



## **EFFICACY OF TRIPHALA MOUTHWASH IN THE TREATMENT OF PLAQUE INDUCED GINGIVITIS**

**Dr. Sirsat Jyoti D.<sup>1</sup>, Dr. Gosalia Aneri A.\*<sup>2</sup>, Dr. Shah Mona U.<sup>3</sup>, Dr. Doshi Yogesh S.<sup>4</sup>, Dr. Kevadia Vidhi N.<sup>5</sup>, Dr. Talat Mohammadi<sup>6</sup>**

<sup>1</sup>(MDS) Private Practitioner, Beed, Maharashtra, India.

<sup>2</sup>(BDS) Post Graduate Student, Department of Periodontics, Pandit Deendayal Upadhyay Dental College, Solapur, India.

<sup>3</sup>(MDS) Head of the Department, Department of Periodontics, Pandit Deendayal Upadhyay Dental College, Solapur, India.

<sup>4</sup>(MDS) Professor, Department of Periodontics, Pandit Deendayal Upadhyay Dental College, Solapur, India.

<sup>5</sup>(MDS) Reader, Department of Periodontics, Pandit Deendayal Upadhyay Dental College, Solapur, India.

<sup>6</sup>(MDS) Senior Lecturer, Department of Periodontics, Pandit Deendayal Upadhyay Dental College, Solapur, India.

**\*Corresponding Author: Dr. Gosalia Aneri A.**

(BDS) Post Graduate Student, Department of Periodontics, Pandit Deendayal Upadhyay Dental College, Solapur, India.

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### **ABSTRACT**

**Background:** Triphala is a combination of three medicinal plants, extensively used in Ayurveda since ancient times. It is used as an antiplaque agent with minimal side effects that can be used as an effective adjunct to mechanical plaque control. The current study is designed to evaluate efficacy of Triphala mouthwash in comparison with the gold standard 0.2% Chlorhexidine in plaque induced gingivitis. **Materials and Method:** 30 Individuals with chronic generalized gingivitis were randomly assigned to three groups: Group I (n=10): using Triphala mouthwash (6%), Group II (n=10): using Chlorhexidine mouthwash (0.2%), Group III (n=10): using distilled water (Placebo). All participants were instructed to rinse with their respective mouthwash twice daily. All participants were re-examined after 15 days and 30 days and oral examination was done to record Plaque index, (PI) Gingival index, (GI) Oral hygiene index – simplified (OHIS) by the same examiner. **Results:** All the three groups showed gradual decrease in PI, GI and OHIS values from B/L to follow up visits at 15 days and 30 days. A significant reduction in PI, GI, and OHIS scores was observed for groups I, and II at all time intervals. There was a significant difference with respect to reduction in PI, GI and OHIS in group III compared with group II and group I. **Conclusion:** Triphala mouthwash has proven to be as effective as chlorhexidine mouthwash in reducing plaque accumulation in chronic generalized gingivitis patients.

**KEYWORDS:** Triphala, Chlorhexidine, Mouthwash, Gingivitis.

### **INTRODUCTION**

Ayurveda is an ancient Indian system of medicine that offers a vast pool of herbal medications that are effective and often considered free of toxicity of modern allopathic preparations. In recent times, a lot of clinical trials have been conducted, evaluating the age-old science of ayurveda by testing it against the gold standard of allopathic preparations used for established treatment modalities.<sup>[1]</sup>

Gingivitis is one of the most prevalent oral disease worldwide and is caused by bacterial biofilm surrounding the teeth. Gingivitis leads to swollen gums, bleeding gums and halitosis.<sup>[2]</sup> All these conditions result in poor oral hygiene and a cascade of events causing early loss of teeth leading to dental esthetics and functional problems.<sup>[3]</sup>

The primary way of prevention of oral diseases is plaque control and prevention of plaque accumulation on tooth and gingival surface. In fact, mechanical plaque removal is the most effective way of preventing caries, gingivitis, periodontitis and microbial systemic diseases.<sup>[4]</sup>

Natural herbs such as triphala, tulsi patra, jystimadh, 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. The major strength of these natural herbs is that their use has not been reported with any side effects till date.<sup>[5]</sup>

“Triphala” is among the most common formulations used in traditional Ayurvedic medicine.<sup>[6]</sup> According to the

20<sup>th</sup> slokha of Sushruta Samhita, triphala can be used as a gargling agent in dental diseases.<sup>[7]</sup> It is composed of the fruits of three trees, Indian gooseberry Amalakai (*Emblica officinalis*), Bibhitaki (*Terminalia beleria*), and Haritaki (*Terminalia chebula*). The dry fruit of these three mentioned plants and triphala as a whole are easily available in the market and are affordable for all socioeconomic strata. Triphala has been reported to have antimicrobial, antiseptic, anti-inflammatory and antioxidant properties.<sup>[8,9]</sup>

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 effect of 6% of triphala and 0.2% Chlorhexidine (CHX) mouthwash against plaque accumulation and gingival inflammation.

## MATERIALS AND METHODS

This study was conducted at the department of Periodontics, at Pandit Deendayal Upadhyay Dental College Solapur.

**Sample size:** A total of 30 patients in the age group 18-60 years, with chronic generalized gingivitis were enrolled. Patients divided in to three groups of 10 each.

### Group Distribution

The subjects were divided into three groups

Group I (n=10): using Triphala mouthwash (6%)

Group II (n=10): using Chlorhexidine mouthwash (0.2%)

Group III (n=10): using distilled water (Placebo)

### Inclusion and exclusion criteria

After taking a detailed medical history and initial clinical examination, systemically healthy individuals with previously untreated gingivitis were selected.

#### Inclusion Criteria

- Age > 18 years
- Systemically healthy individuals
- Subjects presenting with plaque induced gingivitis
- Subjects presenting with halitosis

#### Exclusion criteria

- Use of antibiotics and anti-inflammatory drugs in previous 6 months
- History of mouthwash use in the past 6 months
- Allergy to any ingredients used in the study
- Smokers or users of tobacco in any form
- Pregnant or lactating females.

### Preparation of Triphala mouthwash

Triphala is available in a finely sieved powder form called churna. In the present study, 6% triphala mouthwash was prepared. Sixty grams of commercially available triphala powder was dissolved in 1 L of distilled water and to improve patient compliance, 2ml of glycerine (sweetening agent) and 1 ml of Pudin Hara

(flavoring agent) were added to the solution. The solution was brought to boil for 10 minutes, cooled, and filtered. It was dispensed in white semitransparent bottles.

Triphala and Placebo mouthwashes were prepared at Shivdhare Pharmacy collage Solapur, India.

Baseline examinations was performed for individuals who agreed to participate in the study. Clinical parameters recorded were: 1) Plaque index (PI) 2) Gingival index (GI) 3) Oral hygiene index – simplified (OHIS).

After this all individual underwent ultrasonic scaling in order to remove debris, plaque and calculus. All individuals were instructed to use 15 ml mouthwash twice daily, 30 minutes after brushing and instructed not to rinse or eat anything for 30 minutes after mouthwash use. During the entire study period, the participants continued to exercise their routine self-performed oral hygiene measures. No instructions were given to any of the participants regarding the oral hygiene practices, so as to prevent any associated bias in any of the groups. All the participants were re-examined after 15 days and 30 days and oral examination was done to record Plaque index, (PI) Gingival index, (GI) Oral hygiene index – simplified (OHIS) by the same examiner.

Data collected during the study were entered into excel sheets and were subjected to data analysis. Statistical analysis was done by the statistician. Values of different parameters collected are expressed as mean standard deviation (SD). Repeated measures analysis of variance (ANOVA) was performed for comparison of differences among the three groups and to assess to change for assessed parameters at all time intervals for within subject effect.

## RESULTS

All the study participants (n=30) completed the study. There were no significant differences between groups I, II, and III in baseline of PI, GI and OHIS values. All the three groups showed gradual decrease in PI, GI and OHIS values from B/L to follow up visits at 15 days and 30 days.

A significant reduction in PI, GI, and OHIS scores was observed for groups I, and II at all time intervals. There was a significant difference with respect to reduction in PI, GI and OHIS in group III compared with group II and group I.

**Table 1: Values (mean ±SD) for PI, GI, OHIS at all time intervals.**

Parameter	Interval	TRP	CHX	Placebo	P value
PI	B/L	2.3300	2.3800	2.3200	<0.000
	15 Days	1.3900	1.5630	2.0800	
	30 Days	0.9530	0.8630	2.0500	
GI	B/L	2.3300	2.2900	.0030	<0.000
	15 Days	1.5300	1.3100	.7220	
	30 Days	1.0030	.7220	1.8100	
OHIS	B/L	4.8100	4.0200	4.7700	<0.000
	15 Days	2.7000	2.3000	4.0600	
	30 Days	1.8580	1.2560	3.7700	

## DISCUSSION

This study was designed to evaluate the 6% Triphala (TRP) extract and compare it with 0.2% chlorhexidine (CHX) mouthwash on dental plaque accumulation and gingival inflammation. Several authors have used TRP as a mouthwash for gingivitis and periodontitis patients. Chlorhexidine (CHX) has been proven to be more effective than placebo mouth rinses in controlling plaque in different patient groups. CHX is therefore considered as gold standard among antiplaque agents.<sup>[10,11,12,13]</sup> Effectiveness of CHX attributed to its bactericidal and bacteriostatic effects and its substantivity within the oral cavity (8 hour after rinsing). However certain disadvantages including its unpleasant taste and discoloration of teeth limits its long-term use and warrants the use of herbal agents which may be effective with minimal disadvantages.<sup>[14,15]</sup> Currently herbal drugs are being widely used for treatment of a variety of diseases. Ayurvedic drugs are rapidly replacing chemicals for treatment of various diseases including gingival and periodontal diseases because of equivalent potential and lesser side effects.<sup>[16]</sup>

Oral rinses made from herbal agents are currently being used to treat gingival inflammation and bleeding.<sup>[17,18,19]</sup> Triphala (TRP) has been extensively used in Ayurveda because of its various properties and therapeutic uses. Triphala means “three fruits” an herb originating in India, has been found to act as body cleaner, not only triphala helps to detoxify and cleanse the colon but it also purifies the blood and removes toxins from liver. Other cleansing benefits of triphala includes reduction of some forms of serum cholesterol and high blood pressure. Triphala can bring relief to wide variety of stomach related ailments such as abdominal pain, decreased appetite, stomach acidity and constipation.

According to ayurveda, Triphala is tridoshahar, that is, vata, pitta, and kapha balancing in nature. Separately, Haritaki has been mentioned as tridoshahar. It has shothahar (anti-inflammatory), vrashodhan (wound cleansing), vedanasthapan (analgesic) actions, which are helpful for treating the inflammation of gingiva. Amalaki is also a tridoshahar. It is known as vedanasthapan (analgesic) that alleviates pain. It is a rich source of vitamin C, which is required for collagen maturation and is essential to maintain firm and healthy gingiva. Vibhitaki is also tridoshahar and apart from other

beneficial actions it has vedanasthapan (analgesic) properties.<sup>[20]</sup> Ela churna was mixed with Triphala decoction to treat the bad odor of mouth as it is known as mukhashodhan and was found to have potential immunomodulatory action, and antimicrobial action against dental caries-causing organisms.<sup>[21,22,23]</sup>

Jagdish *et al* (2005)<sup>[24]</sup> conducted a study to determine the effect of triphala on dental biofilms and concluded that triphala had potent antioxidant and antimicrobial activity and inhibited the growth of S mutans and gram-positive cocci involved in plaque formation when it was adsorbed on tooth surfaces.

Tandon *et al* (2010)<sup>[7]</sup> suggested the use of triphala mouthwash for preventing the development of incipient lesions and reported that triphala mouthwash is cheaper than the commercially available CHX mouthwash. Being an ayurvedic product, it has no side effects and hence safer for long term use.

Use of herbal preparation in treatment of gingival and periodontal diseases is increasing, and TRP with efficacy comparable to CHX and lesser side effects, can be at better prospects in reduction of gingival inflammation and periodontal disease. Further long-term prospective studies with larger sample sizes are needed to conform findings of this short-term clinical trial.

## CONCLUSION

In conclusion this trial shows that 6% Triphala (TRP) mouthwash has similar efficacy as that of 0.2%chlorhexidine (CHX) in reducing plaque accumulation and gingivitis. TRP mouthwash is easy to prepare, it is cost effective, easily available and well tolerated with no reported side effects as compared to CHX mouthwash. Therefore, it can be considered as a potential therapeutic agent in the treatment of gingivitis.

## REFERENCES

- Samy RP, Pushparaj PN, Ponnampalam G. A compilation of bioactive compounds from Ayurveda. *Biotransformation*, 2008; 3: 100-10.
- American Academy of Periodontology. Proceedings of the world workshop in clinical Periodontics. Chicago, IL:American Academy of Periodontology, 1989; I/23-I/24.

3. Journal of Evidence –Based Complementary & Alternative Medicine, 2017; 22(3): 468-72.
4. Jahangirnezhad M, Amin M, Montazeri AM, et al. In vitro Comparison of the effect and Chlorhexidine mouthwash on oral Pathogens. Afr J Microbiol Res, 2012; 6(6): 1262-4.
5. Narayan A, Mendon C. Comparing the Effect of Different Mouthrinses on de novo Plaque Formation. J Contemp Dent Pract, 2012; 13(4): 460-3.
6. Malhotra R, et al Comparison of the effectiveness of a commercially available herbal mouthrinse with chlorhexidine gluconate at the clinical and patient level. J Indian Soc Periodontal, 2011; 15(4): 349-52.
7. Bajaj N, 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.
8. Sabina EP, Rasool M. An in vivo and in vitro Potential of Indian Ayurvedic herbal formulation triphala on experimental gouty arthritis in mice. Vascul Pharmacol, 2008; 48: 14-20.
9. Nariya M, ShuklanV, Jain S, Ravishankar B. Comparison of enteroprotective efficacy of triphala formulations (Indian Herbal Drugs) on methotrexate – induced small intestinal damage in rats. Phytother Res, 2009; 23: 1092-8.
10. Sireeratawong S, Jayjoy K, Soonthorncharennon N. Evaluation of Antiinflammatory and antinociceptive activity of triphala recipe. Alr J Tradit Complement Allern Med, 2012; 10: 246-50.
11. Nagappan N, John J. Antimicrobial efficacy of herbal and chlorhexidine mouth rinse: a systematic review. J Dent Med Sci, 2012; 2: 5-10.
12. Addy M, Moran Jm. Evaluation of Oral Hygiene products: Science is true; don't be misled by the facts. Periodontol, 2000; 1997; 15: 40-51.
13. Loe H, Schiott CR. The effect of mouthrinses and opical application of chlorhexidine on the developmeny of dental plaque and gingivitis in man. J Periodontal Res, 1970; 5: 79-83.
14. Adams D, Addy M. Mouthrinses. Adv Dent Res, 1994; 8: 291-301.
15. Brecks M, Macdold LL, Legary K, Cheang M, Forgay Mg. Long Term effects of Meriodol and Chlorhexidine mouthrinses on plaque gingivitis, Staining and bacterial vitality. J Dent Res, 1993; 72: 1194-7.
16. Addy M, Moran J, Griffiths AA, Willis –Wood NJ. Extrinsic tooth discoloration by metals and chlorhexidine. I Surface Protein denaturation or dietary precipitation Br Dent J, 1985; 159: 281-5.
17. Champaklal Pranalal Boghani. Progress of periodontal Research and practice in India. In: Bartold PM, Ishikawa I, Sirirat M, eds. Progress of periodontal research and practice in Asian Pacific Countries. Bangkok: Asian Pacific Society of Periodontology, 2000; 75-96.
18. Sabina Ep, Rasool M An in vivo and in vitro potential of Indian ayurvedic Herbal formulation triphala on experimental gouty arthritis in mice. Vascul Pharmacol, 2008; 48: 14-20.
19. Chandrasas B, Jayakumar A, Naveen A, Buchibabu K, Reddy PK, Muralikrishna T, A randomized, double blind clinical study to assess the antiplaque and antigingivitis efficacy of Aloe vera mouth rinse. I Indian Soc Peridontol, 2012; 16: 543-8.
20. Chartterjee A, Saluja M, Singh N, Kandwal A, To evaluate the antigingivitis and antiplaque effect on Azadirachta indica (neem) mouthrinses on plaque induced gingivitis: A double blind randomized, Controloed trial. J Indian Soc Periodotol, 2011; 15: 398-401.
21. Pandey GS, ed. Bhavprakash Nighantu, Haritakyadi Varga. Commentary by Chunekar KV Varanasi, India: Chaukhambha Orientalia, 2002.
22. Majdalawieh AF, Carr RI. investigation of the potential immunomodulatory and anti-cancer activities of black pepper (Piper nigrum) and cardamom (Elettaria cardamomum). J Med Food, 2010; 13: 371-81.
23. Aneja KR, Joshi R. Antimicrobial activity of Amomum subulatum and Elettaria cardamomum against dental caries causing microorganisms. Ethnobotanical Leaflets, 2009; 2009(7): Article 3.
24. Jagdish I, Anand VK, kaviyarasanV. Effect of triphala on dental biofilm. Indian JSci Technol, 2009; 2(1): 30-3.