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Comparative Evaluation of Antimicrobial Effectiveness of Probiotic and Fluoride Mouthrinse on Salivary Streptococcus mutants in Child in Orthodontic Patients: An Observational Trial

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Abstract **Original Research Article**

Aim: To clinically evaluate the efficacy of Probiotic as compare to fluoride mouthrinse on salivary streptococcus mutants in child orthodontic patients. ***Methods:*** Between Probiotic mouthrinse, and Fluoride mouthrinse, This is a 28 days observational comparative study which included 40 healthy children in age-group of 6-10 yrs. ***Results:*** The Probiotic and Fluoride groups compared with the control group at the end of 28 days, had less plaque accumulations (P < 0.001 and P< 0.001, respectively). Between the Probiotic, Chlorhexidine and Fluoride mouthrinse, there was no significant difference in the mean gingival inflammation on the 28th day, But mean Plaque Index (PI) was significantly decreased when compared with control group on the 28th day. ***Conclusion:*** Along with regular brushing to improve periodontal status during fixed orthodontic treatment, Probiotic mouth wash can be used as an adjunctive measure. As per as reducing plaque accumulation and gingival inflammation is concern, Probiotic mouth-rinse tested was effective among children in age-group of 6-10 yrs.

Keywords: Fluoride mouthrinse, Probiotic, Chlorhexidine, orthodontic treatment.

INTRODUCTION

Nearly about 60-90% of the children dental caries is the most common chronic oral disease. Undoubtably proper oral hygiene habits and dietary counselling are required for its control specially in children [1]. In reducing the risk of caries in highly prone children preventive dentistry in clinical practice has been evolving over a period of time [2]. Tooth structure is mainly affected due to colonisation and rapid growth of bacterial populations like Streptococcus mutans [3]. Thus early intervention and prevention of such can protect tooth structure specially in children in age-group of 6-10 yrs. As an effective and safe method for delivery of antimicrobial agents are capable of preventing bacterial metabolism, colonization and adhesion and thus affect the bacterial growth [4]. Probiotics are ingredients containing living microbes or living microbes hat beneficially influence the health of the host [5].

The main objective of this observational comparative study is to clinically evaluate the efficacy of Probiotic as compare to fluoride mouthrinse on salivary streptococcus mutants in child orthodontic patients.

METHODS

Between Probiotic mouthrinse, and Fluoride mouthrinse, These was a 28 days observational comparative study which included 40 healthy children in age-group of 6-10 yrs. Healthy children with no recent history of use of antimicrobial agents or any drugs (upto within 6 months) and without any known systemic illness were included in the study. Other than routine tooth brushing if children using any oral hygiene were excluded from the study.

With 40 children in each group, the participants were assigned into three groups as follows: Group A: Probiotic Group Group; B: Flouride group Group and D: Control Group.

RESULTS

The Probiotic and Fluoride groups compared with the control group at the end of 28 days, had less plaque accumulations (P < 0.001 and P< 0.001, respectively).

All three groups showed a p value of < 0.001 in tests of within subjects' effect for PI which is also demonstrated in Figure-1.

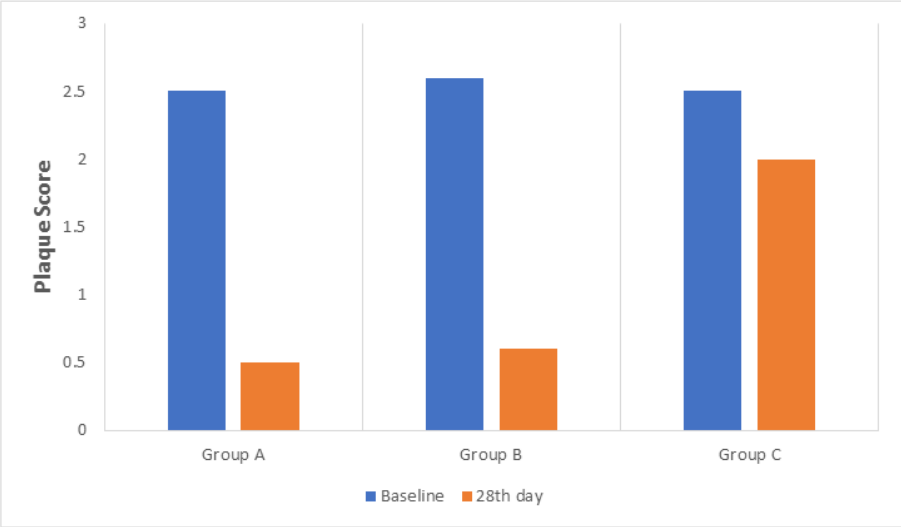

Fig-1: Comparision of mean PI scores between the test groups

Between the Probiotic, Chlorhexidine and Fluoride mouthrinse, there was no significant difference in the mean gingival inflammation on the 28th day, But mean Plaque Index (PI) was significantly decreased when compared with control group on the 28th day. All three groups showed a p value of < 0.001 in tests of within subjects' effect for GI which is also demonstrated in Figure-2.

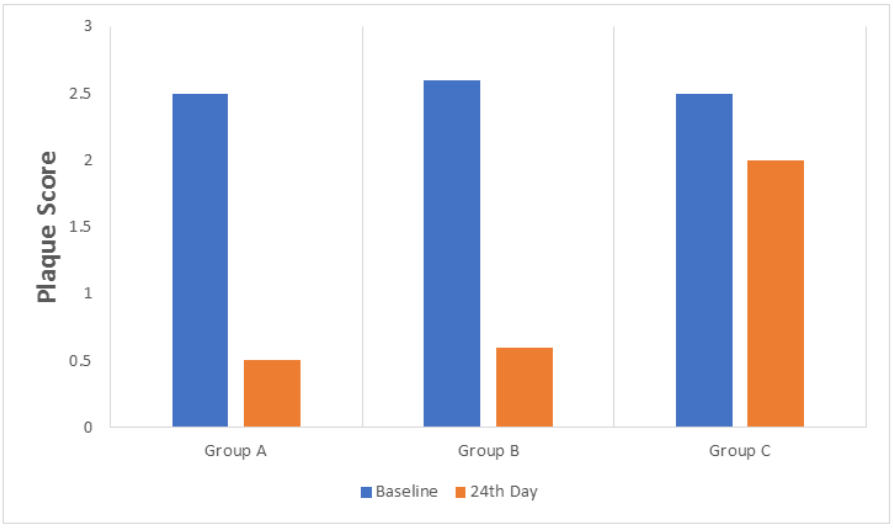

Fig-2: Comparison of mean GI scores between the test groups

DISCUSSION

Most of the oral diseases prevents by maintaining good oral hygiene. Regular tooth brushing is considering as major Oral hygiene habits specially among children as to prevent the oral cavity it has positive synergistic effect [6]. By metabolizing sucrose to lactic acid using the enzyme glucansucrase S. mutans which is a gram-positive facultative anaerobe, creating an acidic environment in the oral cavity and thus facilitating demineralization of the enamel [7].

In the development of dental caries, periodontal disease and gingivitis Plaque plays a major role specially in children [8]. This observational study once again established that for the prevention of plaque formation and reducing gingivitis Probiotic mouthrinse had potential therapeutic value and can also be good alternative to other antibacterial mouthrinses. There were many studies like this which also established that on streptococcus mutans present in supragingival plaque the effect of mouthrinse and probiotic [9-12]

In the year 1934, due to its effect in reducing demineralization of the tooth structure and increasing remineralization, Sir H. Trendley Dean introduced Fluoride to dentistry. To maintain oral hygiene and prevent caries Wide range of fluoride mouthwashes and tooth pastes are available. By inhibiting the glycolytic

enzyme which converts 2-P-glycerate to phosphoenol pyruvate (PEP), Fluoride interacts with the metabolic and growth process in the bacteria [13]. The present observational study has confirmed that when probiotic mouthwash was compared with the fluoride mouthwashes, the mean colony count of S. mutans was reduced on the 28th day.

Along with regular brushing to improve periodontal status during fixed orthodontic treatment, Probiotic mouth wash can be used as an adjunctive measure. As per as reducing plaque accumulation and gingival inflammation is concern, Probiotic mouth-rinse tested was effective among children in age-group of 6-10 yrs. As one of the effective regimens in maintaining oral hygiene, probiotic mouthwash can also be considered.

CONCLUSION

Along with regular brushing to improve periodontal status during fixed orthodontic treatment, Probiotic mouth wash can be used as an adjunctive measure. As per as reducing plaque accumulation and gingival inflammation is concern, Probiotic mouth-rinse tested was effective among children in age-group of 6-10 yrs.

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