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Potency of Probiotic Curd Consumption on Salivary S Mutans Count among Rural School Children.

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Abstract

Probiotics to be the next-most important immune defense system when commonly prescribed antibiotics are rendered useless by antibiotic resistance. The use of probiotics in antibiotic resistance is termed as microbial interference therapy. Probiotics is defined as bacterial cultures or living micro-organisms which upon ingestion in certain number, exert health benefits beyond inherent general nutrition and support a good healthy intestinal bacterial flora. The study was designed to compare the potency of probiotic curd on S mutans count before and after consumption. Thirty children were randomly selected from Dyandeep English Medium school khed for the study. The selected children were equally divided into two groups I, (probiotic curd group) and II (normal curd group) comprising of 15 children in each group who were given probiotic curd (which contained Bifido Bacterium 12) and plain curd respectively for a period of 7 days. Saliva collection was done after the clinical examination. Present study reveals that the use of probiotic products could be an alternative strategy for displacing pathogenic microorganisms by probiotic bacteria and can thus be exploited for the prevention of enamel demineralization.

Introduction

In 1994, the WHO deemed Probiotics to be the next-most important immune defense system when commonly prescribed antibiotics are rendered useless by antibiotic resistance. The use of probiotics in antibiotic resistance is termed as microbial interference therapy[1]Probiotics is defined as ‘bacterial cultures or living micro-organisms which upon ingestion in certain number, exert health benefits beyond inherent general nutrition and support a good healthy intestinal bacterial flora.’ The idea was the harmless bacteria in the fermented products competed with pathogens injurious to health.[2]The most common probiotic strains are Lactobacillus and Bifidobacterium. The various means of administration of probiotics for oral health purpose are: Lozenges, Tablets, Cheese, Yoghurt, Mouth rinse, Capsule etc. The archetypical probiotic food is yoghurt (curd) and daily consumption of dairy products seems to be most natural way to ingest probiotic bacteria.3 Dairy yoghurt is produced using a culture of lactobacillus delbrueckii sub species bulgaricus and streptococcus salivarius subsp. thermophilus bacteria.4 In addition, lactobacillus acidophilus, lactobacillus bifidus and lactobacillus case are also sometimes used in culturing yoghurt. Recent studies have shown that certain gut bacteria including lactobacilli and bifidobacterium may exert

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beneficial effects in the oral cavity by inhibiting cariogenic streptococci and Candida species.1,3In this study, the probiotic yogurt (curd) containing lactobacillus acidophilus has been used to investigate its effects on salivary pH and streptococcus mutans counts. These effects have been compared with those of normal curds.

Aim

To compare the potency of probiotic curd on S mutans count before and after consumption.

Objectives

1. Estimation of Mutans Streptococci levels in saliva.
2. Effect of normal curd on Mutans Streptococci levels in saliva.
3. Effect of probiotic curd on Mutans Streptococci levels in saliva.

Methodology

Thirty children were randomly selected from Dyandeep English Medium school khed for the study. The selected children were equally divided into two groups I, (probiotic curd group) and II (normal curd group) comprising of 15 children in each group who were given probiotic curd (which contained Bifido Bacterium 12) and plain curd respectively for a period of 7 days.

Curd was given once daily and subjects were instructed to refrain from other curd consumption. The subjects were however, encouraged to maintain their normal oral hygiene habits. No tooth brushing was allowed for at least 1 hr after eating the curd.

Inclusion Criteria

Children of 12-14 years with all permanent teeth erupted (except 3rd molars), no detectable caries, no history of any preventive dental treatment & present on the day of examination were included in the study.

Exclusion criteria

Children, who were severely ill, medically compromised, having difficulty in opening the mouth, who had taken antibiotics in the last 6 month&with orthodontic appliances were excluded from the study.

Method of saliva collection

Saliva collection was done after the clinical examination. Children were made to sit comfortably on the chair and made to swallow the preexisting saliva, in order to clear the mouth of any residual saliva.After this, each student was asked to split the saliva in a sterile hard plastic container. The saliva samples of all the participants were identified by a code number during the period of sample collection and processing. The samples collected were handed over to laboratory, for analysis on the same day. The samples were precoded and not disclosed to the technician. In laboratory, samples were stored at room temperature (17-25o C) prior to the analysis.Saliva samples were assessed at baseline, 1 hour after consumption and after 7 days intervention period by using MitisSalivarius Bacitracin agar.

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Figure 1: Mutans Streptococci colony Growth on MSB Agar plate

Data analysis

Statistical analysis – SPSS (statistical package for social sciences) version 22 was used for statistical analysis. The mean and standard deviation for S.mutans count in samples were determined using unpaired Student t-test.

Results:

The mean salivary mutans streptococci after consumption of probiotic and normal curd at base line was found to be 211.6 & 215.8 respectively, after 1 hour it was 185 & 211.3 respectively and after 7 days it was 150.6 & 213.6 respectively. The results were found to be statistically significant. (Table 1)

Table 1: After consumption of Probiotic and Normal Curd at base line, after 1hour and after 7 Days

Time interval	Curd	Mean	Standard deviation	p-value
Base line	**Probiotic**	211.6	24.5	**0.62**
	Plain curd	215.8	22.1	
1 hour	**Probiotic**	185	12.5	**0.0002 HS**
	Normal curd	211.3	21.6	
7 days	**Probiotic**	150.6	8.11	**0.0001 HS**
	Normal curd	213.3	25.6	

Discussion:

The current study showed Salivary Mutan CFUs less after using probiotic than normal. This was in accordance with the study done by AnithaChinnappa, et al[5] in which the mean values for probiotic and normal curd at base line were 207.2 & 170.7 respectively, at 1 hour were 89.20 & 164.3 respectively and after 7 days were 52.9 & 177.8 respectively.In our study, we found significant reduction in salivary mutans streptococci ($p \leq 0.05$) after consumption of probiotic curd. Previous studies done by EsberCaglar et.al,[6]SuleKavaloglu et.al[7] and Yunwo Zhu et al[8] also found statistically significant reduction of salivary mutans streptococci after probiotic yogurt consumption ($p \leq 0.05$). Rich Singh et.al[9] also reported that probiotic ice-cream brought about a statistically significant reduction in mutans streptococci count ($p \leq 0.05$). Similarly, G.Jindal et.al[10] concluded that statistically significant reduction ($p<0.05$) in salivary mutans streptococci counts was recorded after probiotic ingestion.Whereas, in previous study done by Li-Chuan Chuang et.al[11] no differences in the counts of mutans streptococci between probiotic and control groups were found.

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Conclusion

Present study reveals that the use of probiotic products could be an alternative strategy for displacing pathogenic microorganisms by probiotic bacteria and can thus be exploited for the prevention of enamel demineralization.

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