

Clinical Evaluation Of Homeopathic Mouthwash Compared With Chlorhexidine (0.2%): A Randomized Controlled Study

Research Article

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Abstract

Introduction: Gingivitis, Periodontitis and other oral diseases are caused by various triggering factors. Periodontal diseases affect bone and teeth supporting structures. Trending homeopathic medicines made from herbal plants, minerals or animal product can be used as anti-inflammatory, analgesics, anti-oxidants, anti-ulcerogenic, anti-fungaletc. in oral diseases. These medicines activate immune response thereby treating the disease.

Objective: To comparatively evaluate efficacy of formulated homeopathic mouthwash and chlorhexidine mouthwash in Generalized Mild Gingivitis patients.

Methods: Sample size of 40 dental students aged (20-22yrs) were equally divided in two groups. Thorough scaling was done to bring all students to baseline. Then they were administered with Group A (20) - 160ml of Homeopathic Test Mouthwash each and B (20) - with Chlorhexidine (0.2%) 160ml Mouthwash. Samples were evaluated at baseline and after seven days for Gingival, Plaque and Sulcus Bleeding Indices.

Results: Homeopathic mouthwash was found to be equally effective with less side effects compared to chlorhexidine on overall oral health status with reduction in plaque, gingivitis and bleeding index.

Conclusion: Administration of homeopathic drugs have been effective and a safe alternative to conventional modes of treatment. Further scope lies in the long-term assessment of such herbal extracts.

Keywords: Chlorhexidine, Homeopathic Mouthwash, Gingivitis.

Introduction

Inflammatory damage of gingiva and periodontal ligament can occur due to chronic inflammatory diseases of the periodontium resulting into Periodontal disease.[1] These diseases affect tissues, bone and teeth supporting structures. They are caused by local etiologic factors like microbial plaque accumulating at or near the tooth surface.[2] Bacterial plaques are the primary etiological cause of chronic gingivitis.[1]

Significant quantity of bacterial plaque comprising of virulent pathogens collects over teeth due to improper oral hygiene practices in many individuals. Hence efficient oral care is important for all individuals.[3]

With the advancement in the field of dentistry, various preventive and prophylactic measures are emerging day by day, targeting the causative factors of the oral diseases.[4] Chemotherapeutic and antimicrobial agents, play a significant role as the preventive agents in such treatment modalities.[5] Chlorhexidine (CHX) a chemical agent, has the ability to inhibit plaque formation to a larger extent. It is used in the form of mouthwash, gel, sprays, varnishes, toothpastes and also in irrigators.[6] It is definitely used widely as the most common choice of mouthwash but not ignoring its side effects like taste alterations or mucosal irritation etc. which limits its use in pediatric field and ulcerative lesions.[7-9] Hence, finding an alternative herbal or homeopathic medicine becomes necessary.

According to the World Health Organisation, about more than 80% of the people in developing countries avail traditional medi-

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cine for primary health care. Phytotherapy involves the use of plants as medicine.[9]

Alternative medicines other than the routine ones, for treatment of dental treatments are increasing everywhere. Natural products such as *Curcuma zedoaria*, *Azadirachta indica*, *Aloe vera*, *Punica granatum* Linn., and other herbal products have been tested and are found to have effective medicinal properties.[10] Homeopathy is one of the alternative method, which dates back to 200 years ago. The main concept of homeopathic medications is similar to the use of vaccines, where attenuated microorganisms are used to trigger an immune response in the human body. The homeopathic philosophy considers that no one organ of the body can be ill without disturbing the person as a whole. Many homeopathic remedies help to release pain and inflammation and promote the healing of weak tissues which can be applicable to gingival and periodontal conditions too.[11]

There are insufficient studies on homeopathic mouth wash. Hence the present study was done to evaluate the efficacy of homeopathic over chlorhexidine mouth wash.

Materials And Methods

This single centered, single blind, randomized controlled trial was approved by the Institutional Ethical. This study was performed in harmony with the Helsinki Declaration of 1975, and 2013 revised edition.[12] Written informed consent was obtained from all the participants involved in this study by the treating periodontist.

Participants aged between 20-22years, diagnosed with gingivitis having a probing depth (PD) ≤ 3 mm were included in the study. Subjects having periodontitis, any antimicrobial drug intake history in the last 6 months, any systemic illness, tobacco chewing or smoking habits, allergy to herbal medication history were excluded. Total sample size was calculated as 40 for the complete trial.

Randomization

Samples wererandomized using the computerized random number generator, Prism 4.0 software package was used (GraphPad, La Jolla, CA, USA). Allocation ratio was 1:1. The 40 dental students aged (20-21yrs) were randomly allocated into two groups of 20 samples in each group; Group A as test group administered with homeopathic mouthwashand Group B as control group with chlorhexidine mouth wash.

Blinding

This double blind randomized controlled trial was conducted in such a way, wherethe participants were not aware of content-sin thegiven mouth rinse. The mouthwashes were dispensed in opaque color-coded bottles (Fig. 1) by a Homoeopathic practitioner not involved in any dental treatment, assessment or interaction with the patients. The patients were allotted with these bottles by the periodontist and the statistician was blinded about the randomization.

Intervention

Each participant was advised to rinse with the allotted mouth-

wash twice daily for 1 min after brushing, in the morning and at night, for 7 days. Half an hour post rinsing, theparticipants were instructed to avoid intake of food or drinks.

Thorough scaling and root planing was done to bring all students to baseline followed by clinical evaluation. Then they were allotted with respective mouthwashes, that is: -Group A (n=20) - 160ml of Homeopathic Test Mouthwash and B (n=20) - with Chlorhexidine (0.2%) Mouthwash. Samples were evaluated at baseline and also after seven days for Gingival index (GI), Plaque index (PI)13 and Sulcus Bleeding Index (SBI).The Plaque index given by Sillness-Loe in 1964 and Gingival index given by Loe in 1963, was used to evaluate the amount of plaque deposition and severity of gingivitis respectively. Sulcus Bleeding Status (SBI) by Muhlemann in 1971was used to assess the bleeding on probing in gingivitis patients. For all the clinical measurements, a UNC-15 probe was used. (Fig.1)

The experimentalhomeopathic mouthwash was prepared by mixingequal amounts of every content like *Calendula*, *Echinacea*, *Hepar sulph*a, *Plantago major* and *Symphytum*. So, for e.g.: - 25 ml of mouthwash contained 5ml each of above constituents.

The primary outcomes were plaque index score and sulcus Bleeding Status, and the secondary outcomes were Gingival index score. Research hypothesis was set as "there lies a significant reduction in the clinical parameters PI, GI, SBI. Whereas, Null hypothesis was set with "there is no significant reduction in clinical parameters PI,GI, SBI for test and control groups.

The obtained data was tabulated and statistically evaluated using SPSS statistical software version 22. Intragroup comparison of both plaque and gingival indiceswas done using paired t-test, whereas intergroup assessment of these indices was done with Tukey's HSD test.P value was set below 0.5.

Result

Graph 1. indicates Plaque score between Homeopathic and Chlorhexidine groups. At baseline and after 7 days of mouth rinse, there was no statistically significant difference in the plaque index score but there was a decrease in PI from baseline to 7th day.

Graph 2. indicates Gingival score between Homeopathic and Chlorhexidine groups. There was statistically significant difference in GI score between homeopathic and chlorhexidine mouth wash from baseline to intervention, but at 7th day comparably the decrease in GI score with homeopathic mouth rinse was not statistically significant.

Graph 3. indicates that the Sulcus Bleeding Status (SBI) decreased from baseline to 7th day. There was statistically significant difference in SBI score between homeopathic and chlorhexidine mouth wash at baseline and at 7th day too.

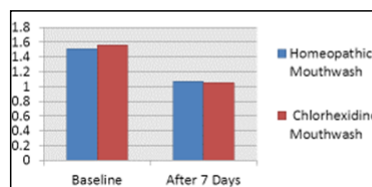
Discussion

The most common treatment for periodontal disease is scaling and root planning which has been confirmed as a gold standard treatment of periodontitis.[14] Mechanical and chemical methods of plaque control are required regularly during dental visits to

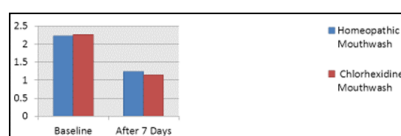
Figure 1.



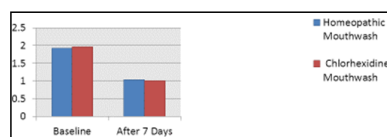
Graph 1. Plaque score between Homeopathic and Chlorhexidine groups.



Graph 2. Gingival score between Homeopathic and Chlorhexidine groups.



Graph 3. Bleeding index score between Homeopathic and Chlorhexidine groups.



reduce gingival inflammation and maintain periodontal health. Antiplaque, antimicrobial and antigingivitis, agents have shown to alter the dental plaque quality and quantity. As said by the WHO, Homeopathy is the second most helpful health-care system in the world having possibility to heal diseases with negligible side effects. New treatment methods that can alter the host response towards microbial challenge.[9]

In 1800, Samuel Christian Friedrich Hahnemann, a German physician formulated the theory of homeopathy. Homeopathy works on following principles; The law of similar: (Similia similibus curantur), The law of single Remedy, The law of Minimum Dose, and Concept of vital force.[15, 16] Conventional therapy believes that symptoms of an illness are a direct result of that illness and tries to suppress them with the medicine whereas homeopathy sees symptoms as the body's effort to overcome the sickness and pursues to support this process with the therapy, and not to defeat it.

Homeopathic prescriptions are of two types mainly;

- i) Pathological homeopathic prescribing is a treatment specifically for the disease or ailment; and
- ii) Constitutional homeopathic prescribing involves analyzing a person's body type, temperament, disposition, and behavioral tendencies.[17]

Homeopathic remedies are established on a universal methodology to health that addresses illness by stimulating the body's own healing powers. The compound selection is based on the symptoms of patient. A homeopath chooses a compound that would trigger similar symptoms if a person took it in large amounts. In an extremely diluted form, the homeopathic remedy is thought to relieve those same symptoms. Homeopathic medicines not only eliminate the complaints of periodontal diseases but also stop

progress of disease.[11] The homeopathic approach is to respect the body's attempts to heal itself and gently support. For bleeding gums with substantial loss of periodontal bone, Phosphorus 15C once daily is advised to reduce bleeding gums.[16-18]

It has been found that *Calendula officinalis* has antihypersensitivity, anti-inflammatory, Antiprotozoal, Antispasmodic and antimicrobial activity. Hence Mouth rinsing with calendula will allow its anti-inflammatory properties to work against the swollen, irritated gums and its antibacterial properties deal with the periodontopathic microorganisms. [14]

Yadav et al evaluated the antimicrobial efficacy of Calendula Oil, extracted from the flowers of *Calendula* of marigold family. They evaluated the antimicrobial efficacy against *Porphyromonas gingivalis*, *Tannerella forsythia*, *Fusobacterium nucleatum*, *Aggregatibacter actinomycetemcomitans* by minimum inhibitory concentration by tube dilution method. Authors concluded that calendula possess antibacterial activity against periodontal pathogens.[14] It has been stated that regular use of a Calendula mouthwash helps to keep gums healthy.[17]

Chopra and Chopra evaluated the efficacy of homeopathic medicine in periodontists on 53 patients. They found that homeopathic not much effective in periodontal condition.[11]

Mehta et al evaluated the homeopathic mouth wash (Freshol) over chlorhexidine as a mouth wash on plaque status, gingival status, and salivary *Streptococcus mutans* count on 8-14 years old children for 14 days. They observed that Freshol was more efficient than chlorhexidine in decreasing the salivary mutans streptococci count.[13]

Khairnar et. al. evaluated the anti plaque and anti gingivitis efficacy of *Calendula officinalis* on 200 patients. GI, PI, sulcus bleed-

ing index and OHI S were noted at baseline to 6th month. They have concluded that calendula mouthwash is effective in reducing dental plaque and gingivitis adjunctive to scaling.[10]

Nisha et al assessed the effectiveness of Hyper. Q in decreasing dental plaque and gingival inflammation. They observed that, there was significant reduction of Plaque index (PI), gingival index (GI), sulcus bleeding index (SBI) and oral hygiene index simplified (OHIS) after sixth months of follow up with homeopathic mouth rinse as compared to saline. However, CHX was found better than Hyper.[9]

Mathie and Farrer studied the consequences of Homeopathic prescriptions in dental practice, and they determined in their pilot study that Homeopathic medications had higher positive outcomes in the treatment of periodontal infections, pericoronitis, abscess and toothache.[19]

In a study by Elizabeth N Southern and her colleagues, they assessed the efficacy of 0.12% Chlorhexidine, placebo and Herbal Oral rinse on Dental Plaque-Induced Gingivitis using Gingival Index (GI), Plaque Index (PI), and bleeding on probing (BOP). They observed that there was no statistically significant difference with placebo at any time period. They also proved the anti-inflammatory and anti-microbial property of Echinacea in an herbal mouthwash along with few other components like golden-seal, calendula, aloe, bloodroot, grapefruit seed extract, citric acid, spearmint oil, peppermint oil and cinnamon.[3]

We know that oxidative stress is a reason for major general drop in cellular functions associated with many oral diseases, especially periodontitis. Oxidative stress occurs when the production of Reactive Oxygen Species (ROS) exceeds the body's natural antioxidant defences, causing damage to biomolecules such as proteins and DNA. *Plantago major*, commonly known as 'Ribwort' is easily available in different parts of the world. For many centuries its leaves and seeds have been used as an analgesic, antioxidant, immune-modulating, anti-ulcerogenic, anti-fungal and for wound healing purposes. Reina, et al. in her In-vitro study determined the effect of *P. major* extract, baicalein, and alicurbin on human neutrophil respiratory burst activity. The study concluded, anti-oxidant effect of *Plantago major* which was then recommended to use in treating periodontal diseases.[20]

One of the literature reviews by Gümüs G. and Ali et. al. in 2009 mentioned the antibacterial effect of *Symphytum officinale* (Comfrey) in treating many oral as well as systemic diseases. Roots and leaves are cold pressed to be added into mouthwash solution with spring water and other constituents. It is advised to gargle this mouthwash 2-3 times daily.[21]

Limitations of the present study are the smaller sample size and shorter duration of the trial. Also, the mouthwash being herbal in nature, has a pungent taste which could be altered using a flavoring agent. Further studies are needed to evaluate the microbiological and the biochemical aspects of the formulated mouthwash, against the periodontopathogens. While, along durational study could help in assessing the advantages and disadvantages of it use.

Conclusion

Homeopathic mouthwash was found equally effective with less

side effects compared to Chlorhexidine on overall oral health status. Administration of homeopathic drugs in treatment of oral diseases have proved as a beneficial and safe alternative to conventional modes of treatment. Standardization, validation and qualitative assurance of herbal medicines is also an area of research in future and efforts must be initialized towards this target. There are more and more opportunities for further research in the utility of herbal remedies for periodontal diseases.

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