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REVIEW ARTICLE

Blessing of Nature- 'Probiotics'

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ABSTRACT
Nature has given a very precious gift to humans in the form of Probiotics. Probiotic have such natural power that they help the immune system fight against harmful microorganisms by taking them regularly, it also protects humans from harmful diseases and infections like gastrointestinal tract infection, urine infection, diabetes, obesity, allergy, and heart disease by lowering cholesterol. It is very important to have it in the right proportion as a supplement. Consumption of probiotics regularly will create some magical changes in the human body such as boosting immunity, maintaining body weight, regulating a healthy metabolism, and improving gut health. Probiotics are naturally presented in dairy food and fermented food and are commercially available as supplements. The primary purpose of this article is to raise people's awareness of probiotics so that they will understand their benefits and start using them regularly.
Key Words- Disease, Gut microflora, Lactic acid bacteria, Mechanism, Probiotic

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INTRODUCTION

Probiotics and human health have a history of the association. Consuming fermented foods—which it is known that the Greek and Roman populations did a lot of—began the history of probiotics along with the history of humans. Probiotics can be defined as "living microorganisms that when administered during a specified amount for the health advantage of the host" (from the Greek "biotikos," which means "for life") [1]. The probiotics are oral supplements or foods that contain enough live microbes for the maintenance of human gut microflora, according to the WHO/Food and Agriculture Organization (2010). If probiotics are given in the proper dosages and daily, they will improve human health. Probiotics are a modulation of the microfloral diversity in human beings that replaces non beneficial microorganisms with beneficial ones. The discovery was made possible by Henry Tissier's research, who found that stool samples from children with diarrhea who were infected had significantly lower quantities of a certain type of bacteria than healthy children did [2]**.** These findings imply that as consumer understanding of the connection between nutrition and health grows, a favorable environment is created for the introduction of the functional food concept, which describes foods or food ingredients that have beneficial effects on consumers' health in addition to their nutritional value. Consuming probiotics has several positive advantages, including enhancing gut health, reducing obesity, easing lactase deficiency symptoms, and lowering the risk of contracting a number of different diseases.

MICROORGANISMS WITH PROBIOTIC ABILITY

Originally, probiotics were utilized to enhance the intestinal microbiota's ability to support higher organisms like humans and animals in maintaining their health. Intestinal microbiota is mostly composed of numerous distinct bacterial species that are naturally occurring. The majority of intestinal

microorganisms involved in modulating the host's gut balance to promote health are frequently chosen as probiotics. At present, several strains belonging to the genera Lactobacilli, Bifidobacteria, Staphylococcus, Enterococcus and yeast are reported to be beneficial probiotic microorganisms for humans. The risk of gastrointestinal (GI) infections and other bacterial illnesses is decreased by probiotics consumption. Consuming probiotics has a number of advantages, including enhancing intestinal health by regulating microbiota, stimulation and developing the system, synthesizing and improving nutrient bioavailability, minimizing lactase deficiency symptoms, lowering the risk of other diseases, and boosting the host immune system [3]. The representative probiotic species are shown in following table**.**

Table 1: Group of Probiotic Microorganism

S.No	Group of probiotic microorganism	List of Probiotic species
1	Lactic Acid Producing Probiotic Lactobacillus	*Lactobacillus acidophilus, Lactobacillus bulgaricus, Lactobacillus casei, Lactobacillus fermentum, Lactobacillus lactis , Lactobacillus paracasei, Lactobacillus rhamnosus, Lactobacillus delbrueckii, Lactobacillus brevis, Lactobacillus johnsonii, Lactobacillus plantarum, Lactobacillus salivarius , Lactobacillus fermentum, Lactobacillus kefir*
2	Probiotic Enterococcus species	*Enterococcus faecalis, Enterococcus faecium, Enterococcus durans, Enterococcus lactis*
3	Other Probiotic genera of Microorganism	*Coccobacillus, Streptococcus, Leuconostoc, Lactococcus, Pediococcus Propionibacterium, Bacillus, Aspergillus niger*
4	Bifidobacterium Species	*Bifidobacterium adolescentis, Bifidobacterium bifidum, Bifidobacterium breve, Bifidobacterium lactis, Bifidobacterium longum, Bifidobacterium infantis, Bifidobacterium animalis*
5	Non-pathogenic Yeast	*Saccharomyces boulardii, Saccharomyces cerevisiae*[2]

ESSENTIAL PROPERTIES OF A GOOD PROBIOTIC

Probiotics should always be classified as "safe" for individuals with a minimal risk of developing an illness or contributing to the development of one. Animal and plants are source of probiotic origin which claims, that they provide different health benefits able to tolerate different temperatures, high concentrations of bile acids, and different ph. In addition, a probiotic must also be capable of adhering to mucosal and epithelial surfaces, withstanding low pH and high salt concentrations. Key traits of novel probiotics include immunological modulation, bile salt hydrolase activity and competitive exclusion of pathogens, suppression of pathogen adhesion and colonization, and antibacterial action against pathogenic bacteria [4]. One of the main components of commercially available probiotic products, colony-forming units (CFU) per gram of product, should be specifically dosed at rates established by human research to be effective. Probiotic products should contain a minimum concentration of 1 x 108 CFU/ml or gram of probiotic bacteria to be consumed daily for the beneficial effects to be transferred to the user, while research addressing the minimum effective concentrations is currently lacking. The strains must also sustain viability throughout routine storage and be able to thrive in manufacturing and commercial environments [5]**.** Probiotics have the potential of toleration in different environmental conditions such as variable temperature (low and high), high hydrostatic pressure, oxidative stress, variable pH (acidic and alkaline), osmotic pressure, and starvation during their stay along the gastrointestinal habitat. Selection of the best probiotic strains depends upon the way they deal with various environmental stresses and their performance in all unfavorable conditions [6].

MECHANISM OF ACTION

Probiotics work in a variety of ways. There are different modes of probiotic activity. The natural anaerobic microflora regulates the concentration of potentially pathogenic flora within the alimentary canal by preventing pathogen attachment to intestinal mucosa. Numerous gastrointestinal pathogens have been shown to be inhibited by colonizing and eventually engaging in antagonistic activity by Lactobacilli and Bifidobacteria. In many instances, adherence property of probiotic is essential for the control of infections, their treatment, and the restoration of the gut's microbial balance. The production of antimicrobial agent's bacteriocins, organic acids, short-chain carboxylic acids, and a decrease in gut pH are all potential regulator of probiotics. These antimicrobial substances prevent the growth of other pathogenic and spoilage causing microorganisms in the GIT environment. By creating antagonistic conditions, this action kills the pathogen and may also inactivate toxins. Another method involves T-cell activation, cytokine generation, and overall immunomodulation by the initiation of phagocytosis and immunoglobulin A secretion, altering T-cell responses, boosting Th1 responses, and suppressing Th2

responses. The treatment and prevention of infectious diseases will certainly benefit from this form of action. Immune modulation may be affected by probiotic bacteria. These microorganisms can interact with lymphocytes, monocytes/macrophages, dendritic cells (DCs), and epithelial cells. They collaborate and modulate in numerous tactics. The immunological benefits of probiotics are frequently brought about by the activation of nearby macrophages; systemic and localize manipulation of Immunoglobulin A production, modification of cytokine profiles that are associated with inflammation, or the modulation of the immune system's response to dietary antigens.

PROBIOTIC FOODS

Different kind of foods that contain probiotic strains is generally large and continues to expand. Dairy products such as cheese, fermented milk, buttermilk, ice cream, yogurts and milk powder make up the majority of market offerings [8]. Examples of non-dairy food items that can effectively supply probiotics to customers include cereals, nutrition bars, and various juices. When examining the efficiency of the introduction of the probiotic strains into such goods, soy-based products are also crucial considerations. When assessing the effectiveness of probiotic strains into such products, it is important to consider the product's degree of compatibility with the microorganism and the retention of its life during the processing, packing, and storage of food. Dairy products that have undergone fermentation and have been infused with probiotic bacteria are one of the most well-liked subcategories of functional foods. They sparked the creation of a brand-new category of probiotic products, such as daily servings of drinks in little bottles, yoghurt, ice cream, milk based sweet dishes, powder milk for infants, fermented vegetables, cheese and capsules. Yogurt, Acidophilus Milk, Traditional Buttermilk, Cottage Cheese, Tempeh, Natto, Raw Milk, Kefir, Kimchi, Kombucha, Pickles, Brine-Cured Olives, Apple Cider Vinegar, Sauerkraut, and Aged Soft Cheeses are the most well-liked natural probiotic foods. Recent studies have found that honey contains a variety of good probiotic bacteria, the majority of which are levansucrase makers [9]. Bacillus species-containing Italian probiotic products named as enterogermina was approved as an over-the-counter nutritional supplement in 1958 and have been marketed for at least 50 years [10]. Commercial probiotics are most frequently sold as liquid, powder, tablets, capsules, and food items. The number of colony-forming units (CFUs) included in a dose or serving of food can vary between brands [11]. Patients must to be advised to carefully read product labels to make sure they are getting the right dosage. In contrast to infants, who normally receive one-fourth of the adult dose, pediatric patients receive half the adult dose orally.

BENEFITS OF PROBIOTICS

The ancient Hippocrates quotation explains the significance of probiotics in modern society. The adage "Food be thy medicine and medicine be thy food" has become more relevant as integrative medicine and self-care have become more popular, along with the baby boomer generation's commitment to good health. This has led to a boom in the market for foods that are more beneficial to health and not just provides basic nutrition. Probiotics are the small but rapidly expanding areas within the functional foods-live microbial supplements affecting beneficially an individual by improving intestinal microbial balance. The first probiotic known for human consumption was fermented milk, and as a result, it gained popularity among people. Even in the earlier centuries, people were aware of the significance of fermented milk in the routine diet. "The prolongation of life" a book by *Ellie Metchinkoff'* in 1908 boosted the interest of scientists in this area. The suggestion given by him was that fermented milk containing lactobacilli should be consumed by humans as it prolongs their lives by preventing autointoxication (chronic toxemia) caused by gut bacteria. It was discovered that Bulgarian villagers who were also involved in the longevity study drank a lot of sour milk. Research suggests that removal of the harmful reaction and implantation of lactic acid bacteria from Bulgarian yoghurt could increase life expectancy. Investigations were started by researchers on the role and function of lactic acid bacteria in animal and human health.

Probiotics have been used as enhancers for anti-cholesterolaemic effects and lactose intolerance, anti-tumor effect. Diarrhea, cancer, allergic reaction, and heart diseases have been the main field of research concerning probiotics. Probiotic delivery was initially connected with food, especially dairy products, but there is a growing trend towards employing them in other food systems, including nutraceuticals and supplements. The choice of appropriate food systems is an important consideration when creating functional probiotic meals since shifting trends in the distribution of probiotics might reduce functional efficacy by excluding potential synergistic effects of the food. There are three categories in which probiotics can be found in the global marketplace- foods, pharmaceuticals, and dietary supplements. New probiotic cosmetics are being offered for skin and body nourishing. For safety concerns, there are several

regulatory systems that strictly limit the amount of living microorganisms that can be present in cosmetic items. However, for these products to be considered "probiotics," they must contain sufficient levels of live bacteria. Chewing gum, throat spray and items like probiotic lozenges don't cleanly fall into the supplement category. Probiotics are not only intended for human consumption; they are also available for use in farming and in pets. Probiotic product labelling, as well as its dependability, quality, and correctness, can vary widely between nations and product categories [12]. There is no global harmonization of regulatory system dictating claim substantiation requirements and manufacturing of probiotics. Makers and consumers would thoroughly enjoy efforts to verify the quality of the product via third-party. Species from genera *Lactobacillus*, *Bifidobacterium*, and *Saccharomyces* are most commonly used as Probiotics. *Bacillus, Streptococcus, Propionibacterium*, and *Escherichia* are probiotics used from other important genera. The identification of novel potential probiotic species that have been isolated from various sites of healthy human volunteers is currently being researched. It is most likely that pharmaceutical drugs will be created using the "next generation" of probiotics. Probiotics are suggested as an effective way of influencing the function of the gut environment in order to improve nutritional status and health [13].

APPLICATION AND CLINICAL SIGNIFICANCE OF PROBIOTIC

Probiotic from dairy sources have been used for an extended period of time. Humans first began using fermented milk as probiotic food, which includes several species of probiotic Lactobacillus and Enterococcus, has been consumed regularly. Moreover, each probiotic bacterial strain has its own unique set of health advantages. The most significant positive benefits and different illness conditions are frequently connected. Probiotics play a significant role in preventing and treating various microbial illnesses as well as enhancing immunity. Probiotics can be used to treat and manage diseases, prevent infections, and improve human health [14].

PROBIOTIC AND ALLERGY

There may be a significant economic and social impact on overall society due to the rising prevalence of allergic diseases brought on by immunological disorders. For the monitoring and prevention of these diseases, it is essential to comprehend the basic molecular pathway contributing to the genesis of allergic disorders as well as new therapeutic modalities. The beneficial effects of probiotics on the treatment and prevention of allergic disorders have increased in recent years. By producing interleukin-12 and interferon-g in the host body, some probiotic species, such as *Lactobacillus plantarum* L67, have the potential to prevent disorders associated with allergies [15]. In another study, mice treated to ovalbumin had their serum levels of total immunoglobulin E, ovalbumin-specific immunoglobulin E, and histamine considerably reduced by *Lactobacillus plantarum* 06CC2. According to reports, *Lactobacillus plantarum* 06CC2 significantly increases the interferon-g and interleukin-4 secretions in mouse spleen cells, which are crucial for minimizing allergic symptoms [16]. To evaluate the anti-allergic properties of probiotics and their mode of action, more research may be required.

PROBIOTICS AND BLOOD PRESSURE

Cardiovascular diseases such ischemic heart disease, heart failure, kidney disease, and stroke are all significantly increased by hypertension. In the Global Burden of Disease Study 2013, high systolic blood pressure (BP) ranked second only to dietary risks in terms of importance as a risk factor for morbidity and mortality, ahead of risks related to smoking, an elevated body mass index, high fasting plasma glucose levels, and high levels of total cholesterol. Commonly prescribed antihypertensive drugs aim to protect the kidney, heart, and blood vessels by targeting a number of hormone systems, including the renin-angiotensin system, and the production of endogenous vasoactive substances. The ability of probiotics and their metabolites to increase levels of total cholesterol and low-density lipoprotein cholesterol has also been demonstrated to lower blood pressure. Without the use of medications, hypertension can be lowered by regularly consuming probiotics. Two tripeptides that are present in milk that has been fermented with *Lactobacillus helveticus* block the angiotensin-converting enzyme. Common probiotic supplements include *Lactobacillus casei*, *Lactobacillus helveticus*, *Lactobacillus bulgaricus*, *Lactobacillus rhamnosus* GG, *Lactobacillus acidophilus*, *Lactobacillus kefir*, *Lactobacillus rhamnosus*, *Bifidobacterium longum*, *Bifidobacterium breve*, *Saccharomyces cerevisiae*, and *Streptococcus* [17].

PROBIOTICS AND DIARRHEA

Due to the tendency of antibiotic medication to suppress the normal microflora and promote the proliferation of opportunistic or pathogenic strains, mild or severe patterns of diarrhea are frequently

experienced as a side effect. The spectrum may include pseudo-membranous colitis and diarrhea without mucosal abnormalities. In therapeutic practice, *Lactobacillus rhamnosus* and *Saccharomyces boulardii* have been given as part of probiotic treatment. Consuming probiotics can reduce the frequency of antibiotic-associated diarrhea, according to a variety of studies. Daily administration of *Lactobacillus casei*, *Lactobacillus rhamnosus*, and *Saccharomyces boulardii* is connected with a decreased risk of diarrhea brought on by antibiotics and gastrointestinal infections. Future studies will focus heavily on the ideal probiotic preparation dosage and the relative efficacy of various probiotic therapies [18].

PROBIOTICS AND UROGENITAL INFECTIONS (BACTERIAL VIRGINITIES)

More than a billion women globally, according to the Centers for Disease Control and Prevention (CDCP), have urogenital diseases that are not sexually transmitted, such as bacterial vaginosis (BV), urinary tract infections (UTI), and different yeast infections. The three species most frequently associated with bacterial vaginosis are *Ureaplasma urealyticum, Gardnerella vaginalis,* and *Mycoplasma hominis* [19]. Globally, sexually transmitted diseases (STDs) account for a major portion of morbidity. In certain advanced nations, gonorrhea and chlamydia, which are brought on by *Neisseria gonorrhea* and *Chlamydia trachomatis*, respectively, are the most often reported bacterial STDs in world. Despite having advanced medications to treat a variety of illnesses, the main challenge of the present decade is that pathogenic bacteria are currently developing resistance to the available medications. Probiotics taken on a regular basis will help prevent pathogenic infections and reduce the negative effects of treatments for these illnesses. It is widely recognized that unusual flora in the vagina is related to higher risk of urinary tract infections (UTI). The vagina is inhabited to about 50 distinct species, including those that are considered to be the primary regulators of the vaginal microenvironment, such as Lactobacillus species, *Lactobacillus brevis*, *Lactobacillus vaginalis*, *Lactobacillus delbrueckii, Lactobacillus reuteri,* and *Lactobacillus rhamnosus*. A disturbed vaginal microenvironment with bacterial vaginosis (BV) and urinary tract infections (UTI) might occur from an imbalance in the microbial composition. The quantity of Lactobacillus sp. in these compromised states is frequently balanced by adding probiotics [20].

PROBIOTICS AND CHOLESTEROL ASSIMILATION

According to a number of experts, manipulating the gut microbial concentration with probiotics may have an impact on host metabolism and ultimately reduce the risk of CVDs. Decreased body weight, decreased plasma cholesterol, and decreased liver triglycerides are all possible effects of probiotic bacteria with BSH activity. Many authors describe that bile salt hydrolyzing activity can be measured qualitatively. The deconjugation of bile salts can lead to the secretion of cholesterol and lipids by the fecal route. The assimilation of cholesterol is also measured within the culture media by probiotic strains that have been tested in vitro. The majority of the research demonstrates that Lactobacilli with high BSH activity have an advantage over other strains in that they can survive, colonize the lower small intestine, and provide favorable cholesterol metabolism outcomes. The rennin-angiotensin system, which regulates pressure of blood by the balance of salt and water in the body, heavily relies on the ACE enzyme. The ACE enzyme may hydrolyze angiotensin I to angiotensin II, which can be a potent vasoconstrictor and elevate vital signs. Peptides that suppress the function of ACE-I, a screening tool, are generated during the proteolysis of extracellular proteins such as casein. The beneficial impact of probiotics on the prevention of cardiovascular illnesses has been supported by numerous scientific investigations [21].

PROBIOTIC AND LIVER DISEASES

Hepatocyte activity is significantly influenced by the microbes that live in the intestinal lumen. Low levels of probiotic microbes in the digestive tract can cause major and liver dysfunctions like cirrhosis, hepatomegaly, alcoholic liver disease, non-alcoholic liver disease, and hepatic encephalopathy. In a process of regulation, restoration, and transformation of gut flora and immune function, probiotic is utilized as a unique treatment method against liver disease. Probiotics are helpful in the treatment of chronic liver illnesses because they strengthen the intestinal barrier, which prevents germs from entering the bloodstream and ultimately reaching the liver [22].

PROBIOTICS AND DENTAL CARIES

Corrosive demineralization of the enamel is a sign of dental caries and it is a bacterial multifactorial illness. It appears that subsequent adjustments to the oral environment's homeostasis led to the bacterial biofilm's proliferation, which was largely made up of mutant group streptococci. Dental surfaces must allow probiotics to stick and collaborate with the bacterial groups that make up the dental biofilm, and create an environment that is less conducive to the growth of dangerous germs. Complex interactions

occur between the pathogens and the host in periodontal disease. By lowering the bacterial load and modifying the host immune response, probiotic therapy has a significant potential to improve the clinical indications of periodontal disease. It is natural and free of side effects [23]. The benefit of adding probiotics to dairy products is their ability to balance acidic environments. For instance, it was just explained that cheese both accelerates and stops the demineralization of the enamel [24].

PROBIOTIC AND ORTHODONTIC TREATMENT

The most common scars discovered after dental treatment are white spot lesions, which are brought on by the bacteria *streptococcus mutans*. By severely blocking the pathogens and elevating the pH to reverse demineralization, the probiotic microorganisms can produce the oral bio-film. Because of the microbial assemblage that may result in enamel demineralization, clinically evident as white patches on teeth, fixed orthodontic appliances are thought to pose a risk to tooth health. Additionally, the complex design of orthodontic braces bands and brackets may create a biological environment that favors the establishment and growth of strains of cariogenic mutant streptococci. The latest orderly audits have looked at ways to stop this adverse effect of orthodontic treatment, which can be shown as an imbalance between mineral loss and mineral growth. Probiotic use may be an effective alternate strategy for the prevention mineral loss and white patch of teeth, but more research is needed to confirm this. When taken as a lozenge tablet, probiotics derived from *lactobacillus brevis*, *Bifidobacterium animalis* (subsp. *lactis* BB-12) and *Bifidobacterium lactis* can lessen the presence of *Streptococcus mutans* in plaque surrounding braces [25].

IMMUNOLOGIC ENHANCEMENT/ IMMUNITY STIMULATION

According to a number of investigations, the lactic acid bacteria or probiotic microorganisms found in dairy products can improve the host's immunological response. *Bifidobacterium longum*, *Lactobacillus helveticus, Lactobacillus acidophilus*, and *L. casei* subsp. *rhamnosum* are among the organisms that have been noted to possess this characteristic. Future studies on potential probiotics should focus on the improvement of the immune response. Prostaglandin E, TNF, lymphocyte proliferation, serum total protein, albumin, globulin, and gamma interferon production should all be included in the immune test profile. Increase phagocytic activity of neutrophils or macrophages, lymphokine secretion by the lymphocytes, and increased production of plasma cells in the blood are typical responses of probiotics, against pathogens and it is a very effective and expressive change in immune system. During an inflammatory immune response, monocytes and macrophages were stimulated by cytokines, which led to the creation of cytotoxic chemicals that might lyse tumor cells in vitro. Another beneficial effect of probiotics is enhanced lymphocyte proliferation in the spleen, peripheral blood, gastrointestinal tract, and spleen of rats fed yogurt containing *Lactobacillus bulgaricus* (100158) and *Streptococcus thermophilus* (001158) as well as enhanced IFN-c production in Peyer's patches and spleen. An excellent result for improving immunity in elderly persons is daily consumption of probiotics in a specific dose. Probiotic cultures have been found to promote both nonspecific and specific immunity, regardless of the underlying mechanisms. Potential therapeutic and preventative applications of such cultures in the treatment of infections and carcinogenesis may be explained by the possibility that probiotic bacteria stimulate the immune system [26].

PROBIOTIC IN DIABETES AND OBESITY

Novel gut microbes known as probiotics have been studied extensively for their capability to treat and prevent diabetes and obesity. In both animal and human models, it has been extensively studied that how normal gut microflora affects the research of insulin resistance to type 2 diabetes and obesity. Numerous studies suggested that gut bacteria regulate insulin resistance and body weight in mice. Obesity and diabetes are caused by gut flora-mediated disease, which is characterized by increased energy production, elevated blood lipopolysaccharide levels, and low-grade inflammation [27]. Hence creating a good balance of gut micro flora has been considered a good choice to treat obesity and diabetes. Researcher proposed that consumption of probiotic-supplemented dairy products called yogurt completely suppresses diet-induced insulin resistance and resistance to streptozotocin-induced diabetes in animal models. Probiotic yogurt enhances the antioxidant system of the body and suppressed the progression of diabetes. Bifidobacteria is one of the crucial categories of probiotic organisms and according to research, the concentration of Bifidobacteria in the gut of overweight women was decreased in comparison to normal weight women and it helps to reduce obesity. Selective strains of the probiotic bacteria lactobacilli and Bifidobacteria have been shown to be effective in preventing type -2diabetes and obesity. Probiotics have been proven to effectively decrease obesity and type 2 diabetes in an animal

study, but very few human studies have shown significant effects related to suppression of obesity and type 2 diabetes [28].

CONCLUSION

The probiotics, in this review, have been highlighted for their many positive qualities as well as for their prospective usage as functional foods to improve wellbeing of society. The functional usage of probiotics in health-related fields and their use in human clinical traits were also major topics of this review. Probiotics are living microorganisms that have a surprising positive impact on human health. Without a doubt, probiotic microorganisms are a focus of a growing global interest among the general public as well as researchers. Millions of bacteria are present in the human gut to maintain the intestinal ecosystem. In the fight against the majority of infectious diseases and lifestyle diseases, probiotic strains are quite effective. The major probiotic strains include those of the bacteria *Lactobacillus, Bifidobacterium, Enterococcus, Lactococcus, Bacillus*, and yeasts strains which are frequently used microorganisms with probiotic activity have responded well to medical treatment for various diseases and infections, such as antibiotic-associated diarrhea, allergies, diabetes, obesity, GIT infections, urogenital infections, HIV, cardiovascular disease, and other diseases related to pathogenic microbes. In normal ways, dietary probiotics involve dairy products but now a day's commercially non-dairy fermented food products can also be available as a good source of Probiotics supplements.

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