



COMPARATIVE EVALUATION OF CLINICAL EFFICACY IN COMMERCIALY AVAILABLE DENTIFRICES- PARODONTAX™ AND OMNIDENT™ ON ESTABLISHED GINGIVITIS-A CLINICAL STUDY

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ABSTRACT

Introduction: Bacteria in dental plaque are a primary cause of periodontal inflammation, making effective plaque control essential. One of the most widely accepted methods for managing plaque and gingivitis is self-performed mechanical plaque removal. Researchers have long explored chemical agents that can assist in mechanical plaque control, thereby helping to prevent or reduce oral diseases. Toothpastes play a significant role in maintaining oral hygiene and controlling plaque. This study aims to assess the effectiveness of fluoride-based toothpastes, specifically Parodontax™ and Omnident™, in managing plaque and alleviating gingivitis symptoms. **Aim & Objective:** To evaluate the clinical effectiveness of toothpaste Parodontax™ and Omnident™ for the improvement of oral hygiene and the reduction of gingival inflammation in patients with established gingivitis. **Materials And Methods:** A total of 30 systemically healthy patients in the age group of 18-45 years with established gingivitis were randomly selected and divided into 2 groups. Group 1: 15 Patients received dentifrice Parodontax™. Group 2: 15 Patients received triclosan based toothpaste Omnident™. All the patients used the allocated dentifrice, twice a day for 30 days. Clinical parameters such as Plaque index, Gingival index and Sulcular bleeding index were assessed at baseline and after 30 days. **Results:** It can be inferred that among the tested toothpastes, for plaque and gingival bleeding reduction, highly statistically significant results were observed in case of Omnident™ for all the parameters (PI, GI, SBI) at baseline and after 30 days. **Conclusion:** Based on the result of the study it can be concluded that Omnident can be a possible alternate to Parodontax™ in management of gingivitis and as a routine measure for oral hygiene maintenance. However, this toothpaste could be used for further research to examine its efficacy in terms of remineralization and anti-microbial effect.

KEYWORDS : Established gingivitis, gingival inflammation, dentifrices, fluoride, oral hygiene.

INTRODUCTION

Removing microbial dental plaque biofilm is essential for preventing gingivitis, periodontitis, and tooth decay. While brushing twice daily and regular flossing are effective in reducing plaque, many individuals still experience gingival inflammation. Studies indicate that over half of adults have gingivitis, typically affecting three to four teeth on average. The widespread occurrence of gum inflammation suggests that oral hygiene practices are often inadequate, particularly in certain areas of the mouth. Since bacteria in plaque are a major cause of periodontal disease, maintaining thorough plaque control is crucial. Self-performed mechanical plaque removal remains one of the most reliable methods for managing plaque and gingivitis. Researchers have long explored chemical agents that could enhance mechanical plaque control, potentially improving oral health. Toothpastes play a vital role in maintaining oral hygiene and aiding in plaque removal.

Various toothpastes are available in the market today, each formulated with specific ingredients to promote oral health. Parodontax™, widely used in Europe for several years, has gained significant attention due to its unique composition. It contains sodium bicarbonate, sodium fluoride (1400 ppm), and other components such as glycerin, sodium lauryl sulfate, xanthan gum, and herbal extracts, including chamomile, echinacea, sage, myrrh, rhatany, and peppermint oil, all known for their medicinal properties.

Research suggests that Parodontax™ may be highly effective

in reducing plaque and gingivitis compared to other toothpaste formulations. Many clinical studies provide participants with professional dental cleaning and oral hygiene instructions before beginning trials. However, in real-world scenarios, most individuals perform plaque removal without supervision, leading to plaque buildup and gingival inflammation.

Another well-documented antimicrobial ingredient in oral care products is triclosan (2,4,4-trichloro-2'-hydroxydiphenyl ether), a non-ionic chlorinated bisphenol commonly found in personal hygiene products. It exhibits moderate substantivity, which enhances when combined with co-polymers. Omnident™, a commercially available fluoride and triclosan-based toothpaste (917 ppm fluoride), contains sodium monofluorophosphate (MFP), triclosan, zinc sulfate, and alum dental gel. It is designed to aid in plaque removal and improve gum health by reducing bleeding.

Fluoride plays a crucial role in strengthening tooth enamel by remineralizing demineralized areas and attracting essential minerals like calcium, which helps in preventing decay. It also stimulates the formation of fluorapatite, an acid-resistant enamel structure, thereby reducing susceptibility to bacterial attacks and further mineral loss.

This study aims to clinically assess the effectiveness of Parodontax™ and Omnident™ in plaque control, reducing gingival inflammation, and maintaining overall oral hygiene.

MATERIALS AND METHODS

Study Population

For the proposed study, a total of 30 patients were selected from the Outpatient Department of Periodontics and Oral Implantology, National Dental College & Hospital, Derabassi, Punjab. An ethical approval for the study was obtained from the Institutional Ethical Board Committee and a detailed verbal and written consent was taken from each of the patient. Patients were allocated randomly into two study groups (15 in each group)

Group 1 15 Patients received dentifrice Parodontax™ (1400 ppm) after Phase I therapy

Group 2 15 Patients received triclosan based toothpaste Omnident™ (917 ppm) Phase I therapy

Inclusion Criteria:

- I. Patients between age group of 18-45 years.
- II. Baseline Plaque Score mean > 1.5
- III. Gingival index > 1.0
- IV. Signs of gingival inflammation

Exclusion Criteria:

- I. Advanced periodontal inflammation
- II. Fixed orthodontic appliances
- III. Malocclusion (crowding) in the teeth
- IV. Anti-inflammatory medicines or antibiotic therapy less than 1 month before the study.
- V. Pregnant women
- VI. Lactating mothers

Methodology

Clinical parameters were recorded at baseline. All patients underwent a full mouth scaling using ultrasonic scalers and hand instrumentation. A total of 30 Patients were allocated randomly into two study groups:

Group 1: 15 Patients received dentifrice Parodontax™ (1400 ppm)

Group 2: 15 Patients received triclosan based toothpaste Omnident™ (917 ppm)

Oral hygiene instructions were given to all the study patients after the intervention. The patients were instructed to brush twice a day using respective dentifrices.

Assessment Of Clinical Parameter:

Clinical parameters included the assessment of Plaque index (PI) Silness & Loe (1964). Gingival index (GI) Loe & Silness (1963) and Sulcular bleeding index developed by Muhlemann H.R and Son S in 1971 were recorded at baseline and after 30th day of intervention.

Statistical Analysis

The parameters were tabulated and put to statistical analysis. The data for the present study was entered in the Microsoft Excel 2021 and analyzed using the SPSS statistical software 23.0 Version. The descriptive statistics included mean, standard deviation frequency and percentage. The intragroup comparison for the different time intervals was done using Paired t-tests to find the difference between the individual time intervals. The level of the significance for the present study was fixed at 5%.

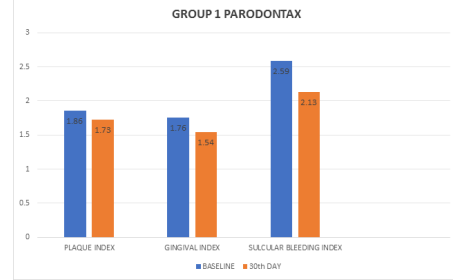
RESULT

Table 1: Intragroup Comparison Of Parodontax From Baseline To 30th Day For All Clinical Parameters

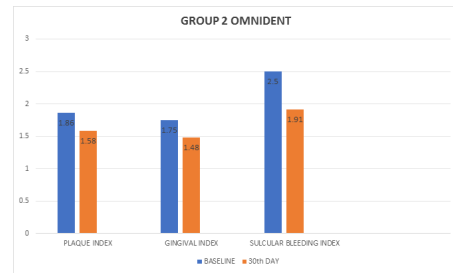
	PARODONTAX		
	BASELINE	30 DAYS	
PLAQUE INDEX	1.86±0.2	1.73±0.18	N.S.
GINGIVAL INDEX	1.76±0.13	1.54±0.1	S
SULCULAR BLEEDING INDEX	2.59±0.66	2.13±0.66	N.S.

Table 2: Intragroup Comparison Of Omnident From Baseline To 30th Day For All Clinical Parameters

	OMNIDENT		
	BASELINE	30 DAYS	
PLAQUE INDEX	1.86±0.2	1.58±0.22	S
GINGIVAL INDEX	1.75±0.1	1.48±0.13	S
SULCULAR BLEEDING INDEX	2.50±0.5	1.91±0.5	S



Graph 1: Intragroup Comparison at baseline and after 30th day



Graph 2: Intragroup Comparison at baseline and after 30th day

Table 3: Intergroup Comparison Of Omnident And Parodontax At 30th Day For All Clinical Parameters

	PLAQUE INDEX (Mean ± SD)		GINGIVAL INDEX (Mean ± SD)		SULCULAR BLEEDING INDEX SCORE (Mean ± SD)	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
BASELINE	1.86±0.20	1.86±0.20	1.76±0.13	1.75±0.1	2.59±0.66	2.50±0.50
30 TH DAY	1.73±0.18	1.58±0.22	1.54±0.1	1.48±0.13	2.13±0.66	1.91±0.50
P value	0.025*		0.073		0.036*	

The intergroup comparison of all parameters at 30th day was statistically significant for Plaque index and Sulcular bleeding index, however, Gingival index score was not found to be statistically significant. (p value= <0.05)

DISCUSSION:

The inflammatory response from experimental gingivitis is primarily due to microbial plaque accumulation. The dental plaque is considered to be the one of the primary etiological factors for dental diseases. The formation of plaque induced biofilm on the tooth surface is characterized by the progression of pioneer microbial species to the complex flora of mature dental plaque induced biofilm. There is an initial adherence of bacteria to the salivary pellicle and subsequent accumulation of inter-bacterial species around the soft tissue wall and form the aerobic and anerobic colonies in the biofilm. Ultimately, the tooth surface gets coated with a dense, complex micro-community that ends up in the destruction of hard enamel tissue.¹¹ Micro-organisms play a significant role in the causation of gingivitis and periodontitis. Studies have suggested the combined use of both mechanical and chemical therapy as the most efficient way in bringing down

the gingival inflammation. Various chemico therapeutic agents have been incorporated into dentifrice formulation to prevent and reduce gingivitis and dental caries.

Triclosan, stannous salts, and zinc salts along with fluoride and calcium are the main ingredients of any dentifrice. Fluoride is primarily known for its adherence to the tooth surface and its incorporation into the pellicle and dental plaque.¹² Studies on the interaction of fluoride content with oral soft tissues are very scant, which may be an experimental design challenge for future research. However, oral soft tissues are probably the main oral reservoir for fluoride.

A range of triclosan technologies have also been developed to enhance the anti-microbial activity.^{13,14} Dentifrices with only fluoride re-mineralize predominantly the surface layer of a caries lesion. Dentifrice with added triclosan provides putative anti-inflammatory and anti-bacterial properties which could be useful in controlling plaque and gingivitis.

Ingredients in dentifrice that aim to inhibit calcium phosphate deposits to prevent the development of calculus are mainly pyrophosphates. Dentifrices are ideal vehicles for the delivery of therapeutic agents because they are ubiquitously used during routine tooth brushing. They can be formulated to support user compliance with recommended brushing instructions.¹⁵ The present study was conducted to evaluate the effectiveness of two commercially available toothpastes (Parodontax™) and triclosan-based toothpaste (Omnicident™) in the reduction of gingival inflammation in patients with established gingivitis and improved oral hygiene status. The clinical parameter recorded were Plaque index, Gingival index and Sulcular Bleeding index at baseline and on 30th day.

In the present study, significant improvement in the mean plaque index score has been witnessed in group 2 (Omnicident™) as compared to group 1 (Parodontax™) from baseline to 30th day after the intervention. From the observations of the present study, it can be inferred that among the tested dentifrices, highly statistically significant results were observed in case of fluoride and triclosan based dentifrice- Omnicident™ for all the parameters (namely Plaque index, Gingival index and Sulcular bleeding index) at 30th day of intervention, whereas statistically insignificant results were recorded for plaque index and sulcular bleeding index in case of fluoride based dentifrice- Parodontax™.

The study's findings are in agreement with earlier research conducted by **Nogueira-Filho GR et al 2000** in which he studied the effect of 3 dentifrices containing triclosan and various additives on 25 dental students, on 21-day partial mouth experimental model of gingivitis. A formulation containing triclosan was able to reduce 35.9% of gingival index scores as compared to control group. In another study conducted by **Niederman.R 2004** on effects of triclosan - containing toothpastes, the triclosan dentifrice significantly reduced gingivitis with weighted mean differences of 0.12 (95% CI, 0.17 to 0.08) at the end of 6 months of unsupervised use of dentifrices. In a similar study by **McClanahan SF 2002** on effects of triclosan /copolymer dentifrice on dental plaque and gingivitis in a 3 month randomized controlled clinical trial, results showed 4.2% reduction in gingival index score.²¹

In the present study, the mean plaque index, gingival index and sulcular bleeding index score has significantly improved in Group 2 (Omnicident™) as compared to Group 1 (Parodontax™) at 30th day whereas statistically insignificant results were achieved for Group 1 (Parodontax™) after 30th day of intervention.

In this study no adverse effect was noted on the oral hard and soft tissues after the use of dentifrice. Although the use of

interdental cleaning aids and use of mouthwash was not advised during the time period of the study. Because of the small sample size and shorter follow up time period, further longitudinal clinical studies are required to determine the effectiveness of dentifrices and to determine any buildup of microbial resistance and reduction seen in the gingival inflammation or merely a reduction in plaque level at a larger study population.

CONCLUSION:

On the basis of the results of this study, it can be concluded that tooth brushing with fluoride and triclosan containing Omnicident™ dentifrice can reduce gingival inflammation, plaque formation and gingival bleeding effectively when compared with fluoride-based Parodontax™ dentifrice in all the study subjects. Hence, Omnicident™ can be a possible alternate to Parodontax™ dentifrice in the management of gingivitis.

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