



Review Article

Brief Overview on Probiotics

Aesha Zafna¹, Vidhya Vijayan^{2,*}, V Darshana², Anjali Sathyan³, J S Vaishnavi³¹Assistant Professor, Department of Public Health Dentistry, Vydehi Institute of Dental Sciences, Bengaluru, Karnataka, India²Assistant Professor, Department of Pediatric and Preventive Dentistry, KMCT Dental College, Mukkom, Calicut, India³Lecturer, Department of Pediatric and Preventive Dentistry, KMCT Dental College, Mukkom, Calicut, India

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* Corresponding author.

Vidhya Vijayan

vidhya@kmctdentalcollege.org

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ABSTRACT

Probiotics are generally safe to consume, but may cause bacteria-host interactions and side effects in few cases. Bacteria play an essential role in maturation of the intestine, development and control of the immune system. In a newborn, this bacterial flora is transferred from mother through breastfeeding. The imbalances of oral microbial flora are responsible for various oral diseases. Probiotics are live microorganisms that provide health benefits when consumed. Probiotics are generally safe to consume, but may cause bacteria-host interactions and side effects in few cases. The recent researches review that the judicious use of probiotics play a vital role in limiting these diseases. Probiotics are generally safe to consume, but may cause bacteria-host interactions and side effects in few cases.

Keywords: Probiotics; Microbial flora; Oral health

1 INTRODUCTION

The proper functioning of the digestive ecosystem is affected by the microbial load in the diet. The interaction of food and the gut microbiota determines the status of healthy living. Probiotics have been associated with gut health, and focused on the prevention or treatment of gastrointestinal infections and diseases. During the last few years, several authors have suggested that probiotic bacteria originally planned for gut health could also be beneficial to oral health⁽¹⁾. Dental caries and periodontal disease are the most prevalent diseases that affect oral health.

Effective antimicrobial treatment modulates the microbial ecology of dental plaque in a pathogen-targeted manner. The non-selective antibacterial killing cause imbalance of the ecology of normal oral flora and results in persistent pathogenesis⁽²⁾. Eliminating the pathogenic organisms and maintaining the favourable microbes with probiotics for preventing oral diseases has become a recent trend in dentistry.

2 BACTERIA USED AS PROBIOTICS

1. Lactobacillus species
2. Bifidobacterium
3. Streptococcus

2.1 Commercially used probiotics Lactobacilli and Bifidobacterium strains

- *Lactobacillus rhamnosus* GG
- *Lactobacillus johnsonii* Lal
- *Lactobacillus acidophilus* NCFM

2.2 Probiotic organisms⁽³⁾

- *Lactobacillus casei* CRL-43i Gilliland (La-Mo)
- *Lactobacillus reuteri* SD
- *Lactobacillus plantarum* 299V
- *Lactobacillus rhamnosus* 271
- *Lactobacillus casei* DN 014001
- *Lactobacillus casei* Shirota
- *Lactobacillus delbrueckii* subsp bulgaricus 2038
- *Streptococcus thermophilus* 1131

Table 1:

Direct interactions in dental plaque	Indirect probiotic actions in the oral cavity
<ul style="list-style-type: none"> • Involvement in binding of oral micro-organisms to proteins (biofilm formation) • Action on plaque formation and on its complex ecosystem by competing and intervening with bacteria-to bacteria attachments • Involvement in metabolism of substrates (competing with oral micro-organisms of substrates available) • Production of chemicals that inhibit oral bacteria (antimicrobial substances) 	<ul style="list-style-type: none"> • Modulating systemic immune function selection pressure on developing oral microflora colonization by less pathogenic species. • Reduction of malodor. <p>Other effects</p> <ul style="list-style-type: none"> • Inhibit growth of pathogenic bacteria • Enhance growth of other friendly bacteria. • Reduce toxins • Increased immunity / bacterial resistance • Produce vitamins and other nutritional factors • Reduce cholesterol • Alleviate flatulence

- *Lactobacillus acidophilus* SBT-2062
- *Bifidobacterium longum* SBT-2928
- *Saccharomyces boulardii*
- *B. longum* BB536
- *Bifidobacterium breve* Yakult⁽⁴⁾

A recent study shows that probiotic effects are strain-specific; beneficial effects to one strain cannot be assumed to be provided by another strain, even when it belongs to the same species. A combination of strains creates a synergistic effect.

3 VEHICLE OF ADMINISTRATION

The vehicle by which probiotics are ingested or delivered in the oral cavity, influence the cariogenic potential and the oral colonization of a probiotic. The most commonly used dietary lactobacilli are being consumed in milk products.⁽⁵⁾

Dairy foods containing probiotic bacteria include yogurt, culture-containing fluid milks, such as “Sweet Acidophilus Milk” and a few brands of cottage cheese. Dairy foods seem to fit naturally with probiotics because of the association of beneficial fermentation bacteria and fermented dairy products. Consumers associate fermented dairy products with live cultures and perceive a benefit in the presence of these cultures.

Thus, the different vehicles for probiotics administration are –

3.1 Milk Products

1. Milk drink
 - (a) Yogurt
 - (b) Cheese
2. Fruit Juices
3. Lozenges
4. Powder
5. Gelatine
6. Straw
7. Tablets
8. A probiotic lozenge administered medical device.
9. Capsules

4 MECHANISM /INTERACTION OF PROBIOTIC ORGANISMS IN ORAL CAVITY

Probiotics may act direct interaction or indirect interaction on oral biofilm and microflora and vice versa.

Hence, probiotics have the following functions in the oral cavity.

1. Prevent dental caries
2. Improves periodontal health
3. Controls microbial infections
4. Treat halitosis

5 CONCLUSION

The results of this review confirm that more studies are necessary to evaluate the efficacy of probiotics with correct methodological design, in broader population samples, and over longer periods of time. Comparative trials of different strains of probiotic species would be recommended.

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