Research Article

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COMPARISON OF THE ANTIGINGIVITIS AND ANTIPLAQUE EFFICACY OF THE HERBAL MOUTHWASH WITH ALLOPATHIC MOUTHWASH: A CLINICAL STUDY

Shivanand Aspalli [1], Moumita Pal [2]*, Anupama Desai [3], Boppa Ramya [2], Swati Singh [2]

[1]Professor And Head Of The Department, Department Of Periodontics And Oral Implantology, A.M.E's Dental College And Hospital Raichur, India

[2]PG Student, Department Of Periodontics And Oral Implantology, A.M.E's Dental College And Hospital Raichur, India

[3]Reader, Department Of Periodontics And Oral Implantology, A.M.E's Dental College And Hospital Raichur, India

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***Corresponding author**
E-mail: bopparamyakrishna008@gmail.com

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ABSTRACT

Introduction- Mouthwashes are often prescribed in dentistry for prevention and treatment of several oral conditions. Chlorhexidine gluconate mouthwash has earned eponym of gold standard to treat and/or prevent periodontal disease. In the recent times naturally occurring products are used on a large scale. Objective- The aim of this study is to compare the anti-gingivitis and antiplaque efficacy of herbal mouthwash (Hiora) with allopathic mouthwash (Chlorhexidine). Methodology– A total of 20 patients aged between 18 to 50 years, with gingivitis was selected for this study. After baseline scaling, 10 patients were advised to use 0.2% chlorhexidine mouthwash twice daily in 1:1 dilution and other 10 patients used Hiora mouthwash twice daily. Plaque index, gingival index, bleeding on probing was recorded at baseline and after 21 days. Result- There were no statistically significant differences between the two groups with regard to the clinical parameters. Herbal mouth rinses may be as effective as chlorhexidine as chemical anti-plaque agents with fewer side effects Conclusion- Herbal mouth rinses may be as effective as chlorhexidine as chemical anti- plaque agents with fewer side effects. However, alternative study designs using larger sample sizes and longer duration are needed to further reiterate its benefits.

KEYWORDS: Scaling, Gingivitis, Chlorhexidine, Ayurvedic Products.

INTRODUCTION

Dental plaque has been proved by extensive research to be paramount factor in initiation and progression of gingival and periodontal diseases. A direct relationship has been demonstrated between plaque levels and the severity of gingivitis.[1]

Since bacterial plaque is the principal causative factor in gingival and periodontal diseases, the most rational methodology towards the prevention of periodontal diseases would be regular effective removal of plaque by personal oral hygiene protocol.[2]

Supra gingival plaque control is largely the responsibility of the individual, using tooth brushes and interdental cleaning devices.[1]

However, mechanical plaque eradication is considered for most as time consuming, requires motivation, skill and is more difficult for handicapped people.[3]

Also, the prevalence of gingivitis from young age in all population, and the occurrence or recurrence of periodontal disease is high. These observations suggest that mechanical cleaning alone by a considerable proportion of individuals is insufficient to maintain gingival health and is difficult to prevent periodontal disease occurrence, progression or recurrence in susceptible individuals.[1]

A number of chemical agents which have antiseptic or antimicrobial action have been used, with variable success, to inhibit supragingival plaque formation and the development of gingivitis.[1]

A mouthwash is a medicated liquid which is held in the mouth and swished by the action of perioral musculature to eliminate the oral pathogens.[4]

The earliest reports of usage of mouth rise are attributed to the Indian and Chinese forms of medicine. It is also well documented that Hippocrates recommended a mixture of salt, alum and vinegar.[5]

The Jewish solution in the name of Talmud, dating back about 1,800 years, recommended the use "dough water" and olive oil.[6]

Greek physician Pedanius Dioscorides, formulated a mouthwash mixture of decoct extracted from the olive tree leaves, milk, wine and oil, pomegranate peelings, nutgalls and vinegar. This was how ancient mouth washes were prepared using traditional methods and herbs.[7]

It was observed that in the 18th century urine served as a key active ingredient due to the presence of ammonia that rendered the oral cavity free from oral pathogens especially sulphur producing organisms.[8]

Since then a variety of herbal remedies are available triphala, tulsi patra, jyestiamadh, neem, clove oil, pudina, ajwain, white oak bark, horsetail herb, plantain leaf, aloe vera, organic echinacea angustifolia root, myrrh gum, organic lobelia herb and seed, organic peppermint leaf, wildcrafted goldenseal root, clove essential oil, peppermint essential oil, tea tree essential oil.[9]

Things changed after Anton van Leeuwenhoek, discovered live bacterial organisms in the deposits of his own teeth. He found that the organisms were viable and that upon the action of brandy they

lost the viability. He then concluded that alcohol has the ability to render the viable organism inactive.[10]

The next breakthrough was obtained in 1960s when Harald Loe demonstrated that a chlorhexidine compound could prevent dental plaque build-up.[11]

Since then commercial interest in mouthwashes has been intense and several newer products claim effectiveness in reducing the build-up of dental plaque, gingivitis and halitosis. The number of mouthwash variants in the world has grown from 15 in 1970 to nearly about 113 in 2012.[12]

Chlorhexidine (CHX) is the most effective antiseptic for plaque inhibition and prevention of gingivitis when used twice daily as mouth rinse. But in oral use as a mouth rinse chlorhexidine has been reported to have a number of side effects.[1]

In order to overcome such side effects the World Health Organization (WHO) advice researchers to investigate the possible use of natural products such as herb and plant extracts. Herbs and plant extract have been used in oral hygiene products for many years.[13]

A number of clinical studies have shown the effects of using mouth washes extracted from herbs such as *Sanguinarina*, *Myrtus communis*, *Qureucus infectoria*, *Capparis spinosa* and *Cinnamon* in the prevention of dental plaque accumulation and subsequent gingival inflammation.[1]

Salvadora persica (S.persica) is a medicinal plant whose roots have been used by many people in Africa, South America, Middle East and Asia. It has been demonstrated that extracts of *S. Persica* improved gingival health and inhibited growth of cariogenic bacteria.[14]

The widespread use of mouthwashes as an aid to oral hygiene is a relatively recent phenomenon in the developing countries of the world. Hence, herbal dental products are becoming popular amongst general public. [1]

One such herbal product is Hiora, a herbal mouthwash known for its antiseptic, antimicrobial, antiplaque and analgesic property. Hiora contains herbs having antimicrobial properties such as oil of Syzygium aromaticum, Cinnamomum zeylanicum, and extract of Spinacia oleracea, Triphala, Trikatu and powders of Yashada bhasma and Suryakshara. Syzygium aromaticum which have shown to have antifungal, antiviral, analgesic/ anesthetic, antiseptic, anticoagulant and antioxidant properties. Oil of clove has also shown antimicrobial activity.[15]

As the number increases the questions that frequently arise is which one is better.[8]

The aim of this study is to compare the antigingivitis and antiplaque efficacy of Hiora with Chlorhexidine mouthwash at clinical level.

MATERIALS AND METHODS

Following the approval of the Ethical Committee of Bangalore Institute of Dental Sciences, 20 systemically healthy subjects aged 18-50 years were recruited for this.

Sample size- 20 periodontally healthy patient included in this study

Age group- 18 to 50 years

- 10 case group (Herbal mouthwash) - Patients were treated by scaling along with the usage of herbal mouthwash.
- 10 control group (chlorhexidine mouthwash) - Patients were treated by scaling along with the usage of chlorhexidine.

Inclusion Criteria

- Healthy patients 18-50 years age group.
- Minimum of 20 teeth should be present
- Patient diagnosed with gingivitis.
- Patient with bleeding on probing.
- Patient who had not received any periodontal therapy for the past 6 months.
- Patient willing to participate.

Exclusion Criteria

- Destructive periodontal disease or who had undergone a periodontal surgery in the past three months.
- Subjects taking antibiotics or any other drugs within last 3months.
- Pregnant women and lactating mothers.
- Smokers.
- Patients who had periodontal pockets more than 4mm.
- Patient with a known history of allergy to chemical or any herbal products

CLINICAL PARAMETERS

Prior to scaling, patient was subjected to assessment of the following clinical parameters.

- Plaque index (Silness and Loe, 1964)
- Gingival index (Loe and Silness,1963)
- Gingival bleeding index (Mombelli1987).
- After recording the clinical parameters in selected patients, a thorough scaling was carried out using ultrasonic scalers in both groups.

The clinical parameters were assessed on day '0' and 21st day. (Figure no. 1-8).

STATISTICAL ANALYSIS

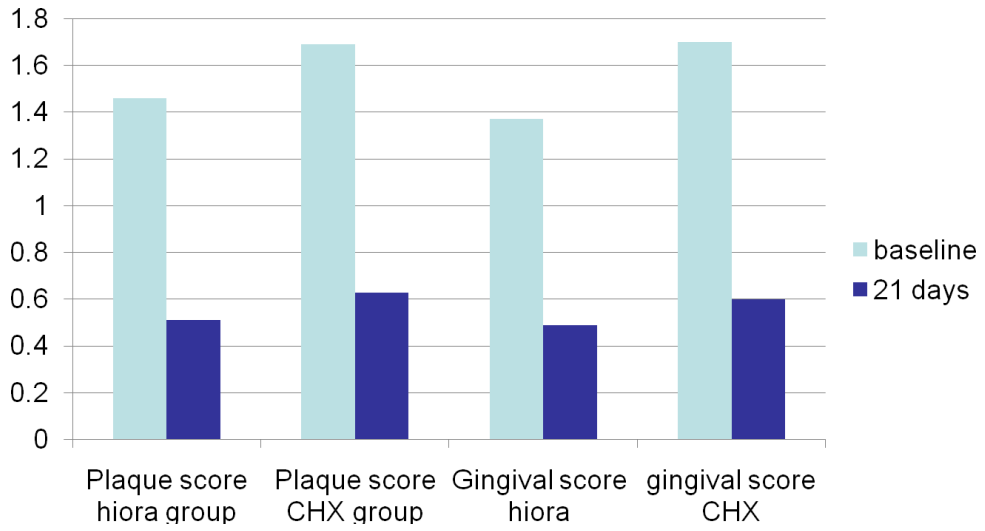
Data were analyzed using software. Mean changes in the parameters were calculated from baseline to 21st day. Statistical analysis was carried out using paired T test at baseline and 21st day.

RESULTS

All 20 patients completed study, no patient showed any adverse reaction and discomfort. The clinical parameters for both the groups at each visit are shown in Table (1-3) and Graphs (1). statistically significant intergroup difference in baseline values for any parameter was observed. There were no statistically significant differences between the two groups with regard to the clinical parameters. Herbal mouth rinses may be as effective as chlorhexidine as chemical anti-plaque agents with fewer side effects.

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.[16]



Graph 1 : Mean value of Hiora group and Chlorhexidine group recorded at baseline and on 21st day.

Table 1: Comparison of Clinical Variable measurements between Baseline and 21st Day in HIORA mouthwash.

Clinical Variables	Baseline mean±SD	21 day MEAN±SD	Difference mean±SD	P value
Plaque index	1.46±0.30	0.51±0.19	0.95±0.11	<0.001 S
Gingival index	1.37±0.30	0.49±0.26	0.88±0.04	<0.001 S

Statistical Analysis: Paired t test. Statistically significant if P<0.05

Table 2: Comparison of Clinical Variable values between Baseline and 21st Day in CHLORHEXIDINE mouthwash.

Clinical Variables	Baseline mean±SD	21 days mean±SD	Difference mean±SD	P value
Plaque index	1.69±0.22	0.63±0.26	0.06±0.04	<0.001 S
Gingival index	1.7±0.76	0.60±0.34	1.10±0.42	<0.001 S

Statistical Analysis: Paired t test. Statistically significant if P<0.05

CHLORHEXIDINE GROUP

Fig 1: Chlorhexidine group at baseline

Fig 2: Chlorhexidine group after scaling

Fig 3: Chlorhexidine group before scaling

Fig 4: Chlorhexidine x group after scaling

HIORA GROUP

Fig 5: Hiora group after scaling

Fig 6: Hiora group after scaling

Fig 7: Hiora group before scaling

Fig 8: Hiora group after scaling

Dalirsani *et al*.[17] and Anupama *et al*.[18] postulated that herbal mouthwash has various positive outcomes such as minimal negative changes and cost-effectiveness when compared to chlorhexidine.

The present study shows that herbal mouthwash is equally effective in controlling oral health as compared to the standard control of chlorhexidine mouthwash.

Our results were in accordance with the findings of Bagchi *et al*. who also found similar results in their study. [19-21]

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*. [22] despite its antibacterial properties, chlorhexidine has certain limitations in its use includes both teeth and tongue stains on its long-term use.[16]

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

Herbal medicine is both promotive and preventive in its approach. The major strength of these natural herbs is that their use has not been reported with any side-effects till date. Herbal mouth rinses may be as effective as chlorhexidine as chemical anti-plaque agents with fewer side effects. However, alternative study designs using larger sample sizes and longer duration are needed to further reiterate its benefits.

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