

Beneficial Role of Probiotics in Oral Health

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Abstract: The Micro Organisms found in the human oral cavity have been referred to as the oral micro flora, oral micro biota or more recently as the oral micro biome. The mouth acts as a window to lot of systemic diseases and serves as a part of entry of the various infections that can alter and affect the immune status of the person, probiotics are dietary supplements containing potentially beneficial bacteria or yeasts. These products help in stimulating health by promoting flora and also suppressing the pathologic colonization and disease spread. Probiotics are living microbes that have a beneficial influence on health. The advent of probiotics into the field of periodontics would possibly open new horizons to address the attractive alternative to antibiotics and to target particular periodontal pathogen, thus increasing the long – term of periodontal therapy.

KEY WORDS: Probiotics, Periodontal Therapy, Oral Microbiota, Oral Microflora & Periodontal Pathogens.

HISTORY OF PROBIOTICS

Gibson and Roberfroid introduce the term “prebiotic”^[1,2]. In 1965 Lilly and Stillwell introduced the term probiotics the antonym of the term “Antibiotics”. Fermented yoghurt is discovered by Mann and Spooner in 1974, fermented yoghurt reduced blood serum cholesterol. Hull identified the first probiotic species, the *Lactobacillus acidophilus* in 1984. Holcomb in 1991 identified *Bifidobacterium bifidum*, in 1994 world health organization [WHO] described the probiotics as the next most important in the immune defense system following antibiotic resistance^[3,4]. In 1984 Hull *et al.*, introduce first probiotic species in research was *Lactobacillus acidophilus*, followed by *Bifidobacterium bifidum* by Holcomb *et al.*, in 1991^[5-11].

INTRODUCTION

Probiotics are live microorganisms when consumed may confer a health benefit to the host. The term probiotic is currently used to name ingested microorganisms associated with benefits for humans and animals. Probiotics are live microorganisms that resemble the beneficial microorganisms found in the human gut. Most probiotics are small single celled bacteria that provide beneficial health effects. They are also known as “good” or “friendly” bacteria.

Probiotic microorganisms are *Lactobacillus*, *Lactococci*, *Bifidobacteria* and *Saccharomyces*. Various dairy products available in the *Lactobacillus* strain [cheese, yoghurt and curd]^[12]. Probiotic are capable to promote effects on host health, they must tolerate environments with high concentrations of bile salts and low pH and display high antimicrobial activities^[13]. Lactic acid bacteria [LAB] are a group of Gram – positive, non – spore forming, cocci or rod shaped, catalase negative and fastidious organisms frequently isolated from milk and dairy products^[14]. Yogurt is a food product produced by bacterial fermentation of milk. Traditional probiotic yogurt is made from dairy that’s fermented into a creamy food packed with beneficial probiotics and is a balanced source of protein, fats, carbohydrates, vitamins and minerals. Yogurt is considered as a super food cows or goats.

The yogurt nutrition is maximized supply of Omega – 3 fatty acid, protein, calcium, magnesium, potassium, vitamin D, K2, enzymes and probiotics. There are numerous claimed benefits of using commercial probiotics such as reducing gastrointestinal discomfort, improving immune health, relieving constipation, avoiding the common cold. Probiotics are considered generally safe, but may cause bacteria – host interactions and unwanted side effects in rare cases.

Biofilms are defined as microbially derived sessile communities characterized by the cells that are irreversibly attached to a substratum or to each other^[15]. Microorganisms growing in a biofilm are intrinsically more resistant to antimicrobial agents than planktonic cells. Biofilms are associated with many medical conditions including medical devices, dental plaque, upper respiratory tract infections, peritonitis and urogenital infections^[16]. Biofilm producing bacteria not only for gram – positive but both gram positive and gram negative bacteria have the capability to form biofilms^[17].

TYPES OF MICROORGANISMS

Health benefits have mainly been demonstrated for specific probiotic strains of the following genera: *Lactobacillus*, *Bifidobacterium*, *Saccharomyces*, *Enterococcus*, *Streptococcus*, *Pediococcus*, *Leuconostoc*, *Bacillus*, *E.coli*. *Lactobacillus acidophilus* play a role in treatment of travellers diarrhea^[18] and reduction of hospital stay of children with acute diarrhea^[19]. Reduction of irritable bowel syndrome^[20]. *Lactobacillus plantarum* used to prevent the endotoxin production^[21]. *Lactobacillus casei* used to treat the functional constipation in adults^[22]. *Lactobacillus brevis* used to protect the bile salt tolerance^[23].

PROBIOTIC FORMULATION

CAPSULE FORM: In 2004 Montalto *et al.*, administered probiotic mix both in capsules and liquid form without observing statistically significant difference, however, in the *S.mutans* counts between the two test groups^[24].

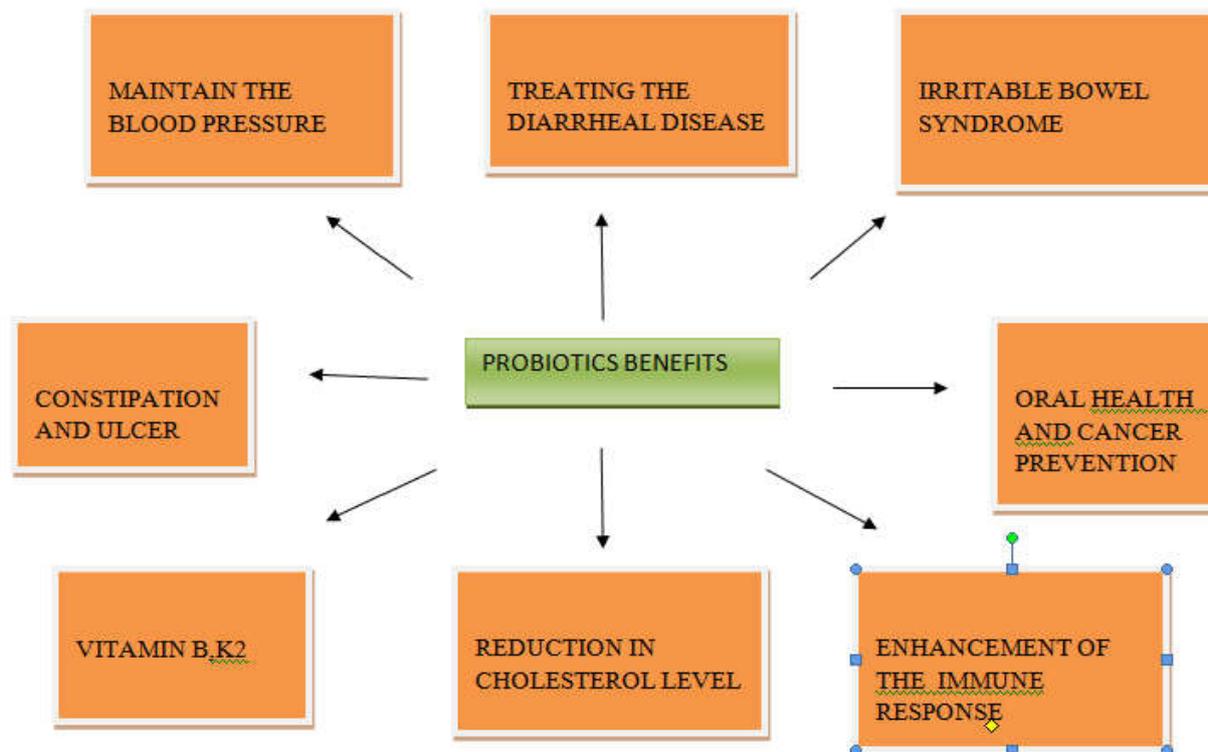
CHEWING GUM: The recent invention for caries prophylaxis is a chewing gum containing *Lactobacillus reuteri* prodentis consumed twice daily this was marketed to regulate *S.mutans* counts in the oral cavity, the average content of *Lactobacillus reuteri* was 10⁸ CFU/ml. So however, the most suitable means of delivery and dosages of probiotics for various oral health purposes have not been defined^[24].

TABLET FORM: In 1994 Pozharitskaia *et al.*, *Lactobacillus acidophilus* contained in a tablet named the Acilact. It was first clinically tested and improved clinical parameters in periodontitis patients and shifts in local microflora towards gram positive cocci and *Lactobacilli*. In 2002 Grudianov *et al.*, carried out a clinical study where they obtained a probiotic mix in the tablet forms viz, Acilact and Bifidumbacterin and found normalization of microflora and reduction of signs of gingivitis and periodontitis^[25].

TOOTH PASTE: Tooth paste is available in the probiotic formulation. In 2017 F.Basak *et al.*, The *in vivo* study a new innovational aspect has been reached in the use of probiotics to ensure the balance between bacterial flora in the oral cavity. In daily routine the administration of probiotics to children is difficult. The toothpaste can be used as a vehicle to transport probiotics to children's mouth^[26].

HEALTH BENEFITS OF PROBIOTICS

There is effective in favour of the claims of the beneficial effects of probiotics. It plays an effective role in treating diarrheal disease, brain function disorder, reduction of cholesterol level, to maintain the blood pressure, irritable bowel syndrome, enhancement of the immune response and cancer prevention.



CONCLUSION

Probiotics are dietary supplements containing potentially beneficial bacteria or yeasts. Which helps in stimulating health by promoting flora and suppressing the pathologic colonization and disease spread? It plays an effective role treating diarrheal disease, brain function disorder, reduction of cholesterol level, to maintain the blood pressure, irritable bowel syndrome, enhancement of the immune response and cancer prevention. In recent years there has been an upgrade in research in probiotics as well as growing commercial interest in the probiotic food concept. The role of probiotics in nutrition and medicine shows a significant increase of interest for upcoming generation. Which should be considered by medical provisional and food industries?

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