

Evaluation of Efficacy of a Commercially Available Herbal Mouthwash on Dental Plaque and Gingivitis: A Double-blinded, Parallel, Randomized, Controlled Trial

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Abstract:

Background: Present study was aimed to access the effectiveness of herbal mouthwash against plaque and gingivitis agents as compared with standard chlorhexidine.

Materials and Methods: A total of 120 patients were chosen for the study with the age group of 18-30 years. The patients were divided into three groups. Group A included patients only on chlorhexidine mouthwash; Group B included patients on herbal mouthwash, and Group C included patients on distilled water. Turesky modification of Quigley-Hein plaque index and modified gingival index by Lobene were used to evaluate plaque and gingivitis, respectively.

Results: There was a significant reduction of dental plaque and gingival scores from 0 to 21 days in all the groups.

Conclusion: Herbal mouth users showed significant enhancement from 0 to 21 days in protecting and maintaining the oral health. However, due to side effects seen while long-term using chlorhexidine mouth rinse, herbal mouthwashes can be used as a replacement for chlorhexidine mouthwash.

Key Words: Antiplaque, chlorhexidine, mouthwash

Introduction

Dental caries, periapical and gingival diseases are the most prevalent oral problems associated with dental plaque in human beings with the plaque being the foremost etiologic factor for initiating gingival inflammation.¹ Most often and

usually, periodontitis is preceded by gingivitis, although signs of gingivitis may not always be apparent clinically during the course of the disease-causing further attachment loss.² For maintaining problem free oral health, plaque control forms the mainstay in oral disease prevention. Various methods of plaque control include both mechanical method (toothbrushes, floss) and chemical methods (mouthwashes).³ Chlorhexidine gluconate is one of the most commonly used antiseptic mouthwashes.⁴ Chlorhex mouth rinses have been involved with dental professional from almost past 30 years as a component of primary health control measure. Chlorhexidine has also been approved by chemical, medicinal companies as baseline chemical plaque control for comparing the effectiveness of other plaque controlling agents.⁵ In fighting the oral health problems, various natural and ayurvedic herbal items have one way or the other proved to be of great efficacy without any noticeable side effects. The microorganisms feed on sugar and alcohol components, generating bad breath causing materials.⁶ Hence, we evaluated the effectiveness of herbal mouth rinse against plaque and gingivitis.

Materials and Methods

The present clinical trial was conducted in the College of Dentistry, King Faisal University, Al-Ahsa, KSA. A study flowchart comprising of case sheet performa was prepared and mean index score of plaque and gingival value were calculated, and a list of symptoms was prepared. The study sample consisted of 120 subjects with age group between 18 and 30 years. Turesky modification plaque index and Lobene modification of gingival index were used as the measuring index for evaluation plaque and gingival scores.^{7,8} Patients with a positive history of any kind of prolonged illness, a local pathologic condition in the oral cavity, known drug allergy and any history of oral surgical procedure were excluded from the study. Subjects were recalled after 2 weeks interval for recording plaque and gingival index score values. Random assigning of the 120 samples was done, and three random groups were made each consisting of 40 patients in each group. Group A included patients being positive control, i.e., on chlorhexidine mouthwash. Group B included patients on herbal mouthwash (Himalaya), and Group C included patients as control, i.e., on distilled water.

The dispensed mouthwashes in three bottles: A, B, and C were divided evenly between the patients on each of successive visit.

Twice rinsing daily by all the subjects was done daily with 15 ml of the allotted mouth rinses for 2 min, approximately 1 h of brushing their teeth. After the application of mouthwashes, the subjects were not allowed to subsequent rinse with water. Precalculated value of mouth rinses were given to patients of different groups at every visit. On the 14th day, patients were recalled, and both the gingival and the plaque index were recorded along with subjective and objective symptoms. After another 1 week, on the 21st day, subjects were again recalled, and the same parameters of oral health were again assessed. For statistical analysis, SPSS was used, and one-way ANOVA test was used for comparing plaque and gingival scores between different groups.

Results

We compared average plaque value scores from 0 to 2 weeks in groups with chlorhexidine and with herbal mouthwash. Data showed a significant decrease in the results between Group A and Group B (Table 1). Further, there was a significant decrease in the plaque scores between 0 and 3 weeks time (Table 1). We also compared gingival index scores between the different patient groups and found that there was a significant fall in the value from 0 day to 2 weeks and from 0 day to 3 weeks interval (Table 2). All the patients showed a positive acceptance of taste in the herbal mouth rinse study group. Regarding the irritative symptoms, in Group A, 25 subjects (62.5%) on the 14th day and 30 subjects (75%) on the 21st day showed burning type of feeling sensations. In Group A, only 4 subjects (10%) felt the dryness of mouth.

Discussion

In the treatment of oral diseases, various herbal products and medicines play an effective role. One of the formulations is the oral rinses with the herbal composition for controlling plaque and inflammation in periodontal therapy.⁹ Dalirsani *et al.*,¹⁰ and Anupama *et al.*,¹¹ postulated that herbal mouthwash has various positive outcomes such as minimal negative changes and cost-effectiveness when compared to chlorhexidine. Nagavalli (*piper betle*) shows anti-inflammatory, antioxidant, and antimicrobial properties. Pilu (*Salvadora persica*)

shows antioxidant activity.⁹ The WHO statistics shows that approximately four-fifth of the population in various included countries use the local traditional medicines for the treatment of their basic physical problems.⁶ Data show that more than thousands of trees and plants forms a vital part of basic ayurvedic medicine in India.¹² Recently, studies quotes and emphasizes on the good and positive effects of these plants on basic oral health. Because of ingredients having opposing action on inflammatory processes, these herbal mouth rinses have gained very much popularity within a very short period of time.¹³ The present study shows that herbal mouthwash is equally effective in controlling oral health as compared to the standard control of chlorhexidine mouthwash. Results also show that herbal group showed significantly better results when compared with the group on distilled water rinses. Our results were in accordance with the findings of Bagchi *et al.*, who also found similar results in their study.¹⁴⁻¹⁶ Our results also showed that these mouthwashes can be used as an additional plaque control technique along with mechanical method of plaque control these results were in contrast to the results obtained by Loe *et al.*,¹⁷ despite its antibacterial properties, chlorhexidine has certain limitations in its use includes both teeth and tongue stains on its long-term use.^{3,13,18} This study also has certain limitations. Further research is required to prove 100% safety protocol before such products could totally replace the conventional chemical plaque controlling agents.

Conclusion

Chlorhexidine mouthwash is one of plaque controls and prevention techniques and, therefore, can be used as an adjunct in maintain oral health and preventing oral diseases. Furthermore, the herbal mouthwash is as effective as the chlorhexidine gluconate rinse as shown in the results. Therefore, as plaque control is essential for the prevention of oral diseases, mouthwashes can prevent plaque formation and thus help in maintaining healthy oral status.

References

- Loe H, Theilade E, Jensen SB. Experimental gingivitis in man. *J Periodontol* 1965;36(5):177-87.
- Page RC. Gingivitis. *J Clin Periodontol* 1986;13(5):345-59.
- Malhotra R, Grover V, Kapoor A, Saxena D. Comparison of the effectiveness of a commercially available herbal mouthrinse with chlorhexidine gluconate at the clinical and patient level. *J Indian Soc Periodontol* 2011;15(4):349-52.
- Mandel ID. Chemotherapeutic agents for controlling plaque and gingivitis. *J Clin Periodontol* 1988;15(8):488-98.
- Jones CG. Chlorhexidine: Is it still the gold standard? *Periodontol* 2000 1997;15:55-62.
- Saraswathi MN, Karthikeyan M, Kannan M, Rajasekar S. Terminalia bellerica. Roxb – A phytopharmacological review. *Int J Res Pharm Biomed Sci* 2012;3:96-9.
- Parwani SR, Parwani RN, Chitnis PJ, Dadlani HP, Prasad SV. Comparative evaluation of anti-plaque efficacy

Table 1: Comparison of mean plaque scores between different groups.

Group	Baseline		14 days			21 days		
	Mean	SD	Mean	SD	P value	Mean	SD	P value
A	1.52	0.24	1.01	0.19	<0.005	0.71	0.10	<0.005
B	1.64	0.18	1.21	0.14	<0.005	0.92	0.15	<0.005
C	1.40	0.24	1.51	0.26	>0.005	1.53	0.26	>0.005

SD: Standard deviation

Table 2: Comparison of mean gingival scores between different groups.

Group	Baseline		14 days			21 days		
	Mean	SD	Mean	SD	P value	Mean	SD	P value
A	1.92	0.28	1.35	0.19	<0.005	1.20	0.10	<0.005
B	1.94	0.30	1.30	0.14	<0.005	1.22	0.15	<0.005
C	2.15	0.48	2.34	0.47	>0.005	2.31	0.38	>0.005

SD: Standard deviation

- of herbal and 0.2% chlorhexidine gluconate mouthwash in a 4-day plaque re-growth study. *J Indian Soc Periodontol* 2013;17(1):72-7.
8. Narayan A, Mendon C. Comparing the effect of different mouthrinses on de novo plaque formation. *J Contemp Dent Pract* 2012;13(4):460-3.
 9. Prasad KA, John S, Deepika V, Dwijendra KS, Reddy BR, Chincholi S. Anti-plaque efficacy of herbal and 0.2% chlorhexidine gluconate mouthwash: A comparative study. *J Int Oral Health* 2015;7(8):98-102.
 10. Dalirsani Z, Aghazadeh M, Adibpour M, Amirchaghmaghi M, Pakfetrat A. *In vitro* comparison of the antibacterial activity of ten herbal extracts against *Streptococcus mutans* with chlorhexidine. *J Appl Sci* 2011;11(5):878-82.
 11. Anupama D, Anil M, Surangama D. A clinical trial to evaluate the effect of triphala as a mouthwash in comparison with chlorhexidine in chronic generalized periodontitis patient. *Indian J Dent Adv* 2010;2:243-7.
 12. Vaish S, Ahuja S, Dodwad V, Parkash H. Comparative evaluation of 0.2% chlorhexidine versus herbal oral rinse on plaque induced gingivitis. *J Indian Assoc Public Health Dent* 2012;2012:55-62.
 13. Bhat N, Mitra R, Reddy JJ, Oza S, Vinayak K. Evaluation of efficacy of chlorhexidine and a herbal mouthwash on dental plaque: An *in vitro* comparative study. *Int J Pharm Bio Sci* 2013;4:625-32.
 14. Bagchi S, Saha S, Jagannath GV, Reddy VK, Sinha P. Evaluation of efficacy of a commercially available herbal mouthwash on dental plaque and gingivitis: A double-blinded parallel randomized controlled trial. *Indian Assoc Public Health Dent* 2015;13:222-7.
 15. Rahmani ME, Radvar M. The antiplaque effects of *Salvadora persica* and *Padina* essential oil solution in comparison to chlorhexidine in human gingival disease; a randomized placebo controlled clinical trial. *Int J Pharmacol* 2005;1:311-5.
 16. Mohammed SG. Comparative study of *in vitro* antibacterial activity of miswak extracts and different toothpastes. *Am J Agric Biol Sci* 2013;8:82-8.
 17. Lorenz K, Bruhn G, Netuschil L, Heumann C, Hoffmann T. How to select study designs and parameters to investigate the effect of mouthrinses? Part I: Rationale and background. *J Physiol Pharmacol* 2009;60 Suppl 8:77-83.
 18. Mathur S, Mathur T, Srivastava R, Khatri R. Chlorhexidine: The gold standard in chemical plaque control. *Natl J Physiol Pharm Pharmacol* 2011;1:45-50.