

Comparison of clinical and antimicrobial effects of Triphala mouthwash with Chlorhexidine mouthwash in generalised chronic periodontitis patients - A clinical study

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ABSTRACT

Aim: Triphala is one of the herbal mouthwashes which has an extensive property on periodontal diseases. This study compares the clinical and antimicrobial effects of Triphala mouthwash with chlorhexidine mouthwash in generalised chronic periodontitis patients.

Materials and Methods: A clinical trial was conducted from the outpatient Department of Saveetha Dental College and Hospital. Thirty patients with generalised chronic periodontitis were selected, according to AAP classification of periodontal diseases. Clinical baseline parameters, Plaque index and gingival index were recorded followed by plaque sample collection to record the baseline microbiological analysis. Supragingival and subgingival scaling were done. Patients were randomly allocated into two groups; Group-A: 15 patients were given with Triphala mouthwash and Group-B: 15 patients were given with Chlorhexidine mouthwash. All the patients were reviewed after 15 days.

Results: In a group A (CHX) patients, plaque index on the day 1 and 15 was 1.67 ± 0.13 and 1.21 ± 0.36 respectively. Gingival index on the day 1 and 15 was 1.61 ± 0.76 and 1.47 ± 0.13 . Bacterial colony count on the day 1 and 15 was 649.5 and 362.3 respectively. In the group B (Triphala) patients, plaque index on the day 1 and 15 was 1.63 ± 1.17 and 1.46 ± 0.29 respectively. Gingival index on the day 1 and 15 was 1.62 ± 0.61 and 1.25 ± 0.71 respectively. Bacterial colony count on the day 1 and 15 was 651.4 and 385.1 respectively.

Conclusion: The results show Triphala and chlorhexidine were effective in reducing plaque formation and gingival inflammation individually. Triphala was more effective in reducing gingivitis and chlorhexidine was effective in reducing plaque formation.

Keywords: Triphala mouthwash; Chlorhexidine; periodontitis; antiplaque agent; anti-inflammatory agent.

INTRODUCTION

Periodontitis means “Inflammation of the periodontium” which comprises of investing and supporting structures of the tooth namely gingiva, periodontal ligament, cementum and alveolar bone. Periodontal destruction originates from the dental plaque which has been defined as the microbial community that develops on the tooth surface, embedded in a matrix of polymers of bacterial and salivary origin (1). Plaque control is the primary step in the prevention and management of periodontal diseases which can be done either mechanically or by different chemical agents. While brushing, certain teeth surfaces receive minimum attention. Thus, use of additional methods like dental flossing, mouthwash has been performed. Chemical supragingival plaque control has been the subject of extensive research for 3–4 decades now. Various chemical agents have been introduced to the market which are antimicrobial and prevent the bacterial proliferation phase of plaque development (2). Among them, Chlorhexidine (CHX) a cationic bisbiguanide which is considered as a gold standard among all mouthwashes because of its substantivity and broad-spectrum antibacterial activity (3-7). However, the side effects of CHX limit its long-term use which includes tooth and tongue discolouration, taste alteration, excess formation of

supragingival calculus, soft-tissue lesions in young patients and allergic reaction has been reported (8, 9).

Natural herbs such as triphala, tulsi patra, jyestiamadh, neem, clove oil, pudina, ajwain, and many more used either as whole single herb or in combination have been scientifically proven to be safe and effective medicine against various oral health problems such as bleeding gums, halitosis, mouth ulcers, and preventing tooth decay (10). Triphala comprises of Amalaki (*Embilica officinalis*), Bibhitaki (*Terminalia beleria*), and Haritaki (*Terminalia chebula*) which is extensively used as a traditional Ayurvedic medicine in ancient times. It has been described in ancient Ayurvedic text as a *Tridoshik rasayana* and it is a therapeutic agent with balancing, laxative, hemostatic, anti-inflammatory, analgesic and wound healing properties.

Effects of Triphala

It is a therapeutic agent with hemostatic, anti-inflammatory, analgesic and wound healing effects. It is rich in polyphenols, tannins and ascorbic acid. These polyphenols are considered to be an antimicrobial agent. It has an epigallocatechin gallate (EGCG) as one of the condensed tannins which binds

to the bacterial cell wall thus inhibiting the bacterial growth. Because of the numerous properties of Triphala along with its other advantages like easy availability and cost effectiveness, the present study was undertaken to compare the clinical and antimicrobial effectiveness of Triphala and a commercially available chlorhexidine in generalised chronic periodontitis patients.

MATERIALS AND METHODS

A clinical trial was conducted from the outpatient department of Saveetha Dental College and Hospitals. Patients were selected based on the following criteria.

Inclusion Criteria: Subjects within 30-50 years were included with generalised chronic periodontitis according to AAP classification of periodontal diseases.

Exclusion Criteria: Subjects with chlorhexidine allergy, antibiotic therapy, anti-inflammatory therapy, Tobacco use were excluded.

Clinical baseline parameters, Plaque index (Loe and Silness 1964) and gingival index (Loe and Silness 1970) are recorded followed by plaque sample collection to record the baseline microbiological analysis. Supragingival and Subgingival scaling was done.

Patients were randomly allocated into two groups; Group-A: 15 patients were given with Triphala mouth wash (6% Triphala mouthwash, 15ml twice a day).

Group-B: 15 patients were given with Chlorhexidine mouth wash (0.2% Chlorhexidine mouthwash, 15ml twice a day).

All the patients were reviewed after 15 days. Clinical baseline parameters, Plaque index and gingival index are recorded followed by plaque sample collection to record the baseline microbiological analysis. Both the clinical and microbiological parameters (bacterial colony count) on the Day 1 is compared with Day 15 and the results were shown below. The study protocol was reviewed and approved by the Institutional Ethical Committee of Saveetha Dental College and Hospitals, Chennai. Chi-square statistical test was used to analyse the results.

RESULTS

A total number of 30 patients (18 males and 12 females) were selected for the study. All the patients completed the study. Mean and standard deviation of plaque and gingival indices for both the groups on Day 1 and Day 15 were shown in the following tables.

From the table 1, Group-A (CHX) the mean of plaque score on the day 1 was 1.67 ± 0.13 and on the day 15 was 1.21 ± 0.36 . Group-B (Triphala) on the day 1 was 1.63 ± 1.17 and on the day 15 was 1.46 ± 0.29 . From the table 2, Group-A(CHX) the mean of gingival score on the day 1 was 1.61 ± 0.76 and on the day 15 was 1.47 ± 0.13 . Group-B (Triphala) on the day 1 was 1.62 ± 0.61 and on the day 15 was 1.25 ± 0.71 .

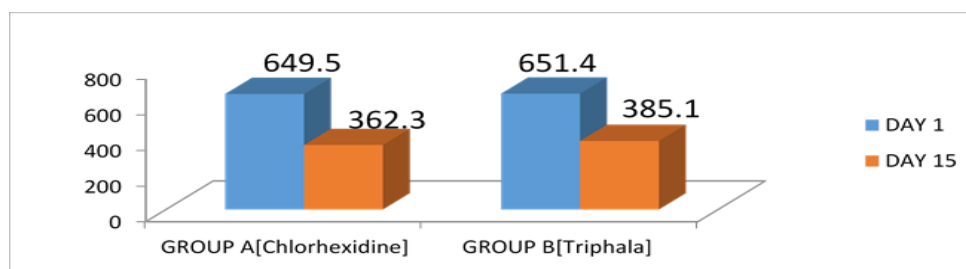
PLAQUE INDEX:

Table 1: Comparison of plaque index for both the groups on Day 1 & Day 15

| Groups | No of patients | Day 1 | Day 15 |
|--------------|----------------|-----------------|-----------------|
| A [CHX] | 15 | 1.67 ± 0.13 | 1.21 ± 0.36 |
| B [Triphala] | 15 | 1.63 ± 1.17 | 1.46 ± 0.29 |

GINGIVAL INDEX: Table 2: Comparison of gingival index for both the groups on Day 1 & Day 15

| Groups | No of patients | Day 1 | Day 15 |
|--------------|----------------|-----------------|-----------------|
| A [CHX] | 15 | 1.61 ± 0.76 | 1.47 ± 0.13 |
| B [Triphala] | 15 | 1.62 ± 0.61 | 1.25 ± 0.71 |



Graph 1: Comparison of bacterial colony count of patients in both the groups

From the graph-1, Group-A (CHX) the bacterial colony count on the day 1 was 649.5 and on the day 15 was 362.3. Group-B (Triphala) the bacterial colony count on the day 1 was 651.4 and on the day 15 was 385.1.

DISCUSSION

Dental plaque is the primary etiology for the development of periodontal diseases. Plaque control is

the first step in the prevention and management of gingivitis as well as periodontitis. Majority of the population may not perform mechanical plaque

control sufficiently or they may lack skill and motivation for mechanical plaque control. Thus, use of antimicrobial mouth rinse are recommended. Chlorhexidine (CHX), a gold standard antiplaque agent which has been proved by many studies (2, 4). This study was done to compare the clinical and antimicrobial effects of Triphala with chlorhexidine in generalised chronic periodontitis patients over a period of two weeks. Both Triphala and Chlorhexidine were significantly reduced plaque formation and gingival inflammation individually Triphala was more effective in reducing gingivitis whereas Chlorhexidine in plaque formation. This finding was consistent with the study conducted by Irfan *et al.*, (11). A study by Santos *et al.*, reported that CHX has reduced 16% - 45% of plaque and gingivitis from 27%-80% in six-month trials (12).

Jagadish *et al.*, conducted a study to determine the effect of Triphala on dental plaque and concluded that it has antioxidant and antimicrobial activity and inhibited the growth of *S. mutans*, gram positive cocci (13). Amalaki contains a large amount of vitamin C, which is most effective in reducing bleeding gums (14). Haritaki is the most efficient for bleeding gums and gingival ulcers as well as carious teeth (15). A study done by Gupta *et al.*, reported that Triphala mouthwash is useful in preventing the development of incipient lesions and it is cheaper than the commercially available CHX mouthwash (16). In this present study, Triphala and chlorhexidine both were significantly reduced the bacterial counts in generalised chronic periodontitis patients. Kaim *et al.*, in his study, investigated the anti-microbial activity of herbal mouth-rinse with 0.12% Chlorhexidine Gluconate against *S. mutans*, *S. sanguis* and *A. viscosus*. It was found that herbal mouth-rinse produced the largest zones of microbial inhibition when compared to against all the three bacteria tested (17). Haffajee *et al.*, compared the effectiveness of herbal mouth-rinse with 0.12% Chlorhexidine Gluconate. It was found that herbal mouth-rinse was effective in inhibiting oral bacteria, predominantly *Actinomyces* sp., *E. nodatum*, *P. intermedia*, *P. melaninogenica*, *P. nigrescens* and *T. forsythia* (18). So far, CHX has been considered the gold standard antiplaque and antigingivitis agent, but now, it is the turn to recognise the value of natural herbs like Triphala, known to have effective anti-inflammatory and anti-microbiological properties with no side effects. More studies are required to further emphasize the effect of Triphala on gram negative anaerobes, the microorganisms responsible for causing periodontitis.

CONCLUSION

This study concludes that both Triphala and chlorhexidine were effective in reducing plaque formation and gingival inflammation individually Triphala was more effective in reducing gingival inflammation and chlorhexidine was effectively

reduced plaque formation. Further studies are required to know the long-term effects of Triphala as a mouthwash.

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REFERENCES

1. Marsh, P. D., Martin, M. V., Lewis, M. A. O. and Williams, D. Oral Microbiology. 5th ed Edinburgh, Elsevier Health Sciences UK 2009.
2. Eley, B. M. A review on Antibacterial agents in the control of supragingival plaque. Br Dent J 1999; 186: 286-296.
3. Nagappan, N., and John, J. A. systemic review on antimicrobial efficacy of herbal and chlorhexidine mouth rinse. J Dent Med Sci. 2012; 2: 5-10.
4. Asadoorian, J. Oral rinsing. Can J Dent Hyg 2006; 40: 1-13.
5. Addy, M., and Moran, J. M. Evaluation of oral hygiene products: science is true; don't be misled by the facts. Periodontol 2000 1997; 15: 40-51.
6. Rolla, G., Loe, H., and Schiott, C. R. Retention of chlorhexidine in the hu-man oral cavity. Arch Oral Biol 1971; 16: 1109-1116.
7. Van Leeuwen, M. P., Slot, D. E., and Van der Weijden, G. A. A systemic review on essential oils compared to chlorhexidine with respect to plaque and parameters of gingival inflammation. J Periodontol 2011; 82: 174- 194.
8. Flötra, L., Gjermo, P., Rölle, G., and Waerhaug, J. Side effects of chlorhexidine mouth washes. Scand J Dent Res. 1971; 79: 119-125.
9. Quirynen, M., Avontroodt, P., Peeters, W., Pauwels, M., Cauck, W., and Steen Berghe, D. Effect of different chlorhexidine formulations in mouth rinses on de novo plaque formation. J Clin Periodontol. 2001; 28: 1127-1136.
10. Bajaj, N., and Tandon, S. The effect of triphala and chlorhexidine mouthwash on dental plaque, gingival inflammation, and microbial growth. Int J Ayurveda Res. 2011; 2: 29-36.
11. Irfan, M., Kumar, S., Amin, V., and Cuevas-Suárez, C. E. Evaluation of the efficacy of triphala mouth rinse as co-adjuvant in the treatment of chronic generalized periodontitis- a randomized clinical trial. Mouth Teeth 1: DOI: 10.15761/MTJ.1000103.
12. Santos, A. Evidence-based control of plaque and gingivitis. J Clin Periodontol. 2003; 30(Suppl 5): 13-16.
13. Jagadish, L. A., Kumar, A., and Kaviyarsan, V. Effect of Triphala on dental bio-film. Indian Journal of Science and Technology. 2009; 2 (1): 30-33.
14. Maurya, D. K., Mittal, N., Sharma, K. R., and Nath, G. Role of triphala in the management of periodontal disease. Anc Sci Life. 1997; 17: 120-127.
15. Dar, P. A., Sofi, G., Parray, S. A., Jafri, M. A. A review on unani system of medicine and modern pharmacology. Int J Inst Pharm Life Sci. 2012; 2:138-149.
16. Tandon, S., Gupta, K., Rao, S., and Malagi, K. J. Effect of triphala mouthwash on the caries status. Int J Ayurveda Res. 2010; 1:93-99.
17. Kaim, J.M., Gultz, J., Do, L., and Scherer, W. An *in vitro* investigation of the antimicrobial activity of an herbal mouthrinse. J Clin Dent. 1998; 9: 46-48.
18. Haffajee, A. D., Yaskell, T., and Socransky, S. S. Antimicrobial effectiveness of an herbal mouth rinse compared with an essential oil and a chlorhexidine mouth rinse. J Am Dent Assoc. 2008; 139: 606-611.