



# meet the friendly bacteria!

*No kidding: good bacteria in the gut help build immunity, prevent stomach upsets and make you stronger. Find out more about friendly micro-organisms called probiotics and how to get the best out of them*

BY NEETI JHA

**D**o you know what's common between *Lactobacillus acidophilus*, *Lactobacillus bulgaricus* and *Bifidobacterium bifidum*? Well, apart from the tongue-twisting nature of their names, it's also their innate goodness! You see, they are a few of the most useful probiotics known today. Probiotics (meaning pro-life) are 'friendly' micro-organisms (mainly bacteria, but also virus and yeast) which, on ingestion, are believed to confer several health benefits to the user. Dr Neerja Hajela, head-science, Yakult Danone India, says, "Scientific evidence points to the fact that probiotics play an important role in digestive, immunological and respiratory functions." From proven effects in protecting the body from intestinal tract infections and autoimmune diseases to now discovering their role in reducing the risk of certain types of cancers—probiotics seem to have the power to keep you hale and hearty.

## HOW PROBIOTICS KEEP YOU HEALTHY

**They protect us from gastrointestinal disorders.** "Probiotics help in the alleviation of acute diarrhoea, antibiotics-associated diarrhoea and improve symptoms of constipation," says Hajela, adding, "Some studies suggest that they may also play a role in controlling irritable bowel syndrome and inflammatory bowel disease." According to Jean-Michel Antoine, scientific director at Danone Institute International (France), probiotics improve constipation by regulating intestinal transit time, which leads to a feeling of lightness and therefore good health.

Dr Dipika Sur of the National Institute of



Cholera and Enteric Diseases, Kolkata, conducted a study in 2008-09 on the effect of probiotics in preventing diarrhoea in Kolkata's slum children. "We found that the daily intake of a probiotic drink decreased the incidence of acute diarrhoea. Within three months, the level of protective efficacy for probiotics was found to be 14%," she says.

CONSUMING  
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IMMUNITY



**They help build immunity.** On consumption, probiotics do not become established members of the gut, explains Hajela. "During the process of transient colonisation, some probiotic strains are known to boost both the innate and acquired immune responses. They may enhance the natural killer cell activity, increase the number of macrophages (fighter cells), increase antibody production and regulate the T-helper cell response." Thus, boosting the body's resistance to infections.

**They protect against nutritional deficiencies.** According to Ishi Khosla, clinical nutritionist and *Prevention* columnist, "Probiotics protect against nutritional deficiencies as they enhance the absorption of vital nutrients, including essential vitamins and minerals like calcium, iron, zinc, magnesium and improve Vitamin B status." And once these deficiencies are taken care of, conditions like osteoporosis and anaemia are prevented too.

**They reduce symptoms of lactose intolerance.** This is a condition in which a person is unable to digest significant amounts of lactose, the major sugar present in milk and milk products. "A well-substantiated and proven advantage of probiotics has been found in preventing and reducing symptoms of lactose intolerance," says Dr JB Prajapati, professor and head, Dairy Microbiology Department, SMC College of Dairy

PHOTOGRAPH BY DEEP PAHWA; MODEL: PAARKHI PAHWA

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## CHECK THE PRODUCT LABEL

Before adding a probiotic product to your shopping cart, read the label to check the following:

- Genus, species, strain (Example: *Lactobacillus casei strain Shirota*).
- Number of viable cells of the probiotic strain should be specified at the level at which efficacy is claimed and at the end of shelf life.
- Health benefits.
- Storage conditions. Most probiotics delivered in dairy foods require refrigeration to ensure the viability of the strain.

—Dr Neerja Hajela,  
head, science, Yakult  
Danone India Pvt. Ltd.



Science, Anand Agricultural University, Gujarat, who's also coordinator of SASNET – Fermented Foods (Swedish South Asian Studies Network).

## STUDIES SHOW THAT PROBIOTICS HAVE MORE BENEFITS

### They could control allergies.

Doctors say that as probiotics focus on keeping the digestive and immune system healthy, they have a good chance of controlling allergies. In a few case studies done on children, a long-term reduction has been found in instances of atopic eczema (an itchy, non-contagious skin rash), which is often the first sign of an allergic reaction.

**They could reduce respiratory tract infections.** Studies have shown that probiotics reduce the incidence and duration of respiratory tract infection symptoms in children and adults. (For more see box on next page).

## HOW PROBIOTICS WORK

The most important point to understand about the efficacy of probiotics is that it does not follow the 'one-bacteria-treats-it-all' formula. "The effect totally depends on the strain of the micro-organism consumed. And even then, the results vary from one individual to another," says Prajapati. So, while *Lactobacillus casei strain Shirota* may help improve digestion and build immunity, *Lactobacillus rhamnosus GG* may specifically prevent antibiotic-related diarrhoea.

"In simple terms, once there, they change the conditions of the intestine, creating a favourable environment," explains Hajela. She adds that probiotic strains exert their beneficial effects through a variety of mechanisms, which include alteration in the systemic and mucosal immune system, anti-microbial action, effects on the intestinal barrier function, alterations in metabolic

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# 5 NEW LEARNINGS ON PROBIOTICS

## NEW WISDOM FROM THE FRONTIERS OF RESEARCH THAT MAY MAKE PREVENTION OF ILLNESSES EASIER

**ALMOST** 100 years ago, Dr Minoru Shirota, a Japanese physician first cultured a strain of lactic acid—*Lactobacillus casei Shirota* (LcS)—that helped fight typhoid, dysentery and cholera. Research around friendly bacteria continues. Scientists have now come up with new findings that have opened up newer possibilities. It seems probiotics may now have a preventive role in cancers, influenza and even busting belly fat! Here are some important additional health benefits that probiotics may have, from the edge of scientific research.

**1 Prevention of recurrence of certain cancers.** The evidence that dietary fibre protects against colorectal cancer is not new. However, recently Japanese researchers

found that LcS also prevented recurrence of colorectal tumours. Researchers divided 398 men and women who had had at least 2 colorectal tumours removed, into 4 groups and administered wheat bran, LcS, both or neither. According to the researchers, the results suggested that LcS prevented atypia of colorectal tumours. Dr Koji Nomoto, senior researcher at the Yakult Central Institute for Microbiological Research, Tokyo says: "LcS has been shown to have preventive effects on the recurrence of bladder cancer and colon cancer in some clinical trials."

**2 Prevention of chest infections.** A study by Prof. Hisako Yasui, of the Graduate School of Agriculture, Shinshu University, Japan, has shown that LcS may be useful

in preventing respiratory tract infections for elderly people with low immune function and for newborns and infants with immature immune systems. Researchers tested the effect of LcS on aged and infant mice and found that it prevented influenza and chest infections.

### 3 Protection of biliary cancer patients from post-operative complications.

According to Nomoto, treatments such as antibiotic chemotherapy and major surgical operations often induce disruption of microflora balance in the gut and subsequent intestinal infections with the harmful bacteria and antibiotic-resistant pathogens invading it. "It is suggested that probiotics (synbiotics) might protect patients from such opportunistic infections through improvement of intestinal microbial imbalance and also by augmentation of host defence mechanisms against the bacterial infections," says Nomoto. However, experts say more data is required to confirm clinical effectiveness of this principle.

**4 Reducing anxiety in chronic fatigue syndrome patients.** Research shows that patients with chronic fatigue

syndrome (CFS) and other functional somatic disorders have alterations in the intestinal microbial flora. Emerging studies have suggested that pathogenic and non-pathogenic gut bacteria may influence mood-related symptoms and even behaviour in animals and humans. In a pilot study from the Department of Nutritional Sciences, University of Toronto, 39 CFS patients were put through a randomised trial to receive either LcS or a placebo daily for two months. The researchers found a significant rise in both *Lactobacillus* and *Bifidobacteria* in those taking the probiotic compared to the control group.

### 5 Busting abdominal fat.

Japanese researchers have found that supplementing the diets of overweight people with one type of human gut microbe makes them lose weight. "The bacteria may cause weight loss by inhibiting fat absorption in the intestine," says lead author Yukio Kadooka. During the study, the team gave 87 overweight volunteers 100 grams of fermented milk, twice a day with their normal diets. The milk drunk by half of the group was enriched with *Lactobacillus gasseri*. After 12 weeks, these volunteers had lost an average of 1 kg, while their counterparts showed no change in weight. Scans revealed that they had lost 4.6% of their 'bad', visceral fat. Hip and waist circumference measures also went down by an average of 1.7 and 1.5 cm respectively.

—By Sanghamitra Chakraborty



## PREBIOTICS & SYNBIOTICS

Prebiotics are substances found in other foods that feed the probiotics. "In a way, they are the probiotic's lunch," says Khosla. To ensure good gut flora, it's important to take plenty of prebiotic food. "These include high-fibre foods like whole-grains, oats, wheat bran, barley, *isabgol* (psyllium), soyabeans and soya-based products, pulses, flaxseeds, sunflower seeds, fenugreek seeds, garlic, onions, leek (like spring onions), carrots and citrus fruits," she adds.

Synbiotics are substances which combine the benefits of both probiotics and prebiotics. While probiotics are mainly active in the small intestine and prebiotics only in the large intestine, the combination of the two give a synergistic effect. Example: You could try a combination of *bifidobacteria* (fermented milk) and *fructo-oligosaccharides* (oats and leeks).



activities, anti-oxidative activities and anti-carcinogenic effects. However, to work its magic, the probiotic strain needs to be resistant to bile and pancreatic juices and reach the intestines live in large numbers. Also, "as these organisms don't colonise in the intestine, there's a need for daily consumption for sustained effect," informs Sur.

### HOW MUCH TO TAKE

Khosla suggests including probiotics in your diet through fermented dairy products, such as yoghurt, buttermilk (*chaas*) and *lassi*. "But the cultures may not be live in all commercially available ones. Dietary supplements like probiotic drinks, powders, capsules etc. are quite useful as they are highly concentrated sources of good bacteria compared to the natural ones," she says.

As for the quantity to be consumed,

experts differ in their recommendation. Hajela says, "Most experts advise an intake of  $10^7$  cells (100 million) per day. The dose response varies greatly with the strain of the bacteria."

Prajapati advises, "Keep in mind that as probiotic food contains live micro-organisms, it should be stored in the refrigerator. Try to consume them as fresh as possible. Dried probiotic cells in certain supplements have a longer shelf-life." He further adds that doctors sometimes prescribe probiotics along with heavy antibiotic doses to replenish the gut microflora (the millions of bacteria already present). "But, this rarely works as the potency of the drugs may kill the good bacteria as well," he adds. He also suggests that probiotics should not be viewed as a cure, but as a food supplement that may help in reducing the risk of contracting infections and maintaining one's general well-being. ■