Probiotics: The new miracle cure?

Research is finding that "friendly" bacteria can help cure a host of afflictions, from digestive problems to skin diseases. New research is looking into probiotics' beneficial effects on the heart and the brain, and their ability to cure the common cold

BY JADE HEMEON

YOU CAN HARDLY TURN ON A TV OR open a magazine these days without seeing an ad for a probiotic product. The ads extol the virtues of probiotics, but tell us little about how they work.

"The average person doesn't know what probiotics are or what they do," says Jeremy Burton, deputy director of the **Canadian Research & Development Centre for Probiotics** (CRDCP) in London, Ont. "Probiotics can be beneficial in the gastrointestinal tract. But they also have a healthy influence beyond that site, and their influence could extend even as far as the brain."

Probiotic products are based on the "good" bacteria that naturally inhabit the human digestive system. Probiotics have beneficial effects on human health that are increasingly coming to light through scientific research. The most common benefits are the alleviation of digestive problems, diarrhea, skin diseases, mouth infections and urogenital infections. But new frontiers are opening up as research expands our knowledge of the immunity-boosting and anti-inflammatory properties of probiotics, as well as their effects on the human heart and the brain.

The human body contains vast amounts of bacteria, including the "friendly" bacteria and pathogenic strains such as staphylococcus and streptococcus, which can cause disease if they become dominant. Although the process is not well understood by scientists, certain amounts of even the "bad" bacteria are thought to play an important role in the functioning of our immune systems.

"When the bacterial balance in our bodies becomes disrupted, we get sick," says Michael Shahani, CEO of **Nebraska Cultures Inc.**, a California-based manufacturer of probiotics. "The ingestion of probiotics can help correct deficiencies and bring bacterial systems into balance, helping in digestion, the processing of vitamins and minerals, and, ultimately, boosting the immune system."

Probiotics are defined by the World Health Organization as "live microorganisms that, when administered in adequate amount, confer a health benefit on the host." Unlike antibiotics, probiotics stimulate rather than squelch the growth of certain microorganisms in the human body. While antibiotics reduce immune system activity as a result of killing off a wide range of bacteria, the introduction of certain "good" bacteria into the stomach by probiotics has been found to boost immune system activity.

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These friendly bacteria are found in foods containing live bacterial cultures, such as yogurt, kefir (a fermented milk drink), tempeh (a fermented soybean food), miso (a Japanese seasoning made with fermented rice), sauerkraut and buttermilk. However, the amount of probiotic microbes in food is not standardized, and the doses found in food are smaller than those found in dietary supplements that contain the live bacteria in freeze-dried form and are sold through health-food stores and pharmacies.

Probiotic dietary supplements typically contain billions of cells of healthy bacteria, a dose difficult to replicate naturally in food. The most popular supplements contain lactobacillus or bifida bacteria, although some brands contain multiple strains.

Studies have shown that probiotics can aid in treating an array of intestinal afflictions, including irritable bowel syndrome, lactose intolerance and diarrhea related to antibiotics, travel and C. difficile bacteria. Probiotics also can help in the treatment of yeast infections in the genital and urinary tracts, respiratory infections and skin disorders such as fever blisters, eczema, acne and canker sores.

Researchers now are studying the anti-inflammatory effects of probiotics. While inflammation normally helps the body to fight off infection, chronically high levels of inflammation may cause swelling and pain, and damage tissues. Psoriasis, ulcerative colitis and chronic fatigue syndrome are diseases in which inflammation may play a role.

The effect of probiotics on emotional disorders relating to depression and anxiety also is being studied.

In the past, probiotics had been obtained naturally in the diet through the consumption of fermented and non-sterilized foods. But with modern methods of refrigeration, processing and preserving, many of these bacteria are being removed. In addition, natural childbirth through the birth canal and breastfeeding have been proven to provide infants with a particular bacterial mix in their systems that affects the development of their immune system.

Researchers believe the increase in births by caesarian section and feeding using formula have lessened the body's ability to set up the optimal bacterial blueprint. Some medical experts believe this trend may have a bearing on development of the immune system and the high number of children with such ailments as allergies. Probiotics can help counteract certain imbalances and deficiencies.

"The mix of bacteria in the gut is established early in life and stays static," Shahani says. "A lot of people have deficiencies and could benefit from probiotics, but they don't know until they try. Many are pleasantly surprised to find their digestion is improved and they no longer suffer from chronic issues such as lactose intolerance, constipation, diarrhea, flatulence and bloating."

Poor food choices, emotional stress, lack of sleep and the use of various drugs can all erode the healthy balance of bacteria in our bodies. The widespread use of antibiotics that indiscriminately kill bacteria in the human body have resulted in some side effects, as both the good and the bad bacteria get wiped out — as well as resulting in the development of stronger strains of disease-causing bacteria that are more resistant to antibiotics.

Probiotics have been shown in studies to reduce the post-antibiotic overgrowth of bacteria such as staphylococci and enterococci, which are associated with infection and future antibiotic resistance. One U.S. study has shown that taking probiotics before starting antibiotics reduces the risk of developing antibiotic-associated diarrhea by about 60%.

"There is more awareness on the part of doctors," Shahani says. "And many will suggest their patients take probiotics along with a prescribed antibiotic to prevent problems."

Patients at the Cincinnati Children's Hospital are given probiotics as a matter of course. The hospital cites 63 studies of more than 8,000 infants showing that probiotics are safe and have a clear benefit in reducing the occurrence and duration of diarrhea.

The first formal observation of the benefits of healthy bacteria was made around the beginning of the 20th century by Russian-born microbiologist Elie Metchnikoff, a Nobel laureate and professor at the Pasteur Institute in Paris. Metchnikoff believed certain harmful microbes in the stomach flora of humans were responsible for physical changes associated with aging. He proposed that the culture of the gut could be modified with the addition of useful microbes.

Metchnikoff had observed that certain rural populations in Europe — such as those of Bulgaria and the Russian steppes — consumed large quantities of milk fermented by lactic acid bacteria and were exceptionally long-lived. He found that his health benefited when he added fermented or soured milk products to his diet. The trend caught on in Paris.

Research later spread to the U.S., where the term "probiotics" was first introduced in 1953. Probiotics currently are being studied for new uses, including the elusive cure for the common cold. Probiotic use is growing at a rate of 15%-20% a year, based on retail sales, the CRDCP's Burton says, and he expects this use to grow as research proves new applications.

Says Burton: "We've just seen the tip of the iceberg in terms of our understanding of how probiotics work and the wider applications." IE