Comparison of *Chrysopogon Zizanioides* Mouthwash with *Chlorhexidine* Mouthwash in *Chronic Periodontitis* Patients

Saravanan R*

Corresponding Author*

Saravanan R
Department of Dental Sciences,
Saveetha University, Tamil Nadu, India,
E-mail: saravanandoc123@gmail.com
Tel: + 9962623871

Received: 3 Sep 2021; **Accepted:** 17 Sep 2021; **Published:** 24 Sep 2021

Abstract

A mouthwash could be a flavoured agent which is typically an antiseptic solution used for cleaning the mouth and freshen the breath. Mouthwash or mouth rinse is an antiseptic solution used as an effective home care system by the patient to enhance oral hygiene. *Chrysopogen zizanioides* L. Nash, also called in the local language as Vetiver grass, is a *lignocellulosic species* that has been reported to be tolerant of various *xenobiotics*. Vetiver is non-invasive high biomass and an extensive root system. *Chrysopogen* Plant extract has medicinal value and also gives a successful outcome and also gives a stronger immune response against the *bacteria*. Nowadays research is based on plant extract because of its medicinal value. *Chrysopogen zizanioides* commonly known as vetiver is a perennial bunchgrass which is a native in India family of *Poaceae*, *Genus* of *Chrysopogon* and order polaes. *Chrysopogon zizanioides* has been used as a cosmetic agents, sedatives and has *antiinflammatory* activity. It is available as oil which has been used as an aromatic agent in India. The plant is well known for its oil that is used in medicine and perfumery. Presence of natural antioxidants from various aromatic and medicinal plants is closely related to the reduction of chronic diseases such as DNA damage, *mutagenesis*, and *carcinogenesis* Vetiver has been used in a research purpose for *anti-tuberculosis* and it also has an *antioxidant* potential. *Chrysopogon zizanioides*, also known as khas khas, khas or khus grass, is native to India. The leaves of *Chrysopogon zizanioides* is densely tufted grass, with long, thin and rigid leaves and can grow up to 1.5 meters high.

Keywords: Chrysopogen • Mutagenesis • Carcinogenesis7 • Antimicrobial

Introduction

The grass grows well in rich marshy soil that is found in plains and lower hills of India on the riverbanks. The plant is different from the other grass forms, in that instead of having mat-like root systems, it grows downwards and can grow up to 2-4 meters in depth. The plant is well known for its oil that is used in medicine and perfumery. Vetiver Essential Oil (VEO) is produced by steam distillation of the aromatic roots of the tropical grass Vetiveria *zizanioides*, which is a native to Indian subcontinent. VEO has a long history which was primarily used as *insect-repellent* property and persistent green-woody note [1]. Scientific studies have evaluated its *insect-repellent*, *anti-inflammatory*, *antioxidant*, and metabolic activities in several settings. *Periodontitis* are a *chronic inflammatory* disease during which microbes, the host, plays a crucial role within the progression of the disease. *Periodontal pathogens* generate by destruction of products and enzymes that dissolve the extracellular matrices as well as host cell membranes to generate nutrients for their growth and function in which the treatment tend to concentrates in reducing the microbial load or killing the *periodontal pathogens* and allows the commensals to grow in the region.

Dental plaque is considered as the primary etiologic factor for the causation of the disease. Plaque accumulation can be prevented by proper brushing and flossing. Certain *pathogens* hide inside the tissue and anatomical econiche and repopulate the area. Hence chemical plaque control agents function as an adjunct to mechanical plaque control in maintaining the oral hygiene of the patient. *Chlorhexidine* (CHX), a cationic bisbiguanide is a gold standard among all mouthwashes particularly because of its substantivity and broad spectrum *antibacterial* activity. However, CHX has been reported to have a number of side effects like brown discoloration of teeth, salt taste perturbation, oral mucosal erosions, and enhanced supragingival calculus formation, which limit its long-term use. *Chlorhexidine* (CHX) has been commonly used in dental practice as antiseptic agent as it has long-lasting *antibacterial* activity with a broad-spectrum of action 15. Many clinical trials have shown effective results of CHX for the clinical management of dental plaque and gingival inflammation and bleeding. In vitro study has been reporting positive results of CHX in reducing the proliferation of bacterial species associated with periodontal disease, such as Enterobacteria, Porphyromonas gingivalis, Fusobacterium nucleatum and different species of Actinomyces and Streptococcus, including Streptococcus mutans, which is considered the main etiological agent of dental caries. Many studies reported that use of CHX was effective in the treatment of halitosis and also in reducing the levels of halitosis-related *bacteria* colonising the dorsal surface of the tongue. Chlorohexidine mouthwash has been considered a powerful adjuvant to mechanical oral hygiene (brushing and flossing), especially in those cases in which it cannot be performed correctly.

Chlorohexine has been available as gel, aerosol, spray and disks, CHX is considered a secure compound, with a minimal and transitory local and systemic side effects. The most common side effects associated with *Chlorhexidine* gluconate oral rinses causes an increase in staining of teeth, other oral surfaces and an alteration in taste perception. The of chlorohexidine mouthwash symptoms have been spontaneously reported as side effects associated due to overuse. *Chlorhexidine* has also been applied to medical devices such as dental implants, vascular catheters, needleless connectors and *antimicrobial* dressings which acts as antiseptic agent and prevents from. *Chlorhexidine*, when applied to or impregnated in medical devices kills organisms and protects against microbial colonization and subsequently biofilm development. Unlike other *antimicrobial*s, *chlorhexidine* has demonstrated some effectiveness against microorganisms and protects form bacterial formation [2]. This includes bacterial spores and protozoa but has substantially less activity against nonenveloped viruses (e.g., rotavirus, adenovirus, and enteroviruses). Hence the aim of the current study is to compare the *chlorhexidine* mouthwash vs *chlorhexidine* mouthwash to detect whether *chrysopogon zizanioides* has effective role against *chlorhexidine* mouthwash.

Literature Review

Chrysopogon zizanioides leaves are dried for 1 week under room temperature and the leaves are washed and cut into pieces. Then the dried leaves are kept in a beaker along with distilled water and heated at 100 Celsius for 2 hours and kept at room temperature to cool. After cooling the prepared aqueous plant then filtered with filtered paper.

Patient with *chronic periodontitis* were reported to after 14 days assessment of both test group and control group Test group(*Chrysopogon zizanioides*)-Shows minimal amount of reduction in BOP, Probing depth and Clinical attachment level.

In which the control group shows reduction bleeding index, Probing depth and Clinical attachment level.In which differences in probing depth between test and control group shows the mean differences in Clinical attachment level between test and control group shows the mean differences in Bleeding on probing between test and control group standard deviation of probing depth pre *chrysopogon zizanioides* probing depth (Preczpd) pre *chlorhexidine* mouthwash probing depth (pre chx pd) post *chrysopogon zizanioides* probing depth(post cz pd) post *chlorhexidine* mouthwash probing depth (post chx pd). probing depth between test group (*Chrysopogon zizanioides*) and Control group(*Chlorhexidine* mouthwash).In which X axis shows the probing depth of *chrysopogon zizanioides* and *chlorhexidine* mouthwash and Y axis shows mean probing depth. In which baseline denotes (Blue colour) and (green colour) denotes reduction from baseline.Paired t test were done between in pre chryopogen zizanoides and pre chlorohexine mouthwash (p value 0.354). In which X axis shows mean differences bleeding on probing *chrysopogon zizanioides* and Y axis shows the mean differences bleeding on probing in *chlorhexidine* mouthwash and Y axis shows the mean differences in bleeding on probing.In which baseline denotes (Blue colour) and (green colour) denotes reduction from baseline.Paired t test were done between in pre chryopogen zizanoides and pre chlorohexine mouthwash (p value 0.03) statistically significant.In post chrysopogen zizanoides and post chlorohexidine mouthwash statistically not significant.

Discussion

Dental plaque is a biofilm that forms naturally on the surfaces of exposed teeth and other areas of the mouth and is the main etiological factor for many of the oral diseases. Plaque control, which is an efficient method within the elimination of plaque biofilm, could also be mechanical and chemical15. While mechanical plaque control with the usage of brushes and interdental aids plays an important role in maintaining the oral hygiene of a private, it requires the patient's motivation. On the opposite hand, chemical plaque control also facilitates good oral hygiene with the usage of adjuvants. Among the various agents advocated for chemical plaque control, mouth rinse plays an essential role.

Among them *chlorhexidine* is one essential mouth rinse which is taken into account to be the gold standard. Apart from its various advantages, it also has drawbacks such as alteration in taste sensation and staining of teeth. To overcome such side effects, herbal medications have also been introduced for attaining total plaque-free mouth. Previously numerous studies have been done on Chrysopogon *zizanioides*, one study used Chrysopogon in the treatment of diabetes where Streptozotocin-induced diabetes is characterized by severe loss in body weight due to the degradation of structural proteins, which are responsible for the changes in body weight [3]. However, treatment with *Chrysopogon zizanioides* methanolic extract showed beneficial effects and the weight suggested its recovery activity against diabetes. The extract treatment in STZ rats led to marked increase in body weight due to increased adipose tissue mass, an observation also seen in humans treated.

In the present study, the clinical parameters, namely PI, GI and BI were evaluated at baseline, 14 days. *Chrysopogon zizanioides* possesses strong anti-inflammatory activity. In *Chrysopogon zizanioides* its constituents like β-vetinone, β-vetinene and α-vetinone are responsible for its antioxidant properties and high content of flavonoids found in *Chrysopogon zizanioides* have been attributed to its antioxidant effect [4]. The antioxidant and anti-inflammatory properties of *Chrysopogon Zizanioides* are responsible for its antidepressant effect.*Chrysopogon zizanioides* is also used as an antituberculosis agent but also indicates prospect for isolation and identification of antituberculosis compounds from bioactive hexane fraction of plant.*Chrysopogon zizanioides* are effective against drug-resistant *bacteria* from both Gram-positive and Gram-negative groups21 Vetiver have been reported to treat inflammatory bowel disease21, urinary tract infection 21 and have been reported in making insect repellent. The extract root of vetiver which has been used for headache and toothache, the leaf paste is used for lumbago, sprain, and rheumatism; the stem decoction for urinary tract infection, the leaf juice of *chrysopogon zizanioides* acts as an anthelmintic, the vapors for malarial fever, and the root ash is given for acidity relief. An in vitro study based on cytotoxic activity test was done in aqueous extract of *chrysopogon zizanioides* to detect the mortality rate of *Chrysopogon zizanioides* in which mortality rate of biologic organism were tested in napili with different concentration of 10 µl, 20 µl, 30 µl, 40 µl and 50 µl which within the deathrate was seen in each concentration 10 µl has 40%, 20 µl has 30%, 30 µl has 30%, 40 µl has 20% and 50µl has 20.*Chrysopogon* would be useful for the treatment of *periodontitis*. Since it has *antibacterial* property against gram negative *microbes* it would be interesting to study the effects on *periodontal pathogens*.

The effectiveness and clinical efficacy of chamomile have been reported selectively in removing smear layer, oral mucositis, *plaque*, *scurvy*, *gingivitis*, and patients undergoing *orthodontic* treatment. *Chlorhexidine* is positively charged particle reacts with charged molecule present on the *bacterial cell membrane* and destroyed *cell hemostasis*. It has been known for its activity against *E. faecalis*. Studies show a good effectiveness of chamomile oils in root canal infection of *E. faecalis* at different time intervals compared to *chlorhexidine* and lime. Vetiver oil did not sustain their activity for a longer duration [5]. *Chlorhexidine* may be a germicidal mouthwash that reduces *bacteria* within the mouth. *Chlorhexidine* oral rinse is employed to treat gingivitis (swelling, redness, bleeding gums). *Chlorhexidine* is usually prescribed by a dentist. *Chlorhexidine* oral rinse isn't for treating all kinds of gingivitis.

Conclusion

Within the limitation the study, However *chlorhexidine* mouthwash is gold standard which reduces probing depth,clinical attachment level and bleeding index. In which chrysopogon *zizanioides* shows a little effects in reducing the periodontal disease compared with *chlorhexidine* mouthwash. Further studies have to be done before using this novel product as mouthwash in periodontal disease.

References

1. Antiochia R, Campanella L, Ghezzi P, Movassaghi K (2007) The use of vetiver for remediation of heavy metal soil contamination. Anal Bioanal Chem 388:947–56.
2. Kayaoglu G, Erten H, Orstavik D (2008) Possible role of the adhesin ace and collagen adherence in conveying resistance to disinfectants onEnterococcus faecalis. Oral Microbiol Immunol 23:449–54.
3. Luqman S, Srivastava S, Darokar MP, Khanuja SPS (2005) Detection of Antibacterial Activity in Spent Roots of Two Genotypes of Aromatic GrassVetiveria zizanioides. Pharm Biol 43:732–6.
4. Arnason T, Hebda RJ, Johns T (1981) Use of plants for food and medicine by Native Peoples of eastern Canada. Can J Bot 59:2189–325.
5. Saikia D, Parveen S, Gupta VK, Luqman S (2012) Anti-tuberculosis activity of Indian grass KHUS. Complement Ther Med 20:434–6.

Cite this article: Saravanan R. "Comparison of Chrysopogon Zizanioides Mouthwash with Chlorhexidine Mouthwash in Chronic Periodontitis Patients". J Gen Dent, 2021,2(5), 001-002.