International Journal of Academic Research
ISSN: 2348-7666; Vol.3, Issue-9(4), September, 2016
Impact Factor: 3.656; Email: drtvramana@yahoo.co.in

Effectiveness of Probiotics on Human Health-An Overview

Dr.C.Madhavi, Department Of Microbiology, Govt.Degree College for Men, Kurnool

Abstract:

Probiotics are defined as "live microorganisms which when administered in adequate amounts confer a health benefit on the host". Probiotics represents an expanding research area. Probiotics have been used to treat a wide range of diseases, ailments, and conditions that affect humans and animals. Additional medical applications have been proposed for potential future uses, depending on the outcomes of future experimental studies. The clinical uses of probiotics are broad; however, the clinical indications based on evidence-based studies are much narrower and are open to continuing evaluation. Most probiotics belong to Lactic acid bacteria, but new species and genera are being assessed for future use. Some other well-known probiotics are Bifidobacterium sp., one strain of the Gram-negative bacterium Escherichia coli and the yeast Saccharomyces boulardii. The aim of this review is to highlight points of research in this field, mainly focusing on the potential impact of probiotics on our health and well-being.

Key Words: *probiotics, live microorganisms, health benefit, Lactic acid bacteria, Bifidobacterium.*

Introduction:

The term probiotic was derived from the Greek, meaning "for life." The Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO) have stated that there is adequate scientific evidence to indicate that there is potential for probiotic foods to provide health benefits and that specific strains are safe for human use. An expert panel commissioned by FAO and WHO defined probiotics as "Live microorganisms which when administered in adequate amounts confer a health benefit on the host." This is the definition that should be used, and probiotics should not be referred to as biotherapeutic agents.

A Medline search of the term probiotics illustrates the significant increase in research undertaken in this area during the past 5 years: over 1,000 publications cited, compared to 85 for the previous 25 years. While this demonstrates the potential significance of this emerging field, much still remains to be done to standardize the meaning of the term probiotic and which strains actually fulfill the criteria of true probiotic microorganisms. In addition, although clinical evidence of the tangible benefits of probiotics is mounting, this does not yet reflect the commercial front. Unfortunately, many so-called probiotic products have not been properly identified, documented, manufactured under good manufacturing practices, or proven clinically, yet various companies make claims that lead consumers and caregivers to believe that they are using reliable products. Thus, the establishment of standards and guidelines represents a necessary first step in making sure that probiotic

products are indeed legitimate and effective.

The term Microbiome, which refers to the total number of microorganisms and their genetic material, is frequently confused with the term microbiota, which is the microbial population present in many parts of the human body. The human body has 100 trillion microorganisms in the gut, literally 10 times more than the cells in the human body. These indigenous microbial communities explain critical features of human biology and also play an important role in human health and disease.

Northern Europeans consume a lot of these beneficial microorganisms, called probiotics (from pro and biota, meaning "for life"), and because of their tradition of eating foods fermented with bacteria, such as yogurt. Probiotic-laced beverages are also big business in Japan.

Enthusiasm for such foods has lagged in the United States, but interest in probiotic supplements is on the rise. Some digestive disease specialists are recommending them for disorders that frustrate conventional medicine, such as irritable bowel syndrome. Since the mid-1990s, clinical studies suggest that probiotic therapy can help treat several gastrointestinal ills, delay the development of allergies in children, and treat and prevent urinary infections in women.

Several diseases and conditions have been proposed to be treatable with probiotics on the basis of animal studies, preliminary human studies, uncontrolled studies, anecdotal observations, or simply speculation. These uses can be classified as potential applications of probiotics in the future or that require ongoing research.

Many health care professionals such as holistic practitioners, naturopaths, chiropractors, and herbalists routinely use products perceived to contain *lactobacilli, bifidobacteria,* and other possible probiotics. However, depending upon the training center, physicians may not be exposed to programs that discuss and evaluate the advantages and disadvantages of so-called nontraditional, complementary or alternative medicine, within which probiotics are sometimes placed.

Sources of Probiotics:

1. Microalgae: This refers to super-food ocean-based plants such as Spirulina, Chlorella, and blue-green algae. These probiotic foods have been shown to increase the amount of both Lactobacillus and bifidobacteria in the digestive tract.

2. Yogurt: One of the best probiotic foods is live-cultured yogurt, especially handmade. Goat's milk and cheese are particularly high in probiotics like thermophillus, bifudus, bulgaricus and acidophilus.

3. Kefir: Similar to yogurt, this fermented dairy product is a unique combination of goat's milk and fermented kefir grains. High in lactobacilli and bifidus bacteria, kefir is also rich in antioxidants.

4.Sauerkraut: Made from fermented cabbage (and sometimes other vegetables), sauerkraut is not only extremely rich in healthy live cultures, but might also help with reducing allergy symptoms.

5.Kimchi: An Asian form of pickled sauerkraut, kimchi is an extremely spicy

and sour fermented cabbage, typically served alongside meals in Korea. Besides beneficial bacteria, Kimchi is also a great source of beta-carotene.

6.Tempeh: A great substitute for meat or tofu, tempeh is a fermented, probiotic-rich grain made from soy beans.

Areas in which probiotics have proven antidisease effect:

1.Probiotics for Newborns and Children:

Intestinal infections in newborn children are common, and in developing countries diarrhea is a prime cause of morbidity and mortality. Bacterial colonization or infection of the intestine by pathogens such as *Clostridium, Escherichia, Klebsiella,Salmonella, Shigella, Campylobacter, Pseudomonas, Streptococcus, Enterococcus, Staphylococcus aureus, and coagulase-negative staphylococci* increases the risk of necrotizing enterocolitis. If nonpathogens, such *as lactobacilli* and *bifidobacteria*, colonize the intestine, or if breast milk rather than formula is used, the incidence of necrotizing enterocolitis has been reported to fall [1].

2. Bacterial Gastroenteritis:

In addition to rotavirus infections, many bacterial species can cause intestinal disorders. There is good in vitro evidence that certain probiotic strains can inhibit the growth and adhesion of a range of enteropathogens (2,9).

4. Ulcerative colitis and bowel syndrome:

Probiotic therapy may also help people with Crohn's disease and irritable bowel syndrome. Clinical trial results are mixed, but several small studies suggest that certain probiotics may help maintain remission of ulcerative colitis and prevent relapse of Crohn's disease and the recurrence of pouchitis (a complication of surgery to treat ulcerative colitis). Because these disorders are so frustrating to treat, many people are giving probiotics a try before all the evidence is in for the particular strains they're using. More research is needed to find out which strains work best for what conditions [7,8].

5. Urogenital Problems:

Probiotic treatment that restores the balance of microflora may be helpful for such common female urogenital problems as bacterial vaginosis, yeast infection, and urinary tract infection[3].

6.Prevention of dental caries: Children in a day care center who were given Lactobacillus GG for 7 months were examined for dental caries, and the children in the 3–4-year-old age group had significantly lower rates of dental caries and a reduced oral count of Streptococcus mutans compared with before the treatment [5].

7. Prevention and treatment of allergic reactions:

The most extensive studies of the modification of allergic reactions have been reported for atopic eczema with Lactobacillus GG as the probiotic .There has also been a study that reported the use of *Bifidobacterium animalis* Bb12 to reduce the severity of atopic dermatitis.

8. Acute diarrhea: There are at least 12 studies that have reported the use of probiotics to either treat or prevent acute diarrhea [6]. The majority of these studies were done with infants or children, the etiologic agent was either rotavirus or unknown, and the probiotic *used was Lactobacillus rhamnosus* strain GG (Lactobacillus GG) (ATCC 53103).

9. Cancer:

The ability of lactobacilli and bifidobacteria to modify the gut microbiota and reduce the risk of cancer is in part due to their ability to decrease β-glucuronidase and carcinogen levels. Cancer recurrences at other sites, such as the urinary bladder, also appear to be reduced by intestinal instillation of probiotics, including *L. casei, Shirota* (the strain present in Yakult, a Japanese milk-based drink taken by an estimated 26 million people every day) .In vitro studies with

L. rhamnosus GG and bifidobacteria and an in vivo study with *L. rhamnosus* GG and LC-705 and a *Propionibacterium* sp. showed a decrease in availability of carcinogenic aflatoxin in the lumen.

Conclusion:

In conclusion, it is clear that the analysis of the impact of probiotics on the host immune system has entered a new and fascinating phase of research. This new area offers us new knowledge that can be exploited to develop new approaches to modulate host immunity for protection against infectious diseases or for immunotherapy. Historical data indicates that probiotic lactobacilli and bifidobacteria administered in food and in capsular form are safe for human use. Their occurrence as normal commensals of the mammalian microbiota and their established safe use in diverse food and supplement products worldwide support this conclusion.

References:

1. Lucas, A., and T. J. Cole. 1990. Breast milk and neonatal necrotising enterocolitis. Lancet 336:1519-1523. [PubMed]

2. Oatley, J. T., M. D. Rarick, G. E. Ji, and J. E. Linz. 2000. Binding of aflatoxin B1 to bifidobacteria in vitro. J. Food Prot. 63:1133-1136. [PubMed].

3. Coconnier, M. H., M. F. Bernet, S. Kerneis, G. Chauviere, J. Fourniat, and A. L. Servin. 1993. Inhibition of adhesion of enteroinvasive pathogens to human intestinal Caco-2 cells by Lactobacillus acidophilus strain LB decreases bacterial invasion. FEMS Microbiol. Lett. 110:299-305. [PubMed]

4. Coconnier, M. H., V. Lievin, M. F. Bernet-Camard, S. Hudault, and A. L. Servin. 1997. Antibacterial effect of the adhering human Lactobacillus acidophilus strain LB. Antimicrob. Agents Chemother. 41:1046-1052. [PMC free article] [PubMed]

5. Aso, Y., H. Akaza, T. Kotake, T. Tsukamoto, K. Imai, and S. Naito. 1995. Preventive effect of a Lactobacillus casei preparation on the recurrence of superficial bladder cancer in a double-blind trial. The BLP Study Group. Eur. Urol. 27:104-109. [PubMed]

6.El-Nezami, H., H. Mykkanen, P. Kankaanpaa, S. Salminen, and J. Ahokas. 2000. Ability o fLactobacillus and Propionibacterium strains to remove aflatoxin B, from the chicken duodenum. J. Food Prot. 63:549-552. [PubMed]

7.Gorbach, S. L. 2000. Probiotics and gastrointestinal health. Am. J. Gastroenterol. 95:S2-4. [PubMed]

8. Guandalini, S. 2002. Use of Lactobacillus-GG in paediatric Crohns disease. Dig. Liver Dis. 34(Suppl. 2):S63-S65. [PubMed]