower cancer risk, reviewers pointed out. Still other human studies have been flatly contradictory, showing either no effect of prebiotics and probiotics or showing a negative effect, linking increased intake of supplements with somewhat higher cancer risk.

"The bottom line is that I just don't think we know enough at this point about probiotics and cancer. I don't think we can say anything compelling," Milner says. "But, there are hundreds of different types of microorganisms in your gut. It would be naïve to think they're just sitting there not doing anything."