

RESEARCH ARTICLE

A Clinical Pilot Study to Evaluate the Efficacy of Sea Salt Based Oral Rinse in Gingivitis Patients

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ABSTRACT

Aim: This pilot study was aimed to evaluate the efficacy of sea salt-based oral rinse as adjunct with conventional oral hygiene measures in gingivitis patients in terms of clinical parameters.

Materials and methods: A total 30 gingivitis patient between the ages of 18 and 55 years were enrolled in the study and divided under two categories. Clinical parameters were recorded prior to phase one therapy; and subjects were put on different oral hygiene regime with and without sea salt-based mouth rinse. At baseline and 3rd month subjects were evaluated.

Results: The results of this study showed that there was significant decrease in clinical parameters from baseline to 3 months in both the groups ($p < 0.01$). The subjects under groups using sea salt-based mouthwash showed a highly significant reduction to all the parameters as compared to subjects under groups using a conventional toothbrushing only.

Conclusion: Thus, we can conclude that long-term regular use of sea salt-based product seems to be more beneficial.

Keywords: Gingivitis, Mouth rinse, Sea salt.

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INTRODUCTION

The mouth acts as a window to lot of systemic diseases and serves as a port of entry to the various infections that can alter and affect the immune status of the person. The oral cavity has the potential to harbor at least 600

different bacterial species, and in any given patient, more than 150 species may be present, surfaces of teeth can have as much as billion bacteria in its attached bacterial plaque.¹ Periodontitis has been proposed as having an etiological or modulating role in cardiovascular, cerebrovascular disease, diabetes, respiratory disease and adverse pregnancy outcome; several mechanisms have been proposed to explain or support such theories. One of these is based around the potential for the inflammatory phenomenon of periodontitis to have effects by the systemic dissemination of locally produced mediators, such as C-reactive protein (CRP), interleukins-1 beta (IL-1 β) and -6 (IL-6) and tumor necrosis factor alpha (TNF- α).² Periodontal diseases are recognized as infectious processes that require bacterial presence and a host response which are further affected and modified by other local, environmental and genetic factors. The oral cavity works as a continuous source of infectious agents, and its condition often reflects the progression of systemic pathologies.³

Dental plaque biofilm cannot be eliminated. However, the pathogenic nature of the dental plaque biofilm can be reduced by reducing the bioburden and maintaining a normal flora with appropriate oral hygiene methods.⁴ The toothbrush plays an important role for personal oral hygiene and effective plaque removal.⁵ The primary purpose of brushing the teeth with a dentifrice is to clean the accessible tooth surfaces so as to minimize the accumulation of dental plaque, stains and food debris. This pilot study was aimed to evaluate the efficacy of sea salt-based oral rinse as adjunct with conventional oral hygiene measures in gingivitis patients in terms of clinical parameters.

MATERIALS AND METHODS

The present study was conducted in the Department of Periodontology, Rural Dental College of Pravara Institute of Medical Sciences, Loni, Ahmednagar, Maharashtra, India. After an informed consent, a total 30 gingivitis patients between the ages of 18 and 55 years were enrolled in the study who meets the study exclusion criteria as listed in Table 1. Subjects were randomized under two categories with each group comprised of 15 subjects each as illustrated in Table 2. Professional prophylaxis done to all the subjects and clinical parameters recorded were

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Table 1: Exclusion criteria for the patient enrolled in the study

- Presence of any systemic neurological disorder (e.g. epilepsy or schizophrenia)
- Presence of a disease with possible effects on the immune system
- Patients who have received antibiotics or NSAIDs (like Ibuprofen) in past 9 to 11 weeks
- Patients who have received periodontal treatment in past 6 months
- Pregnant and lactating mother
- Patient with artificial prosthesis
- Patients who smoke or consume tobacco in any form
- Patients suffering with arthritis
- Patient with any type of heart disease (MI, CHD, etc.)
- Female patient using intrauterine birth control devices or birth control pills
- Obese individuals (30 and above range as per WHO BMI cut off)
- Presence of diabetes mellitus
- Participants not willing to participate in the study

gingival index (GI) (Loe and Silness) and plaque index (PI) (Turesky-Gilmore-Glickman modification of Quigley hein plaque index) at base line and 3 months.

RESULTS

Table 3 demonstrates the demographic data of the subjects under both the groups. Table 4 demonstrates the distribution of mean and standard deviation (SD) values of clinical parameters in groups A and B at baseline and 3 months. By applying Kruskal-Wallis test variation among mean values of all clinical parameters

are significantly higher than expected by chance in both the groups A and B when compared together ($p < 0.0001$). By applying Friedman's test (nonparametric repeated measures ANOVA) variation among median values of all clinical parameters are significantly higher than expected by chance in groups A and B when compared-together ($p < 0.0001$). By applying Student's unpaired 't' test, there was a highly significant difference in mean values of GI, and PI from 3 to 3 months ($p < 0.001$) and not significant from baseline to baseline ($p > 0.05$) when group A compared with group B as seen in Table 5.

Table 2: Study groups: categorization of patients

Groups	Scientific protocol
Group A	Comprised of 15 gingivitis subjects with complete oral prophylaxis followed by toothbrushing and assigned with twice use of sea salt-based oral rinse
Group B	Comprised of 15 gingivitis subjects with complete oral prophylaxis followed by toothbrushing only

DISCUSSION

Long-term oral hygiene is always a key target for maintaining optimal periodontal health. Professional biannually oral prophylaxis plays a vital role in reducing the oral bioburden by removing plaque, calculus and stains from the oral cavity. H₂Ocean based Arctic Ocean

Table 3: Demographic data of subjects

Age in years	Group A (test group) (n = 15)			Group B (control group) (n = 15)		
	Male	Female	Total	Male	Female	Total
20–30	3	3	6 (40%)	0	0	0
30–40	4	3	7 (46.67%)	3	3	6 (40%)
40–50	1	1	2 (13.33%)	3	4	7 (46.67%)
50–60	0	0	0	2	0	2 (13.33%)
Total	8 (53.33%)	7 (46.67%)	15	8 (53.33%)	7 (46.67%)	15
Mean ± SD	31.37 ± 7.11	34.14 ± 6.77	32.67 ± 6.85	43.50 ± 6.57	40.86 ± 5.52	42.26 ± 6.04

Table 4: Distribution of mean and SD values of clinical parameters in groups A and B

Clinical parameters	Group A (test group) (n = 15)		Group B (control group) (n = 15)	
	Baseline	3 Months	Baseline	3 Months
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
Gingival index	2.59 ± 0.31	0.78 ± 0.12	2.59 ± 0.32	1.03 ± 0.11
Plaque index	2.45 ± 0.24	0.72 ± 0.12	2.58 ± 0.26	0.98 ± 0.10

SD: Standard deviation

Table 5: Student's unpaired t-test result

Clinical parameters	Group A vs B	
	From baseline to baseline	From 3 to 3 months
Gingival index	t = 1.29, p > 0.05, not significant	t = 13.70, p < 0.001, highly significant
Plaque index	t = 0.14, p > 0.05, not significant	t = 2.93, p < 0.001, highly significant

mouth rinse along with conventional oral hygiene plays a synergistic role in maintain the long-term oral hygiene by significantly reducing the plaque accumulation and suppressing the gingival inflammation. The above interpretation scientifically established that sea salt-based oral rinse, i.e. The above interpretation data also advocated that conventional oral hygiene plays a effective role in maintain the oral hygiene by significantly reducing the plaque accumulation and suppressing the gingival inflammation for shorter period of time as observed from base line to 3 months.

It depicts that salt water-based oral rinses are superior because they alkalinize the mouth (opposite of acidify, which is what the bacteria create) and the alkalinity helps in reducing the bacteria count because they like an acid environment. Additionally, salt water is astringent and speeds wound healing through reducing inflammation and contracting the tissues.⁶

CONCLUSION

H₂Ocean mouth rinse are the only sea salt-based oral rinse with enzymes naturally found in saliva. H₂Ocean Arctic Ocean oral rinse formula is enriched with the ingredient xylitol which prevents plaque growth and

helps to prevent dry mouth. As per manufacturer's guidelines twice daily use of one cap full of H₂Ocean oral rinse and swish thoroughly for 30 seconds. The key benefits for these products also include nonstaining, alcohol free, nonirritating and no taste alterations. Further, multicentric longitudinal clinical trials with more number of patients for longer duration should be done to critically evaluate the long-term effect of sea salt-based mouthwash in both gingivitis and periodontitis patients.

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