
Miracle of Probiotic in Human Health

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ABSTRACT

Understanding about the microorganism in our body might be beneficial or even necessary for us can be a challenging but at the same time that is the reality. A great number of beneficial bacteria live throughout our entire body, but mainly in our intestines, where they serve a vital and diversified function in maintaining our health. Probiotics is a special food that develops abundant number of beneficial microorganism inside the gut. This article discovered role of probiotic food in human health and types of probiotic foods.

INTRODUCTION

There are billions-trillions of bacteria presence in our digestive gut. There are more bacteria in our digestive tract than the number of cells in our body. Probiotics refer to a mixture of bacteria that are either the same or very similar to those found inside our body. These probiotics presents in our body to enhancing fermentation process and involved in digestion and absorption of food materials. Probiotics possess numerous health benefits when consumed or applied to our body. They help us in many ways, like smooth gut functioning and fighting off harmful microbes, thus improving our general immunity. Probiotic foods producing large amount lactic acid bacteria that creates acidic environment in the gut this leads to paving the way of fermentation process inside gut. People with high intake of fermented foods they had higher lifespans. Among adults, probiotics were the 3rd most frequently used dietary supplement, and their used rates were increased.

The most common probiotics are

- Lactobacillus,
- Yeast,
- Bifidobacterium,
- *Streptococcus thermophilus*,
- *Saccharomyces boulardii*.

Mechanism of action of probiotics

1. Enhancement of epithelial barrier

Probiotics help strengthen the intestinal barrier, which is essential for preventing harmful substances and microbes in the bloodstream. The existing intestinal barrier defense system consists of a mucous layer, Anti-microbial peptides, Secretory IgA, etc. If any of the barriers, as mentioned earlier, becomes compromised, then the harmful microbes and substances could gain easy access inside the inner layers of our intestine, i.e., sub-mucosa, and cause inflammatory response, which causes intestinal disorders.

2. Mucin secretion

Mucin glycoproteins (Mucins) are major macromolecular components present in the mucus and affect human health. Probiotics may promote their secretion as a way to increase barrier function. Several Lactobacillus species increase mucin secretion in the human intestine.

3. Immune system regulation

Probiotics interact with our immune system by stimulating activity and regulating responses. They promote the activity of immune cells, thus leading to improved immune function hence a better defense against invasive pathogens.

4. Increased adhesion to intestinal mucosa

Adhering to the intestinal mucosa is necessary for interaction between the probiotics, i.e., microbes and the host. This adhesion is necessary to increase the activity of the immune system to fight against pathogens. This adhesion has now emerged as new selection criteria for new probiotic strains.

5. Competitive exclusion of pathogenic micro-organisms

A scenario occurs when a type of bacteria compete more ferociously for resources and receptor sites in the host body that are not occupied by the pathogenic organism, making it difficult for the pathogens to survive and multiply. The strategy employed by bacteria, however, differs depending on the species and may involve the development of an unfavorable micro-ecology, the eradication of accessible receptor sites, the manufacture of anti-microbial compounds, or the competitive deletion of vital nutrients. For instance, the bacteria Lactobacillus and Bifidobacterium inhibit a wide variety of infections, such as *Salmonella*, *Listeria*, and *E. coli*.

Role of probiotics in human health

- Maintaining gut health: Probiotics help maintain a balance among the bacterial population in the digestive tract, which is essential for smooth and normal gut functioning.

- Probiotics help build and develop immunity by stimulating and regulating our body's immune cells.
- They also tend to help in digesting complex food which we eat; they produce enzymes that assist in the breakdown process.
- Help in maintaining oral health: they do this by inhibiting the growth of harmful microbes in the mouth, further help in preventing gum diseases, cavities, etc.,
- Role in women's health: They benefit women's health by preventing and treating vaginal infections and maintaining urogenital health.

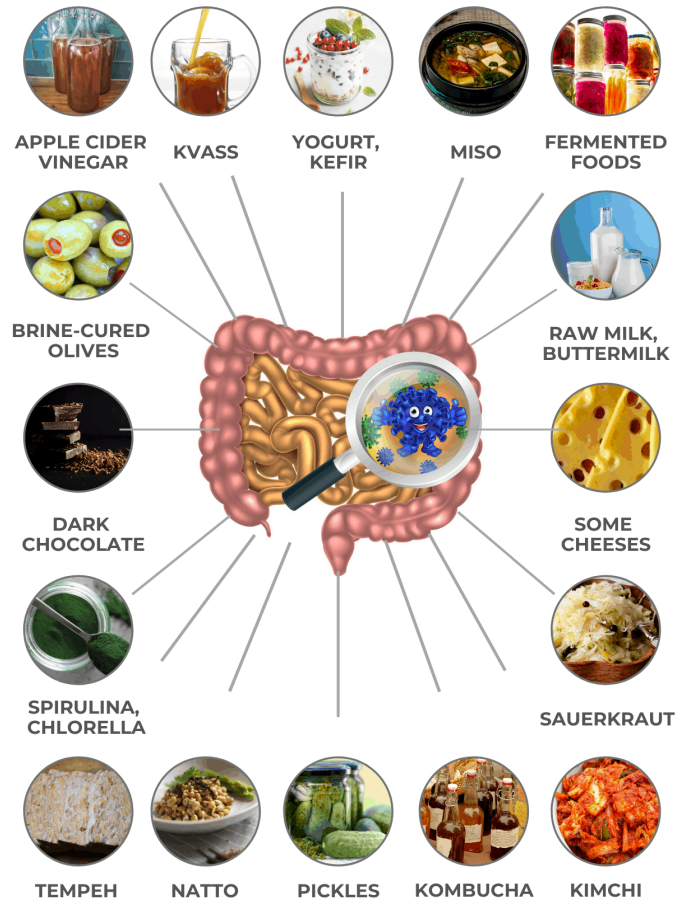


Figure 1. Probiotic foods

Conversant sources of probiotics

Probiotics are naturally found in certain food and food products and are available as dietary supplements. Some common sources include the following:

Yogurt is one of the most common natural sources of probiotics, made by fermenting milk mainly with probiotics such as lactic acid bacteria and bifidobacteria.

Pickle is most common foods used in Indian cuisine and can be prepared by fruits, vegetables and some sea foods. It contains beneficial bacteria. It increases the salivary gland ptyalin secretion. It improves digestion and producing more beneficial bacteria in gut.

Keffir is a fermented milk drink prepared by adding kefir grains to cow or goat's milk, and it has a much thinner consistency than yogurt.

Tempeh: It is a fermented soybean product, and its roots are from Indonesia; it is rich in probiotics and acts as a good substitute for meat. The main problem with soybean products is that they are rich in phytic acid, which makes absorption of minerals such as iron and zinc and reduces the phytic acid content and even produces vitamin B₁₂, a nutrient that soybean does not contain naturally.

Sauerkraut: It is a fermented product of cabbage rich in probiotics; it has a sour and salty taste and rich in fiber, vitamin C, and K. It also contains sodium, iron, and potassium.

Kombucha: It is fermented tea and popular among Asians; some believe that it reduces the chances of getting cancer and diabetes; however, these lack scientific evidence and human trials, but still, they possess beneficial effects as they are rich in probiotics.

Traditional buttermilk: It is the liquid portion left after the churning of butter, also called a grandma probiotic. It is a rich source of probiotics and is consumed mainly in India, Nepal, and Pakistan. It contains vitamin B₁₂, calcium, and phosphorus.

Miso: It is a traditional Japanese seasoning made by fermenting soybean with salt and fungi called Koji. It is salty in taste and available in various colors, such as white, yellow, red, and brown. It is rich in protein, fiber, vitamin K, manganese, and copper. Some research suggests that it can reduce obesity, reduce cancer risk, and high blood pressure.

Natto: It is similar to miso and tempeh; it contains a bacteria- *Bacillus subtilis*. It is a staple food in Japan; people mix it with rice and have it for breakfast. It is rich in vitamin K₂, responsible for bone strength and cardiovascular health.

Dietary supplements: Probiotics are consumed as dietary supplements in the form of tablets, powders, capsules, etc. These supplements contain probiotics in adequate proportions, and when consumed as per the prescribed methods (which varies as per individual), it provides numerous health benefits.

Probiotics for infants and children: Proper establishment of beneficial microbes in our body is essential for healthier beings, and probiotics provide a source for improving our body status. Probiotics even stimulate the growth and maturation of immune cells in infants and greatly enhance general well-being, immunity, gut functioning. Strains of probiotics microbes such as lactobacillus and Bifidobacterium have shown a positive impact on managing inflammatory bowel disease and irritable bowel syndrome. Emerging research states that probiotics even influence our mental state and could alleviate mental stress, anxiety, etc.

CONCLUSION

Probiotics are a mix of microbes including bacteria, yeast and fungi that have proven to benefit the human body and aids in maintaining our body health, preventing various diseases. Abundant number of probiotics foods available naturally. These probiotic foods contribute to the survival of bacteria population and restore normal beneficial bacteria in our gut.

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