

Comparative evaluation of Herbal Oral Rinse verses a Conventional Chlorhexidine (0.12%) Oral Rinse: An Analytical Study¹Sharma Manek, Department of Periodontology, Army Dental Centre (Research & Referral), New Delhi, India²Mukherjee Manish, Department of Periodontology, Army Dental Centre (Research & Referral), New Delhi, India³Singh Harjeet, Department of Periodontology, Army Dental Centre (Research & Referral), New Delhi, India⁴KR Krishna Prasad, Department of Periodontology, Army Dental Centre (Research & Referral), New Delhi, India⁵Rai Rahul, Department of Periodontology, Army Dental Centre (Research & Referral), New Delhi, India**Corresponding Author:** Sharma Manek, Department of Periodontology, Army Dental Centre (Research & Referral), New Delhi, India**Citation of this Article:** Sharma Manek, Mukherjee Manish, Singh Harjeet, KR Krishna Prasad, Rai Rahul, “Comparative evaluation of Herbal Oral Rinse verses a Conventional Chlorhexidine (0.12%) Oral Rinse: An Analytical Study”, IJDSIR- April - 2022, Vol. – 5, Issue - 2, P. No. 252 – 256.**Copyright:** © 2022, Mr. Manek Sharma, et al. This is an open access journal and article distributed under the terms of the creative commons attribution noncommercial License. Which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.**Type of Publication:** Original Research Article**Conflicts of Interest:** Nil**Abstract****Introduction:** Among mouthwashes available which are often prescribed for prevention and treatment of oral conditions chlorhexidine (CHX) digluconate is considered as gold standard. Alternative antiplaque herbal mouthwash has been developed recently, owing to their benefits.**Objective:** The aim is to compare and evaluate the use of herbal based oral rinse to a conventional Chlorhexidine (0.12%) oral rinse with the objective to analyse its efficacy on gingival health status over time.**Methodology:** The study populations consisted of 30 individuals, with plaque-induced gingivitis and were divided into two groups. Subjects were analysed utilizing the Gingival Index (GI), Plaque Index (PI).

These groups were asked to rinse with their respective oral rinse twice daily for 28 days after brushing.

Results: There was statistically significant reduction in p values of plaque and gingival index post treatment in both the groups. Also, HiOra™ mouthwash group showed less plaque formation post treatment compared to Chlorhexidine mouth wash.**Conclusion:** Hi-Ora™ and CHX reported statistically significant difference in anti-plaque and gingival index values. Further research should be carried out to demonstrate the antimicrobial activity of these mouthwashes.**Keywords:** Mouthwash, Gingivitis, Plaque, Herbal Mouthwash

Introduction

A mouthwash is a medicated liquid which is held in the mouth and swished by the action of perioral musculature to eliminate the oral pathogenic flora [1]. There are several types of mouthwashes available in the market today worldwide. Many of these have not been tested adequately, and the information is lacking as to when and how to use these agents for maximum benefit [2].

Chlorhexidine digluconate (CHX) has been the agent of choice as an antiplaque agent and is considered as the gold standard till date [3]. However, due to its side effects, its acceptance by patients can be limited, especially when a longer term of use is recommended [2]. Also, in recent times the use of herbal mouth wash is on the rise due to the awareness of alternative medicine as a distinct discipline. It is also believed strongly that the alternative medical agents have lesser side effects [4].

Herbs have been the main source of medicinal preparations since the ancient times of Sushruta and Charaka. Naturally available herbs such as tulsi, triphala, neem, ajwain, turmeric etc. have been commonly used either alone or in combination as safe and effective antimicrobial agents [5].

There is always a necessity to have an efficient and effective chemical plaque control agent similar to CHX with less adverse effects. Hence with this background, this study was conducted with the aim to compare and evaluate the efficacy of herbal oral rinse to 0.12% CHX oral rinse with the objective to analyse their effectiveness on gingival inflammation reduction and adverse reactions, if any.

Materials and methods

This study was carried out in the Department of Periodontology, Army Dental Centre (Research & Referral), Delhi Cantt between Jul and Sep 2021. The

study population consisted of 30 individuals, who were systemically healthy and with generalized plaque-induced gingivitis. Subjects with 22 or more teeth in oral cavity were included in which periodontal probing depths were less than 3 mm.

Participants were excluded from the study if they suffered from localized or generalized chronic periodontitis, systemic disease affecting periodontium, history of antibiotic use in the last 3 months, long term steroid therapy, oral prophylaxis in last 3 months, allergy to chlorhexidine or any herbal mouth rinse, severe malalignment of teeth, subjects with orthodontic appliance, fully crowned teeth and with removable partial dentures.

The study sample consisted of 30 individuals as convenience sampling divided into two groups (15 in each group): Group A: Chlorhexidine (0.12%) 15 ml for 30 sec twice daily and Group B: Herbal Oral rinse Group 15 ml for 30 sec twice daily

Subjects were divided into two groups by the flip of a coin after taking an informed consent. All subjects received a comprehensive periodontal examination and were evaluated for the study parameters, which included Gingival Index (GI, Loe and Silness, 1963) and Plaque Index (PI, Silness and Loe, 1964) [6].

Scaling and polishing of teeth was performed in all participants as a part of the protocol at baseline. All subjects were instructed to brush and floss post meals and 30 min later rinse with mouthwash twice daily for 28 days and recalled thereafter for a follow up examination.

Result

The data collected was statistically analyzed using SPSS software. Inter and intra groups statistical comparison of all the parameters is done using independent student *t*-

test and paired student *t*-test after confirming the underlying normality assumption of differences.

There was no statistically significant difference between the means of PI and GI of the two groups at baseline and at 4 weeks [Table 1].

In the intra group comparison there was a difference between pre-treatment and post-treatment PI scores [Table 2], with significant decrease in PI values post treatment.

Table 1: Pre and Post treatment comparison of inter group plaque and gingival index

Study groups n=15	PI (t value)	p value (p<0.05) significant	GI (t value)	p value (p<0.05) significant
Baseline	-0.04451	0.482409	0.46073	0.324275
4 weeks	-0.8856	0.191689	-0.15968	0.43714

Table 2: Intragroup comparison of pre - and post - mouthwash treatment (Plaque Index)

Study groups n=15	PI (t value)	p value (p<0.05) significant
Group A(CHX)	-5.34483	0.0001
Group B (Hi-Ora™)	-5.55612	0.00007

Similarly, in the intra group comparison of pre-treatment and post-treatment scores showed a significant decrease in Gingival index values post treatment [Table 3]. The value was more significantly lesser in group B statistically.

Table 3: Intragroup comparison of pre - and post - mouthwash treatment (Gingival Index)

Study groups n=15	GI (t value)	p value (p<0.05) significant
Group A (CHX)	-6.263668	0.00002
Group B (HiOra™)	-5.192498	0.00014

Discussion

Anti-microbial agents are being used in various consistencies as mouthwashes, powders, gels and ointments. Mouthwashes provide a swishing action throughout the oral cavity and can provide effective plaque control required for maintenance of oral hygiene. Chlorhexidine is still the gold standard for chemical plaque control. It is active against gram-positive and gram-negative organisms, facultative anaerobes, aerobes and yeast. At low concentrations, it exhibits a bacteriostatic effect, whereas at high concentrations it leads to disruption of the cell membrane with leakage of cellular contents and consequent death of the organism. However, over long-term use, chlorhexidine can cause stains on the teeth, tongue, gingiva, silicate and resin restorations. Prolonged use can also alter bitter and salt taste sensations which are usually reversed by ceasing its use [7]. According to Eley, chlorhexidine should never be used for more than 2 weeks because of its side effects [8]. A study by Bhat N et al showed that 81.8% subjects presented with mild discolouration and dry mouth on the use of chlorhexidine for a period of one month [9].

HiOra™ contains herbs which acts on plaque and have protective anti-microbial activities. Terminalia bellirica (bibhitaka) has encouraging activity against Staphylococcus aureus. Salvadora persica (miswak) which exhibits excellent anti-microbial activity against oral pathogens. Aqueous extract of Piper beetle (Naga Valli) has shown plaque inhibitory activity in in-vitro studies. Gaultheria fragrantissima (gandha Pura) an essential oil is used for its anti-microbial activity. Elettaria cardamomum has inhibitory activity on oral microbial population in-vitro. Mentha sylvestris (wild mint) has anti-microbial activity against E. coli, Candida albicans etc. Gaultheria fragrantissima, Elettaria

cardamomum impart a fragrant, refreshing effect and help in the management of halitosis [10].

In the present study results showed that both groups A and B showed a significant improvement of recorded parameters at the one-month follow-up examination. This was reflected as a reduction in both GI and PI.

In a similar study performed by Parwani et al, 90 patients were divided into three groups, 30 patients in each group i.e normal saline, Chlorhexidine, and Hi-Ora™ mouthwash group.

The results showed Chlorhexidine and HiOra™ mouthwash were superior to normal saline, but between Chlorhexidine and HiOra™ group there was non-significant improvement in plaque scores [11]. Another study conducted by Jai Ganesh Ramamurthy, Visha MG showed that HiOra™ and Chlorhexidine mouthwashes were equally effective in the treatment of gingivitis [12]. There was no untoward event during the study. Only side effect observed was staining of teeth in three cases in CHX group. Based on the findings of this study, we believe that further clinical trials of long-term durations hold promise for assessing the clinical efficacy of herbal mouthwash in the field of periodontics. There are, however, a few drawbacks to the present study. The sample size and study period was small. Antimicrobial activity was not taken into consideration. Another welcome addition to the study would be the study of the antimicrobial efficacy on periodontal biofilms.

Conclusion

As plaque control is mainstay for the prevention of inflammatory gingival and periodontal diseases, mouthwashes can inhibit plaque formation and thus help in maintaining healthy periodontium. CHX and herbal mouthwash (HiOra™) showed statistically significant anti-plaque activity. Further in vitro/in vivo research should be carried out to demonstrate the antimicrobial

activity of these mouthwashes for better understanding and utilization.

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