

# Editorial



## Human Health Benefits From Probiotics

Doi: <https://doi.org/10.3329/kyamcj.v14i01.45711>

Probiotics are live microbes (mostly bacteria and yeasts) that are grouped and classified for their known and unknown varied mechanisms of health benefits when ingested or consumed or applied to the body. A human probiotic has several characteristics, that include: 1. it must be isolated from a human body, 2. after being swallowed, it can survive in intestines, 3. it has a proved health benefit, 4. it can safely be consumed. There are many bacterial types that can be grouped as probiotics. But there are two specific types that are considered the most commonly as probiotic bacteria. They are *Lactobacillus* and *Bifidobacterium* found in stores. Most common probiotic yeast is *Saccharomyces boulardii*.<sup>1</sup>

Probiotics are of enormous benefit to keep the body healthy and working well. They work in many that include combatting off and eliminating harmful microbes making the subjects feel better. Probiotics may have a variety of effects in the body, and different probiotics may act in different ways. Probiotics help the body maintaining a healthy community of microbes or help the microbial community returning to a healthy condition after being disarranged and rearranged. Probiotics can produce substances with expected and desired effects. Probiotics can affect immunological and inflammatory responses.<sup>2</sup>

Microbiome is the combination of trillions of a diverse community of such microbes as bacteria, fungi including yeasts, viruses, and their genes, protozoa, etc. that naturally live inside the living bodies as they live on them. These microscopic entities work in several ways to health well-being. Each individual has a unique microbiome. Even twins even have different microbiomes. The most common site linked to beneficial microbes is the gut (largely the large intestine). Several other sites in and on human body harbor probiotics. These sites are directly or naturally (through natural orifices) are in contact with the extraneous environment. Thus, these sites include gut, mouth, vagina, urinary tract, skin, lungs, etc. The principal action of probiotics is to create, maintain and balance a healthy dynamic equilibrium in the body. Thus, it tends to keep the body either at neutral or at a better process. On need, probiotics multiply to increase their fighting force against their counterpart the noxious microbes or agents. They can support the immune system. They can contain, control and eliminate inflammation. Certain probiotics can help in digestion of ingested food, combat, contain and eliminate parasitic microbes, synthesize or manufacture certain vitamins, support the immune systems of gut in prohibiting the entry of parasites into circulation, breaking down and absorption of medicines, etc. This balancing beneficial action of probiotics occur as usual natural process all the time within the living human body. Usually, there is no need of ingestion of probiotic supplement for this natural beneficial job. That is to say that probiotics are natural component of normal human life. Ingestion of well-balanced diet rich in fiber daily can keep the probiotic activity at normalcy. With a lot of

probable positive outcomes, enormous research-work is their known, as how probiotics do beneficial actions in human body and definite answers are yet to be uncovered as how probiotics can help in various biological processes.<sup>2,3</sup>

Probiotics are found in yogurt and other fermented foods, dietary supplements, and beauty products. They are often intentionally added as food supplements to yoghurts in industries. Probiotic bacteria are well-known as 'good' or 'friendly' bacteria. Curds contain Lactic acid bacteria (*Lactobacillus bacterium*). Yugharts (both nonflavored and flavored) contain both *Lactobacillus bulgaricus* bacterium and *streptococcus thermophilus*. These probiotics (friendly microbes) naturally live within human body. These probiotics often eliminate infecting microbes to create an expected balance. Probiotic supplements are recommended for expected added health outcomes. *Lactobacillus* is now respected as the most common probiotic studied. It is present in yogurts and other fermented foods. Different strains can be beneficial in people with diarrhea and may be helpful in people who can't digest lactose. Many healthy friendly good bacteria are there living in the intestines and vagina where they protect human tissues against the insults from pathogenic microbes, especially from the pathogenic bacteria.

These probiotics work within our body beyond our knowledge. Lactic acid bacteria (LAB) have traditionally been used in the fermentation process for several thousands of years. Recent such applications as the use of living cultures as probiotics have significantly increased our attention as an industrial interest. Related probiotic bacterial strains differ considerably in both of their genotypes and phenotypes. Not all lactobacilli are 'probiotic', as all homo species that lived on the earth are not *Homo sapiens*. Within the genus 'Lactobacillus', there are multiple well-known probiotic species, including *Lactobacillus reuteri*, *Lactobacillus rhamnosus*, and *Lactobacillus acidophilus*. The *Lactobacillus* genus contains many of the world's most highly researched probiotic bacteria which have been featured in numerous countless clinical trials for decades. One such strain is *Lactobacillus acidophilus* NCFM, the most extensively researched strain of *Lactobacillus acidophilus*. *Lactobacillus acidophilus* NCFM is one of the probiotic strains found in foods (milk, yogurt, and toddler formula) and dietary supplements, etc. (NCFM stands for 'North Carolina Food Microbiology', the research laboratory at North Carolina State University where the isolation of this probiotic first took place. *Bifidobacterium* is found in some dairy products. It may be helpful in easing the symptoms of IBS (irritable bowel syndrome) and of some other conditions. The most common probiotic yeast *Saccharomyces boulardii* is found in many probiotic preparations. It seems to help in fighting diarrhea and some other digestive problems. Different kinds of probiotics may have different effects. If a specific kind of *Lactobacillus* helps preventing an illness, that

doesn't necessarily mean that another kind of *Lactobacillus* or anyone of the *Bifidobacterium* probiotics would do the same thing of preventing that illness.<sup>1-3</sup>

In addition, there are some identified known medical conditions where probiotics are considered helpful. This helpful outcome has individual as well as probiotic variations. Probiotics can benefit both adults and children. Some pathological processes where probiotics are taken as through foods or food-supplements include Diarrhea (antibiotic associated diarrhea and pseudomembranous colitis caused by *Clostridioides difficile* infection, other infectious diarrhea (caused by viruses, bacteria, or parasites), diarrhea caused by cancer treatment, diverticular disease, traveler's diarrhea, dental caries (i.e., tooth decay), periodontal and gum diseases, infant colic, allergic rhinitis (hay fever), asthma, atopic dermatitis (i.e., eczema) in any age, prevention of allergies, acne, hepatic encephalopathy, yeast infections, constipation, irritable bowel syndrome (IBS), inflammatory bowel disease (IBD), lactose intolerance, urinary tract infections (UTIs), such upper respiratory infections as otitis, sinusitis, pharyngitis, sore-throat, common cold, etc., sepsis (especially in infants), prevention of necrotizing enterocolitis and sepsis in premature infants, and induction or maintenance of remission in ulcerative colitis. etc. Even a probiotic can help shortening the symptoms of illness if a child is already on antibiotics (if rightly indicated). In children, probiotics can help relieving constipation, acid reflux, diarrhea, gas (flatulence) and eczema, like those in adults. Thus, probiotics have proved helpful for such skin conditions as eczema, preventing allergies and colds, to preserve and maintain urinary, vaginal, oral and gastrointestinal health. In addition, Probiotics may help in reducing postmenopausal bone loss, relieving chronic pelvic pain. A specific *Bifidobacterium* strain (changing in short-chain fatty acid production in the gut) may be helpful in antibiotic-associated diarrhea.<sup>1-3</sup>

Through intake of foods, drinks and food-supplements, one can increase the quantity of probiotics in one's body. Daily intake of such certain foods as fermented yogurts, curds, and pickles, certain such drinks as kombucha (fermented tea) or kefir (fermented dairy drink) can increase extra probiotics in body. Other than foods, probiotics can be added to the daily diet at any time of the day as food additives. These are not classical drugs, and as such doesn't need rigorous approval by any regulatory body (like FDA or DGDA). The FDA or DGDA regulates probiotics as they regulate foods, unlike regulation of drugs, medicines and medications. Unlike pharmaceuticals, probiotic supplements manufacturers need not essentially show that their products are safe or that they work to cure diseases. That is to say that the manufacturers can sell-supplement simply with "claims" of safety, efficacy and effectiveness. Simply advice from such health care provider as a physician is enough to undertake any dietary change like increased intake of probiotic-rich natural foods and probiotic added food additives. Food packs may have the label 'live and active cultures'. Probiotic supplements may interfere with other medicines, drugs or medication. Some probiotic rich food items include yoghurts, buttermilk, sourdough bread, cottage cheese, kombucha, tempeh, fermented pickles, fermented sauerkraut, kimchi, miso soup. However, one is to ensure a balanced and healthy

meal each time of daily intake (i.e., breakfast, lunch, supper, dinner, banquet, etc.). Adding probiotic-rich foods into a diet would not hurt, but a balanced diet is still the key to remain healthy and hearty. Adding too much of just one food may prohibit one's body from reaping the benefits of other food groups. There are several ways of taking probiotic supplements. Probiotics are available in a variety of such forms as foods, drinks, capsules, pills, powders, liquids, etc. Several probiotic microbial strains are very sensitive and fragile, requiring protection from heat, humidity, light and oxygen, etc. The probiotics might start to break down or die if they are exposed to these agents. Thus, one may need to refrigerate probiotics or store it in a convenient place. Refrigeration of certain probiotic strains entrusts that they are viable when one takes them and will provide its full benefit. One is to ensure its correct storage and use before its expiry date.<sup>1,3</sup>

A Probiotic supplement can be integrated or incorporated with a prebiotic. Prebiotics are non-digestible such food ingredients as complex carbohydrates (e.g., inulin, pectin and resistant starches), that feed the microorganisms in the gut, thus benefiting the host by selectively stimulating the growth and/or activity of one or a limited number of microbes in the colon and finally improving the host health. Prebiotics are essentially the food source for the probiotics. A synbiotic is a probiotic supplement that combines a probiotic and prebiotic.<sup>2</sup>

Probiotic microbes, probiotic foods and probiotic supplements are generally entrusted to be quite safe. However, they may cause allergic reactions and mild gastro-intestinal upset, diarrhoea, or flatulence (passing gas) and bloating for the first few days of starting use. Probiotics often possess a spectacular claim of apparently safe use, especially in healthy people. But, some studies have looked elaborately into the safety of probiotics, leading to lack of solid information on the frequency and severity of ill side effects. The potential risks of probiotics should be carefully weighed against their benefits. Possible harmful effects of probiotics include transfer of antibiotic resistant genes from probiotic microorganisms to other microorganisms in the digestive tract. Probiotic contaminants may also pose serious health risks. Some people need to pay especial caution when using these probiotic supplements. Someone may be at a higher risk of getting infection, getting resistance to some antibiotics and getting harmful byproducts from the probiotic supplement. These vulnerable people are those who have 1. weakened immune system, 2. immunosuppressive chemotherapy or steroid therapy, 3. a critical illness, 4. recently had chemotherapy or surgery, etc.<sup>3</sup>

Though probiotics are generally considered quite safe and harmless in majority of the people, there should be often a 'try' to see if they helped people with different medical problems. Researchers are attempting to formulate the principles how and when probiotics should be given for use, as well as how efficacious and effective they are. Healthcare providers should be aware of situations when probiotics are not to be used. Healthcare providers should have a conversation first with the responsive people before starting a probiotic supplement. There are many probiotic supplements available commercially, specifically prepared for children including infants. It is essential to

have a discussion with a pediatrician before giving any probiotic supplement to a child, or modifying the child's diet for probiotic-rich foods and drinks.<sup>1,2</sup>

Currently, studies on probiotics and people's interest in probiotics and probiotic foods have remarkably increased. In accordance to a recent research, the global Probiotics market is going to be flourished during the subsequent years. There is still no end of research to ensure the effective probiotic supplements for treating different pathologies. More and more researches are still needed, though many researchers have/had identified positive results on impacts of probiotic supplements.<sup>3</sup>

## References

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