

A Metaanalysis of the Clinical Effectiveness of Herbal Oral Care Products in Periodontitis Patients

Lazaros Tsalikis*

Department of Pharmaceutical Technology, Aristotle University of Thessaloniki, 54636 Thessaloniki, Greece

Abstract

Because of their additional anti-inflammatory and antioxidant properties, as well as the lack of side effects associated with their use, the use of herbal products in the oral cavity has grown in popularity and potential benefits. In periodontitis patients, the clinical effectiveness of herbal dental products (mouthwash, dentifrice, gel) was compared to conventional products or placebo. A systematic review of 22 studies published up to March 2022 that used any herbal dental product and compared it to conventional products or placebo in periodontitis patients were screened. Herbal products used as adjuncts to scaling and root planing or supragingival debridement outperformed placebo or no adjuncts in terms of clinical outcomes.

Keywords: Biofilm • Gingival sulcus • Junctional epithelium • Leaky gum

Introduction

Periodontal disease is a multifactorial inflammatory disease characterised by destruction of the supporting tissues surrounding teeth, including periodontal ligament, cementum, and alveolar bone, and it is the leading cause of tooth loss if left untreated. The primary etiological factor of dental caries and periodontal diseases is dental biofilm. The biofilm on the tooth surface is made up of polymers and is resistant to host defence and antibiotics. Effective biofilm destruction is critical for oral health. This can be accomplished through scaling and root planing with or without the use of antibiotics and other agents, and it can be maintained through the patient's good oral hygiene. The elimination of subgingival biofilm and calculus, according to the European Federation of Periodontology S3 level clinical practise guidelines, consists of subgingival debridement and the use of adjunctive agents and systemic or locally delivered antimicrobials. Although non-surgical periodontal treatment is highly predictable and can improve periodontitis patients' clinical periodontal status, 8-12% of patients in a population have residual periodontal pockets that do not respond favourably to SRP alone. This could be attributed to insufficient periodontal biofilm control and poor oral hygiene. To supplement mechanical plaque control and improve daily oral hygiene, antimicrobial agents are added to toothpastes and mouthwashes to inhibit plaque accumulation and dental biofilm growth in areas that are difficult to reach with a toothbrush.

A number of antiseptics, including chlorhexidine, have been shown to be effective against a wide range of Gram-positive and Gram-negative bacteria while also penetrating the plaque biofilm. CHX was discovered by scientists looking for an antimalarial agent in the late 1940s. In the 1950s, it was classified as a broad-spectrum antimicrobial, and its use in dentistry was popularised by a 1976 study that demonstrated long-term clinical benefits. CHX has an antiplaque effect because it binds to salivary glycoproteins,

which interfere with pellicle formation and bacterial adsorption to teeth.

Literature Review

While conventional products and CHX control plaque and gingivitis, herbal-based products such as dentifrices and mouthwashes have demonstrated anti-plaque and anti-gingivitis activity. The development of multidrug resistant pathogens, as well as the need for cost-effective, safe, and effective products, resulted in the development of alternative oral care products derived from plants. Natural compounds have recently sparked increased interest. There is a growing public interest in natural or herbal health products, particularly among patients with chronic diseases. Natural compound-containing products have additional anti-inflammatory and antioxidant properties that may benefit gingival health. Natural products with antimicrobial, anti-inflammatory, antiseptic, and antifungal properties include *Acacia arabica*, *Aloe vera*, *Azadirachta indica*, *Curcuma longa*, *Cymbopogon*, *Camellia sinensis*, and *Ocimum sanctum*.

The variety of formulations, however, may dilute the effect of active and herbal agents. Individual herbs have moderate anti-septic activity; therefore, combining different herbs and chemicals may enhance their antibacterial mechanisms. As a result, they could be used to prevent and treat periodontitis in its early stages. When chlorhexidine and herbal products are compared, different results have been reported in the literature. Three trials showed comparable results in a recent systematic review that included eight randomised clinical trials that compared the efficacy of herbal and CHX-based mouthrinses, with one trial favouring CHX and another favouring herbal mouthwashes. Another consideration in this comparison should be the persistence of the clinical outcome. A meta-analysis of the efficacy of herbal oral care products revealed that herbal products may have benefits.

This inconsistency could be attributed to poorly designed studies, which exhibit increased heterogeneity due to the inclusion of populations with varying characteristics and variable follow-up times. Periodontitis is a chronic inflammatory disease, and patients who have it may benefit from using herbal-based oral products. Numerous natural products have been studied in the literature, but to our knowledge, no systematic review has focused on their use in patients with periodontitis. Furthermore, despite an increase in the number of trials comparing the efficacy and safety of herbal dental products to conventional and CHX-based oral care products, the results are inconclusive and contradictory. As a result of the increased popularity and potential benefits of herbal products, their efficacy should be thoroughly investigated. In adult patients, self-performed mechanical plaque removal

*Address for Correspondence: Lazaros Tsalikis, Department of Pharmaceutical Technology, Aristotle University of Thessaloniki, 54636 Thessaloniki, Greece, E-mail: leedahye22@gmail.com

Copyright: © 2022 Tsalikis L. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Received: 02 November, 2022, Manuscript No. OHCR-23-86874; **Editor Assigned:** 05 November, 2022, PreQC No. P- 86874; **Reviewed:** 16 November, 2022, QC No. Q- 86874; **Revised:** 22 November, 2022, Manuscript No. R- 86874; **Published:** 28 November, 2022, DOI: 10.37421/2471-8726.2022.8.67

has been shown to be ineffective, and additional measures are required to establish good oral hygiene. In the general population, it is difficult to maintain good plaque control using conventional products. Furthermore, the presence of bleeding on probing plays a critical role in attachment loss and disease progression. As a result, using adjunctive antiseptic agents to improve oral hygiene and periodontal treatment response is critical. The use of adjunctive antiseptic agents to supplement periodontal treatment is critical, especially when nonsurgical periodontal treatment is insufficient.

Discussion

CHX is widely used as an antimicrobial agent adjunct to SRP and is considered the gold standard in periodontal antiseptic treatment. However, other products have been tested due to its unpleasant taste and undesirable tooth staining. Herbal products such as mouthwash, dentifrice, and gels have gained popularity in recent years. It is thought that the active ingredients in herbal oral products can penetrate the biofilm and prevent plaque accumulation, thereby reducing bacterial colonisation on tooth surfaces. They also have antimicrobial efficacy against dental caries and periodontal pathogens, as well as a lower risk of drug resistance due to their synergistic combinations. Herbal extracts may also suppress bone resorption in periodontitis by inhibiting osteoclast differentiation and the expression of proinflammatory cytokines.

This systematic review included 20 randomised clinical trials and two non-randomized comparative trials that investigated the effect of herbal products as an adjunctive treatment to SRP, SPD, or no treatment. These products were tested against CHX, conventional products, and a placebo. Triphala and green tea were the most studied herbs or plant extracts in the included studies. The majority of the studies that were included reported data with a relatively short follow-up time of up to 6 weeks post-treatment. After six months, only one study reported data.

Kommuri et al. conducted a systematic review in patients undergoing fixed orthodontic treatment to assess clinical periodontal parameters after the use of CHX and herbal mouthwashes. The research question remained unanswered due to the limited number of eligible studies and the conflicting results, with the majority of the included studies showing comparable effects between herbal mouthwashes and CHX. Herbal mouthwashes used as an adjunct to oral hygiene resulted in significantly improved outcomes in terms of dental plaque and gingival inflammation reduction when compared to placebo in another systematic review that included only subjects with gingivitis. Because of the inclusion of studies with short to intermediate follow-up times, the effect of herbal products should be interpreted with caution.

A systematic review found no differences in plaque and gingival inflammation when herbal dentifrice was compared to conventional products in the short and long term. However, it is critical to emphasise the included studies' increased heterogeneity and high risk of bias. Another systematic

review found better results when it came to the effectiveness of herbal oral care products in reducing dental plaque and gingivitis [1-5].

Conclusion

To summarise, within the scope of this systematic review, the use of herbal oral care products in conjunction with SRP or SPD may provide additional benefits when compared to periodontal treatment alone. Furthermore, there is evidence that herbal products have comparable clinical outcomes to CHX and conventional products with no significant adverse effects. Because of the significant benefits in clinical outcomes and the absence of relevant side effects, the use of adjunctive plant-derived actives could replace chemicals in the management of periodontitis patients and can be recommended as an alternative. Future well-designed and powered studies should adhere to standardised protocols in order to adequately identify the effect of various herbal dental products.

Acknowledgement

None.

Conflict of Interest

There are no conflicts of interest by author.

References

1. Kliman, Harvey J. "Comment on "the placenta harbors a unique microbiome". *Sci Transl Med* 6 (2014): 254le4-254le4.
2. Gomez-Arango, Luisa F., Helen Barrett, H. David McIntyre and Leonie K. Callaway, et al. "Contributions of the maternal oral and gut microbiome to placental microbial colonization in overweight and obese pregnant women." *Sci Rep* 7 (2017): 1-10.
3. De Goffau, Marcus C., Susanne Lager, Ulla Sovio and Francesca Gaccioli, et al. "Human placenta has no microbiome but can contain potential pathogens." *Nature* 572 (2019): 329-334.
4. Kitamoto, Sho, Hiroko Nagao-Kitamoto, Yizu Jiao and Merritt G. Gilliland, et al. "The intermucosal connection between the mouth and gut in commensal pathobiont-driven colitis." *Cell* 182 (2020): 447-462.
5. Kitamoto, S., H. Nagao-Kitamoto, R. Hein and T. M. Schmidt, et al. "The bacterial connection between the oral cavity and the gut diseases." *J Dent Res* 99 (2020): 1021-1029.

How to cite this article: Tsalikis, Lazaros. "A Metaanalysis of the Clinical Effectiveness of Herbal Oral Care Products in Periodontitis Patients." *Oral Health Case Rep* 8 (2022): 67.