

Assessment of plaque regrowth with a probiotic toothpaste containing *Lactobacillus paracasei*: A spectrophotometric study

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ABSTRACT

Background: Probiotics are live microorganisms which when administered in adequate amounts confer health benefits on the host. Commonly, most of the organisms ascribed as having probiotic properties belong to the genera *Lactobacillus* and *Bifidobacterium* and milk is the most commonly used vehicle. **Objectives:** The study was aimed at analyzing the biofilm formation by plaque regrowth method upon the usage of a probiotic toothpaste containing *Lactobacillus paracasei* by measuring the optical density using a spectrophotometer. **Materials and Methods:** A commercially available probiotic toothpaste, PerioBiotic (spearmint flavored) from the company Designs for Health, has been tested. The toothpaste contains the strain *L. paracasei*, which has been found to co-aggregate with *Streptococcus mutans* (MS). The Plaque Glycolysis and Regrowth Method (PGRM) was used for the evaluation of the antimicrobial effects on plaque metabolism *in vivo*. PGRM is based on the observation that natural fasted dental plaque, sampled from different quadrants of the dentition, exhibits similar metabolic and regrowth properties when suspended at equal "biomass" in standardized media. **Conclusion:** The results suggest that *L. paracasei*-based toothpaste, PerioBiotic, is effective in the reduction of MS monospecies biofilm, but the activity appears short lived when high sucrose exposure is administered.

KEYWORDS: Plaque biomass standardization, Plaque Glycolysis and Regrowth Method methodology, probiotic toothpaste, spectrophotometer

Introduction

Since their discovery by Ilye Metchinkoff in the early 20th century, probiotics have emerged as a fascinating area, health-related and commercial target, especially in the past two decades.^[1]

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World Health Organization in 2001 defined probiotics as live microorganisms which when administered in adequate amounts confer health benefits on the host. Probiotics are recognized to perform several actions in the gastrointestinal tract. In relation to prevention of oral diseases, probiotics are administered to maintain and restore the natural saprophytic microflora against pathogen invasion, which is central to the development of major oral diseases.^[2]

Many strains of probiotics used to obtain gastrointestinal benefits may not be ideal for the oral environment, which is quite different from the intestinal habitat.

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