

The Effect Of The Supervised Use Of Fluoridated Toothpaste On The Gingival Health Of Children

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ABSTRACT

Purpose: The present study was envisaged to study the effect of fluoridated toothpaste on the gingival health of children. **Materials and Methods:** Subjects in the age group of 8 to 10 years were selected for the study, irrespective of their sex and socio economic status. Toothpastes containing 0.38% sodium mono fluorophosphates, 500 PPM fluorides, 0.35% sodium

mono fluorophosphates and 458 PPM fluorides were used. The criterion for gingival health scoring was a marginal gingival index. **Result:** The results of this study showed that the oral health of the child patients improved over a 10 week period by the use fluoridated toothpastes.

Conclusion: This study shows that the use of fluoride toothpastes leads to a reduction in the gingival inflammation in children.

Key Words : fluoridated toothpaste; Dental plaque; Gingivitis.

INTRODUCTION

Gingivitis is a non-specific inflammatory response to the dental plaque, involving the gingival margins and is associated with an increase in the plaque mass due to poor oral hygiene [1],[2]. Various methods of maintaining oral hygiene like tooth brushing, mouth rinsing and flossing can remove the plaque in children [3]. Toothpastes came into general use in the 19th century. The Greeks, and then the Romans, improved the recipes for toothpastes by adding abrasives such as crushed bones and oyster shells. It is not known whether these early toothpastes were used alone, were to be rubbed onto the teeth with rags, or were to be used with early toothbrushes such as neem tree twigs or miswak. [4] Brushing with toothpastes helps to accomplish the following: remove plaque, resist decay, promote remineralization, clean and polish teeth, remove teeth stains and freshen the breath. [5] The use of fluoride containing oral health care products in children has a significant anticaries effect, which is attributed mainly to the beneficial influences on the remineralization process [6]. The aim of the present study was to evaluate the gingival health of children by the supervised brushing of teeth with fluoride toothpastes.

MATERIALS AND METHODS

This study was conducted in double-blinded manner. A total of 300 regular users of non fluoridated toothpastes were recruited. Consent was obtained from the parents before the beginning of the study. The subjects who were assigned to the two test groups were instructed to brush their teeth twice daily with soft toothbrushes [6], [7]. Assignments were carried out at the baseline and at 5 and 10 weeks. The subjects were evaluated for gingivitis by using a marginal gingival index [8], [9]. The scoring system was defined as follows: - 0 = Absence of inflammation.

1 = Mild inflammation; slight change in colour, little change in the texture of any portion of, but not in the entire marginal or papillary unit.

2 = Mild inflammation; criteria as above, involving the entire marginal or papillary unit.

3 = Moderate inflammation; redness, hypertrophy of the marginal or the papillary gingival unit.

4 = Severe inflammation, spontaneous bleeding, redness, hypertrophy of the marginal or the papillary gingival unit.

Statistical Analysis

An intra group evaluation of the changes from the baseline was made by using the paired t-test. An analysis of covariance was carried out to test the differences between the products. All the statistical tests assumed a 2-sided significance level of 0.005 ($P < 0.05$).

RESULT

[Table/Fig-1] shows the means for the subjects at the baseline and at 5 and 10 weeks with standard deviation and the sample sizes for the marginal gingival index. An analysis of variance of the baseline values gave no significant difference between the products MGI ($P = 0.5262$).

Toothpaste	Baseline	5 Weeks	10 Weeks
Control Group	1.24 (0.48)(82)	0.78 (0.37)(82)	0.86 (0.49)(82)
Sod Monofluoro phosphate 0.35%w/w, Floride 458 PPM [kidodent, Manufactured by Warren Excel]	1.23 (0.46)(71)	0.69 (0.38)(71)	0.79 (0.50)(71)
Sod Monofluoro phosphate 0.38%w/w, Floride 500 PPM [cherrio gel manufactured by Dr. Reddy's lab]	1.29 (0.45)(71)	0.53 (0.27)(71)	0.37 (0.23)(71)

[Table/Fig-1]: Means (sd) (n) for MGI Index

DISCUSSION

Gingivitis is very common oral health problem, especially in the developing countries [10]. The uncared child patients are often subjected to gingivitis due to the lack of knowledge of the parents and due to poverty and unaffordability of the required diets which are

essential for proper growth and development [11]. There is a global consensus that the regular use of fluoride (F) toothpastes constitutes a cornerstone in the dental health of children. In fact, a global survey revealed that most experts addressed F toothpastes as the main reason for the dramatic decline in caries during the last decades of the 20th century. Furthermore, a toothpaste is probably the most readily available form of F and tooth brushing is a convenient and approved habit in most cultures. A toothpaste is a paste or gel dentifrice which is used with a toothbrush as an accessory to clean and maintain the aesthetics and health of teeth. A toothpaste is used to promote oral hygiene as it serves as an abrasive that aids in removing the dental plaque and food from the teeth, that assists in suppressing halitosis, and that delivers active fluoride to help prevent tooth caries and gingivitis. Most of the cleaning is achieved by the mechanical action of the toothbrush, and not by the toothpaste. [12]

Plaque has been demonstrated to be the major aetiological factor in the causation of gingivitis, but in children, other factors may also show their influence to varying extents. Fluoride in various forms is the most popular active ingredient in toothpastes which can prevent cavities and maintain the gingival health. Although it occurs in small amounts in plants, animals, and some natural water sources, additional fluoride has beneficial effects on the formation of the dental enamel and the bones. Sodium fluoride is the most common source of fluoride, but stannous fluoride and sodium monofluorophosphate are also used. The predominant factors are lack knowledge regarding oral hygiene maintenance and a poor socio-economic status. [13] The results of this study showed that the oral health of the child patients improved over a 10 week period by the use fluoridated tooth pastes. It was also noted that the oral health of the child patients in the control group also improved. [14] The effect of fluoridated toothpastes may be compared to that of non-fluoridated pastes as a placebo with a prospect for further research. Due to the virtue of participating in this study and undergoing frequent check ups, the children became self motivated to improve their oral health. [15, 16]

CONCLUSION

The present study shows that the use of fluoride toothpastes leads to a reduction in the gingival inflammation. Furthermore, sustained oral hygiene instructions and motivation are important in improving the oral health of the child patients.

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REFERENCES

- [1] 10. Alfanco Mc. controversies, Perspectives and clinical implication of nutrition in Periodontal disease. *Dental clinics of North America* 20 : 579, 1976.
- [2] 11. Bradshaw DJ, Marsh PD, Hodgson RJ et al. Effect of glucose and flouride on competition and metabolism with in-vitro dental bacterial communities and biofilms. *Caries Res* 2002 36 : 81 – 86.
- [3] 8. Labene R, weatherford T, Ross N et al. A modified gingival Index for use in clinical trials. *Clinic Prev Dent* 1986 8: 3 – 6.
- [4] 3. Loe H, Theilade E, Jensen SB. Experimental gingivitis in man. *J periodontal* 1965 36: 177 – 187.
- [5] Lynch R, Navada R, Walia R. Low levels of fluoride in plaque and saliva and their effects on the demineralization and demineralization of enamel; role of fluoride toothpastes. *Int. Dent J* 2004 54: 304 – 309.
- [6] 1. Wennhall I, Matsson L, Schröder U, Twetman S Caries prevalence in 3-year-old children living in a low socio-economic multicultural urban area in southern Sweden. *Swed Dent J.* 2002;26(4):167-72. javascript:PopUpMenu2_Set(Menu12611146);
- [7] 16 Wennhall I, Mårtensson EM, Sjunnesson I, Matsson L, Schröder U, Twetman S Caries-preventive effect of an oral health program for preschool children in a low socio-economic, multicultural area in Sweden: results after one year. *Acta Odontol Scand.* 2005 Jun;63(3):163-7.
- [8] 9. Joiner A, Philpotts CJ, Ashcroft AT, Laucello M, Salvaderi A. In vitro cleaning, abrasion and fluoride efficacy of a new silica based whitening toothpaste containing blue covarine. *J Dent.* 2008;36 Suppl 1:S32-7. javascript:PopUpMenu2_Set(Menu18646368);
- [9] 12. Yeung CA. A systematic review of the efficacy and safety of fluoridation. *Evid Based Dent.* 2008;9(2):39-43
- [10] 6. Marinho VC, Higgins JP, Sheiham A, Logan S. Combinations of topical fluoride (toothpastes, mouthrinses, gels, varnishes) versus single topical fluoride for preventing dental caries in children and adolescents. *Cochrane Database Syst Rev.* 2004;(1):CD002781
- [11] 2. Marinho VC, Higgins JP, Sheiham A, Logan S. Fluoride toothpastes for preventing dental caries in children and adolescents. *Cochrane Database Syst Rev.* 2003;(1):CD002278.
- [12] 4. Marinho VC, Higgins JP, Logan S, Sheiham A. Fluoride gels for preventing dental caries in children and adolescents. *Cochrane Database Syst Rev.* 2002;(2):CD002280.
- [13] 6. De Sousa Mda L, Wagner M, Sheiham A. Caries reductions related to the use of fluorides: a retrospective cohort study. *Int Dent J.* 2002 Oct;52(5):315-20. javascript:PopUpMenu2_Set(Menu12418598);
- [14] 7. Marks LA, Martens LC. Use of fluorides in children: recommendations of the European Academy for Pediatric Dentistry. *Rev Belge Med Dent.* 1998;53(1):318-24.
- [15] 14 Ammari AB, Bloch-Zupan A, Ashley PF. Systematic review of studies comparing the anti-caries efficacy of children's toothpaste containing 600 ppm of fluoride or less with high fluoride toothpastes of 1,000 ppm or above. *Caries Res.* 2003 Mar-Apr;37(2):85-92.
- [16] 15. Mann J, Vered Y, Babayof I, Sintes J, Petrone ME, Volpe AR, Stewart B, De Vizio W, McCool JJ, Proskin HM. The comparative anticaries efficacy of a dentifrice containing 0.3% triclosan and 2.0% copolymer in a 0.243% sodium fluoride/silica base and a dentifrice containing 0.243% sodium fluoride/silica base: a two-year coronal caries clinical trial on adults in Israel. *J Clin Dent.* 2001;12(3):71-6.

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