

Evaluation of the Efficacy of Triphala as A Mouthwash in Comparison with Chlorhexidine Mouthwash in Patients with Chronic Generalised Periodontitis

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ABSTRACT

Background: Ayurveda is the ancient Indian system of natural and holistic medicine. When translated in Sanskrit, Ayurveda means “the science of life”. Since ancient times Ayurveda drugs are in use. Periodontal therapy involves the use of mouthwashes that are created from Ayurveda. From these drugs triphala has anti-bacterial activity. Triphala is being widely studied and researched in the dental arena for its anti-oxidant, anti-microbial, anti-caries and anti-microbial activities. The aim of this study is to compare the efficacy of triphala mouthwash with 0.2% chlorhexidine in chronic generalized periodontitis patients.

Materials and Method: The study included 20 subjects diagnosed with chronic generalized gingivitis. They were equally divided into 2 groups. Group-A patients were prescribed triphala mouthwash and Group-B patients were prescribed 0.12% chlorhexidine mouthwash. The clinical parameters such as the Gingival Index (GI), the Plaque Index (PI), oral hygiene index (OHI) and papillary marginal attachment index (PMA) were taken at baseline, 7th, 30th, and 45th day respectively.

Result: The clinical parameters were compared using the Paired sample t- test and the triphala mouthwash was proved to be as effective as commercially available chlorhexidine mouthwash.

Conclusion: Triphala mouthwash has proven to be as effective as chlorhexidine mouthwash in chronic generalized periodontitis patients and thus chlorhexidine can be replaced by triphala in future.

Keywords: Periodontitis, Triphala, Chlorhexidine.

INTRODUCTION

Gingival and periodontal diseases, in their various forms, have afflicted humans since the dawn of history. Our understanding of the etiology and pathogenesis of oral diseases and conditions is continually changing with increased scientific knowledge. The periodontium is composed of the investing and supporting tissues of the tooth namely gingiva, periodontal ligament, cementum

and alveolar bone. Periodontitis is defined as “an inflammatory disease of the supporting tissues of the teeth caused by specific microorganisms or specific group of microorganisms, resulting in the progressive destruction of the periodontal ligament and alveolar bone with pocket formation, recession or both”¹. For treatment of periodontal disease mechanical and chemical supragingival plaque control is essential².

Received: Dec. 23, 2016; Accepted: Jan. 11, 2017

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Dental plaque has been defined as the microbial community that develops on the tooth surface, embedded in a matrix of polymers of bacterial and salivary origin³. Maintenance of effective plaque control is the cornerstone of any attempt to prevent and control periodontal disease. A combination of oral hygiene instructions and mechanical professional tooth cleaning at proper intervals can almost completely prevent the development of both gingivitis and periodontitis. Plaque control normally means preventive measures aimed at removing dental plaque and preventing it from recurring. This can be accomplished either mechanically or chemically⁴.

Dynamic participation by an individual has to be done for proper mechanical plaque control. Therefore the technique which is simple and less time consuming should be recommended for removing dental plaque⁵. Limitation of mechanical plaque control procedures is that they concentrate solely on the hard surfaces of the oral cavity. Although the non-shedding surfaces of the teeth provide an excellent surface for the establishment and growth of biofilms, they represent a relatively small percentage of the total area of the oral cavity (21-23%)⁶. Chemical antiplaque agents present in mouth rinses or dentifrices could reach these soft tissue surfaces, improving the control of biofilm growth on these surfaces and delaying microbial accumulation on teeth⁷.

In the developing countries of the world the widespread use of mouthwashes as an aid to oral hygiene is a relatively recent phenomenon. Chemical supra-gingival plaque control has been an issue of research for 4-5 decades. Antimicrobial agents which can prevent bacterial proliferation are developed. A great number of antimicrobial agents have been studied in regard to the control of plaque. They can be categorized into- Bisbiguanides, quaternary ammonium compounds, phenolic agents, oxygenating agents, natural products etc. From all the mouthwashes, available Chlorhexidine (CHX), a cationic bisbiguanide is said to be a gold standard⁸. It has a promising substantivity and broad-spectrum antibacterial activity⁸. The need for frequent application of CHX and side effects such as staining of teeth and unpleasant taste, has encouraged search for alternatives which are more appropriate.

"TRIPHALA" meaning "three fruits", is a traditional ayurvedic herbal formulation consisting of three fruits namely Amalaki (*Embolica officinalis*), Bibhitaki (*Terminalia bellerica*) and Haritaki (*Terminalia chebula*)⁹. Triphala has been described in ancient Ayurvedic text as a Tridoshik Rasayana, a therapeutic agent with balancing, laxative, hemostatic, anti-inflammatory, analgesic and wound healing properties as described in sushruta samhita¹⁰. Triphala is having an antiplaque efficacy which is alike to CHX. Triphala also inhibits plaque formation with minor or no side effects¹⁰.

The purpose of the present study was to compare the efficacy, safety and antimicrobial properties of the "triphala" mouthwash over 0.2% chlorhexidine mouthwash in patients with chronic generalized periodontitis.

MATERIALS & METHOD

Study design:

An in vitro study was conducted from the out-patient department of Karnavati dental hospital, Uvarsad, Gandhinagar, India. The ethical clearance was obtained from the ethical committee of Karnavati school of dentistry and hospital. The study participants were clearly informed about the study and a written informed consent was obtained. 20 subjects in the age group 35 to 55 years participated in the study. Of the 20 subjects, 11 were females and 9 were males. The selection criteria was that the subjects should have chronic generalized periodontitis (CGP). In this study CGP was defined as "clinical attachment loss > 4-5 mm, periodontal pockets of 5-7 mm in minimum 3 teeth of each quadrant". Subjects who had systemic disease, pregnancy and who used tobacco were excluded from the study. The duration of the study was 45 days. Patients were equally divided into two groups:

- Group A – treated with scaling and root planning and prescribed to use Chlorhexidine mouthwash.
- Group B – treated with scaling and root planning and prescribed to use Triphala as mouthwash.

Instructions were given to the patient to rinse their mouth with 10 mL of the allotted mouthwash for 1 minute twice daily for 45 days. Patients were educated with the oral hygiene instructions. The plaque index (PI)¹¹, the gingival index (GI)¹² oral hygiene index-simplified (OHI-S)¹³ and papillary marginal attachment index (PMA)¹⁴ were assessed in each patient on the 1st, 30th and the 45th day by two different skilled examiners. The efficacy outcome was examined with the changes in the GI, PI and OHI. Also, at each appointment patients were inquired about any side effect regarding the use of mouthwash.

PREPARATION OF TRIPHALA MOUTHWASH

Triphala is available as a fine churn. It is conventionally has a shelf life of 6 months. Mouthwash is prepared by boiling 100 gms of Triphala powder into 1000 ml of water and reduced half¹⁵.

STATISTICAL ANALYSIS

A parametric test (Independent sample t- test) was used to compare difference between index scores recorded at baseline and 45 days.

RESULTS

All 20 patients completed the study. The triphala mouthwash was equally accepted and did not show any adverse reactions. After 45 days of duration, all the group individuals had similar gingival index and the plaque scores as compared to the baseline levels. In group A (triphala group) at baseline the mean gingival score was 1.80 ± 0.33 as compared to 1.38 ± 0.30 recorded after 45 days. Likewise at baseline the mean plaque score was 1.72 ± 0.24 as compared to 1.69 ± 0.24 recorded 45 days. PMA score was 120 ± 8.05 as compared to 111.7 ± 8.47 . In group B (CHX group) at baseline the mean gingival score was 2.02 ± 0.35 as compared to 1.61 ± 0.22 recorded after 45 days. Likewise at baseline the mean plaque score was 1.71 ± 0.22 as compared to 1.63 ± 0.23 recorded 45 days. PMA score was 124 ± 3.83 as compared to 112.6 ± 8.26 .

Table 1: Loe and Silness Gingival Index

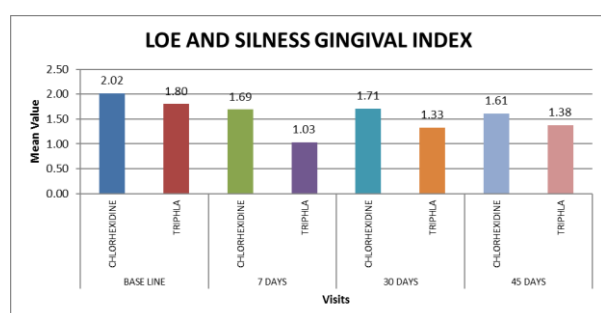
	GROUP	Mean	Std. Deviation	Mean Difference	P value
BASE LINE	CHLORHEXIDINE	2.02	0.355	0.22	0.114
	TRIPHLA	1.80	0.221		
7 DAYS	CHLORHEXIDINE	1.69	0.393	0.66	<0.001
	TRIPHLA	1.03	0.170		
30 DAYS	CHLORHEXIDINE	1.71	0.292	0.38	0.002
	TRIPHLA	1.33	0.177		
45 DAYS	CHLORHEXIDINE	1.61	0.331	0.23	0.124
	TRIPHLA	1.38	0.305		

Table 2: Quigley Hein Plaque Index

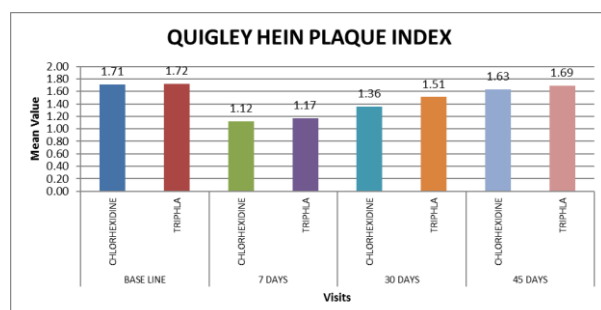
	GROUP	Mean	Std. Deviation	Mean Difference	P value
BASE LINE	CHLORHEXIDINE	1.71	0.228	-0.01	0.923
	TRIPHLA	1.72	0.230		
7 DAYS	CHLORHEXIDINE	1.12	0.162	-0.05	0.587
	TRIPHLA	1.17	0.236		
30 DAYS	CHLORHEXIDINE	1.36	0.201	-0.15	0.132
	TRIPHLA	1.51	0.223		
45 DAYS	CHLORHEXIDINE	1.63	0.241	-0.06	0.589
	TRIPHLA	1.69	0.247		

Table 3: Papillary Marginal Attachment Index.

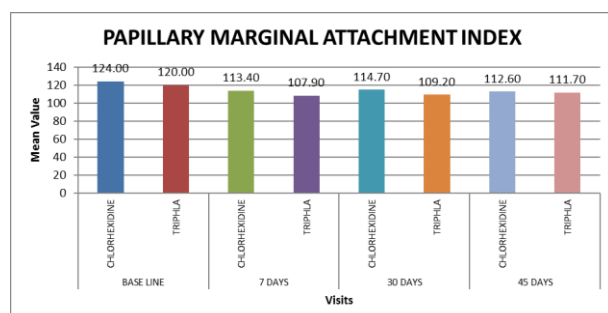
	GROUP	Mean	Std. Deviation	Mean Difference	P value
BASE LINE	CHLORHEXIDINE	124.00	3.830	4.00	0.182
	TRIPHLA	120.00	8.260		
7 DAYS	CHLORHEXIDINE	113.40	3.950	5.50	0.073
	TRIPHLA	107.90	8.225		
30 DAYS	CHLORHEXIDINE	114.70	6.482	5.50	0.126
	TRIPHLA	109.20	8.690		
45 DAYS	CHLORHEXIDINE	112.60	8.058	0.90	0.810
	TRIPHLA	111.70	8.473		



Graph 1: Comparison with relation to Loe and Silness index.



Graph 2: Comparison with relation to Quigley Hein Plaque index.



Graph 3: Comparison with relation to Papillary Marginal Attachment Index.

DISCUSSION

Oral healthcare is an essential part of general health. Foreign bodies and oral bacteria can be a threatening source of aspiration pneumonia and endocarditis¹⁶. Therefore, herbal medicines which are naturally occurring provide most dependable and reliable results for restoration of oral and systemic health¹⁷. Antimicrobial mouthwashes used in periodontics have either sugar or alcohol in one of their contents¹⁸. These components increase the possibility of having caries and halitosis. Thus, by the using herbal mouth rinses, these side effects can be avoided¹⁹.

The knock of Ayurveda on the doors of science is resonating with each passing day. The term Ayurveda is a compound term wherein “Ayu” denotes life and “veda” denotes knowledge. Ayurveda originated more than 3000 years ago from the youngest of vedas, “The Atharva Veda”. It inspires the use of herbal medicines. The traditional indian texts, the charak Samhita and susruta Samhita describes the method for traditional herbal supplement¹⁷. The aptitude behind triphala’s many benefits comes from individual herbs which constitute the formula.

This study showcased the efficacy of an herbal mouthwash with CHX, which is the gold standard antimicrobial agent^{19,20,21}. Brownstein et al in 1990 studied chlorhexidine mouthwash²². Superior efficacy of CHX on plaque regrowth s been demonstrated by Adams et al²¹. Reduction in plaque and gingivitis has been proved by Santos et al²³. As chlorhexidine has been proved to be the most

effective chemical plaque control agent, it was selected as the test substance²⁴.

Triphala has been extensively used in Ayurveda because of its various properties and therapeutic uses. The original meaning of word triphala is “three fruits” derived from haritaki, bibhitaki and vibhitaki²⁵. Triphala helps in detoxification of the colon and purifies the blood of the whole body with removal of the toxins from the liver. Triphala also has added benefits of reduction of serum cholesterol and high blood pressure. Triphala can also bring relief to the stomach-related problems like decreased appetite, stomach acidity, abdominal pain and constipation. Furthermore this peculiar herb is utterly effective in treatment of common cold and cough. The contents of triphala such as phenols, tannins and glycosides are responsible for its potent antioxidant activity^{22,27}.

Mehta et al have shown the evidence regarding the antimicrobial efficacy of Triphala. Inamdar et al and Sujata et al have studied the antibacterial and anti-fungal activity of triphala²⁸. Periodontal disease can be managed by herbal extracts that are potent inhibitors of pathologically elevated collagenases. Lee et al concluded that connective tissue break down during inflammatory periodontal disease is mediated by polymorphonuclear neutrophils which provide the major source of collagenase or gelatinase. Allan et al concluded that activity of MMP-9 can be inhibited by triphala²⁹. Triphala is also known to cause suppression of collagenase activity²⁹.

The triphala mouthwash is easy to use and considering the fact that subjects of the current study reported brown staining and complained of bitter taste with CHX, it is advisable that clinicians can safely prescribe the triphala mouthwash to their patients. This being a short-term study, the results can be used as a baseline data for future studies with similar study design.

CONCLUSION

Within the limits of the study, it was concluded that the triphala and chlorhexidine mouthwash were equally effective which suggests that for inhibiting oral microbial growth the triphala mouthwash can be used therapeutically.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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