



Natural Products in Oral Care, Why Use Them

Elaine Cristina Martinez Teodoro,^{1*} Claudemir de Carvalho,² Silvia Maria Rodrigues Querido³

¹Dentistry student, FUNVIC University Center, Brazil

²Pro-rector of Research and Graduate Studies, FUNVIC University Center, Brazil

³Professor of Dentistry course, FUNVIC University Center, Brazil

Abstract

Many of the modern medications used in dentistry are responsible for known side effects. Herbal therapies are used worldwide to treat health conditions. Therefore, besides conventional treatment methods, herbal agents have been extensively entered oral care products in recent years in function of its interesting medical and physicochemical characteristics. Dentistry has begun to exploit herbal properties for the purpose of relieving tooth pain, gum inflammation, and canker sores. Lots of manufacturers use herbal ingredients in their products to provide additional therapeutic characteristics. Natural bio characteristics, lower costs, availability and low rate of adverse effects have been factors in the choice of herbal medicines compared to conventional medicines. Dentists are interested in plant products whose agents have antiseptics, antibacterial, antimicrobial, antifungal, antioxidant, antiviral, and analgesic actions. However, it is of utmost importance to understand the interactions of plant extracts with the body and other medications.

Keywords: Herbal medicines, Natural products, Plant products, Oral care

Mini Review

The consumption of natural products in the health area has shown significant growth in recent years, mainly by the vegan, vegetarian and naturalist populations, which have increasingly sought natural products. The dental industry has met the needs of this public through the development of products for oral hygiene, especially toothpastes, produced using components of natural origin, seeking less toxicity, greater biocompatibility, sustainability and pharmacological activity.¹

The use of natural compounds similar to synthetic substances used in Dentistry has grown a lot in recent years, which contributes to the development of several researches in order to evidence the effectiveness of substances with less adverse effects and low cost.²

Using this therapy, dental surgeons have developed preventive and curative interventions to control dental biofilm, one of the factors that corresponds to the development of periodontal disease, caries and oral candidiasis, and provide an improvement in the oral health of the adult population and infant. It prevent bacterial growth, adhesion and colonization, in addition to anti-inflammatory, anti-hemorrhagic and anesthetic action.²

Natural compounds involve herbal products and plant parts and other plant materials as an active ingredient and can be used alone or in combination, in order to obtain better oral hygiene, prevent inflammation, allergies and even alleviate some autoimmune diseases.² These products have demonstrated good antifungal, antimicrobial and antineoplastic activity, being considered ideal alternatives in oral treatments.^{3,4}

Quick Response Code:



***Corresponding author:** Elaine Cristina Martinez Teodoro, Estrada Radialista Perci Lacerda, 1000 CEP:12412-825 Pindamonhangaba-SP, Brazil

Received: 03 May, 2022

Published: 17 May, 2022

Citation: Teodoro ECM, Carvalho C, Querido SMR. Natural Products in Oral Care, Why Use Them. *SOJ Den Oral Disor.* 2022;2(1):1-3. DOI: [10.53902/SOJDOD.2022.02.000518](https://doi.org/10.53902/SOJDOD.2022.02.000518)

The most used plants for the preparation of products are: *Rosmarinus officinalis*, *Arnica montana*, *Aloe vera*, *Stryphnodendron adstringens*, *Calendula officinalis*, *Matricaria camomilla*, *Theobroma cacao*, *Cymbopogon citratus*, *Equisetum*, *Copaifera langsdorffii*, *Cravo-da-Índia* *Syzygium aromaticum*, *Echinacea*, *Mikania glomerata*, *Malva sylvestris*, *Passiflora incarnata*, *Melissa officinalis*, *Punica granatum*, *Salvia officinalis*, *Plantago major*, *Allium sativum*, *Malaleuca alternifolia*, *Perilla frutescens*, *Leptospermum scoparium*, *Eucalyptus*, *Lavandula*, *Plumbago auriculata*, *Mentha piperita*, *Thymus vulgaris*, *Centella asiática*, *Magnolia*, *Vaccinium*, *Xilitol*, *Própolis*, among other natural products that can be used and prescribed in routine and clinical activities.^{2,5-12}

Currently, the importance of mechanical control for the reduction of dental biofilm and the inflammatory response in the gingiva has been well documented, which is why the increasing research concerning the addition of natural products to dentifrices. Magnolia extract, for example, incorporated into a toothpaste, due to its potent anti-inflammatory properties, may be beneficial to improve gingival health in individuals with difficulty maintaining good control of dental biofilm.¹³

Some studies indicate that toothpastes containing, for example, Cranberry extract can influence a change in the species of the oral microbiota, resulting in a microbial community less associated with dental caries.¹⁴ The use of herbal agents is accepted as an auxiliary means to reduce biofilm accumulation. The combination of agents that prevent biofilm formation and gingivitis to the oral hygiene regimen was considered beneficial. Such antimicrobial agents may be herbal preparations. Several individual or combined medicinal plants have been used for years to maintain oral hygiene and prevent periodontal diseases.¹⁵

In search of new agents, especially for herbal products, the extract of the plant *Scutellaria baicalensis* was researched, which has shown to exert anti-inflammatory and antibacterial action. It is a plant widely used in several countries such as China, Japan, Korea, Russia and the United States, as a component of traditional herbal medicines. Its properties induce a lesser extent of gingivitis due to an anti-inflammatory effect in the gingival tissue and also less biofilm formation due to an antibacterial effect.¹⁶

Recently, toothpastes with Miswak extracts have become commercially available. The extract consists of essential caries prevention ingredients such as fluorides, silicate, potassium sulfate, calcium sulfate, tannins, saponins, vitamin C and chlorides. Several studies have reported a potent antibacterial effect of these extracts on caries or periodontal disease. They can be safely recommended for daily oral hygiene, as well as having an anti-inflammatory effect.¹⁷

Chinese herbal medicine has become a scientifically researched subject because it is natural, safe and culturally important.¹⁸ Pudilan is a famous compound of traditional Chinese medicine that is widely used. Several compounds have been confirmed as active ingredients in its extract, including alkaloids, organic acids, flavonoids, coumarins and more. Studies show that toothpaste containing Pudilan extract can effectively control biofilm, as well as improve and prevent chronic gingivitis.¹⁸

Green Tea is an unfermented product of the *Camellia sinensis* leaves that is consumed as a beverage all over the world. It is a rich source of flavonoids, especially catechins, as well as having useful implications for oral health. Its catechins have anti-cariogenic activity through a bactericidal effect against *Streptococcus mutans* and *Streptococcus sobrinus* and also by preventing bacterial adherence to teeth. Currently, the addition of green tea catechins to dentifrice has shown to reduce periodontal inflammation, decreasing gingival oxidative stress and the action of pro-inflammatory cytokines.¹⁹ In vitro studies have shown that phytocomplexes derived from rhubarb stalks (*Rhubarb raphanicum*) and spinach leaves *Spinaciaoleracia* are effective in the occlusion of dentinal tubules through the formation of calcium oxalate crystals, being efficient for the topical treatment of Dentin Hypersensitivity.²⁰

Papaya-based toothpastes may constitute an interesting natural alternative to treat individuals susceptible to interdental bleeding, particularly in an advanced stage of gingival bleeding.²¹

Essential oils from several plants were previously tested in in vitro and in vivo studies as promising agents in the treatment of oral diseases and other infections.²² *Lippia sidoides* Cham, a plant of the verbena family, popularly known as "Alecrim-Pimenta", is a shrub with a brittle stem and odoriferous leaves, typically found in Northeast Brazil. The chemical composition of *Lippia sidoides* Cham essential oil (LSO) has been previously described. The oil itself has proven to have significant antifungal activity and broad antimicrobial action against many different bacteria. The two main constituents of LSO are thymol and carvacrol. Phenolic compounds such as carvacrol and thymol had their broad-spectrum antimicrobial action established against yeasts and bacteria, being also constituents of other essential oils. However, a limited number of clinical studies have demonstrated the antimicrobial efficacy of LSO in dental caries and periodontal disease.²²

The antimicrobial effect of a toothpaste containing *Aloe vera* was observed in an in vitro study in which it was found that this herbal medicine inhibited the growth of several oral microorganisms, such as *Streptococcus mutans*, *Streptococcus sanguis*, *Actinomyces viscosus* and *Candida albicans*. The mouthwash containing *Aloe vera* showed a significant reduction of gingivitis and dental

biofilm.²³ On the other hand, it is known that herbal medicines have some side effects such as toxicity, allergies and hypersensitivity, and may interact negatively with some medicines, however, these effects can be avoided by reducing contact with chemicals and using of a correct dosage of herbal medicines.²⁴

In view of the above, it is concluded that the use of natural products in the composition of toothpastes has proved to be a good alternative for the vegan and vegetarian population, for a more sustainable environment, in addition to reducing costs. However, it is of utmost importance to understand the interactions of plant extracts with the body and other medications. It is expected for further studies to be explored in the future.

Acknowledgments

None.

Funding

None.

Conflicts of Interest

Author declares that there is no conflict of interest.

References

- Dinguesleski AH, Thomas GV, Mello AMD, et al. Associação de agentes fitoterápicos em dentífricos. *Rev Gestao e Saude*. 2015;13:11–16.
- Monteiro MHD, Fraga SAPM. Fitoterapia na odontologia: levantamento dos principais produtos de origem vegetal para a saúde bucal. *Rev Fitos*. 2015;9(4):253–303.
- Gomes MS, Mendonça AKP, Cordeiro TO, et al. Uso de plantas medicinais na odontologia: uma revisão integrativa. *Ciênc Saúde Nova Esperança*. 2020;18(2):118–126.
- Castilho AR, Murata RM, Pardi V. Produtos naturais em odontologia. *RevSaúde*. 2007;1(1):11–19.
- Evangelista SS, Sampaio FC, Parente RC, et al. Fitoterápicos na odontologia: estudo etnobotânico na cidade de Manaus. *Rev Bras Pl Med*. 2013;15(4):513–519.
- Gomes MS, Mendonça AKP, Cordeiro TO, et al. Uso de plantas medicinais na odontologia: uma revisão integrativa. *RevCiênc Saúde Nova Esperança*. 2020;18(2):118–126.
- Castilho AR, Murata RM, Pardi V. Produtos naturais em odontologia. *RevSaúde*. 2007;1(1):11–19.
- Dinguesleski AH, Thomas GV, Mello AMD, et al. Associação de agentes fitoterápicos em dentífricos. *Rev Gestao e Saude*. 2015;13:11–16.
- Machado AC, Oliveira RC. Medicamentos fitoterápicos na odontologia: evidências e perspectivas sobre o uso de aroeira-do-sertão (*Myrcodruonurundeuva*Allemão). *Rev Bras Pl Med*. 2014;16(2):283–289.
- Zanin SMW, Miguel MD, Barreira SMW, et al. Enxaguatório bucal: principais ativos e desenvolvimento de fórmula contendo extrato hidroalcoólico de *Salvia officinalis* L. *Rev Visão Acadêmica*. 2007;8(1):19–24.
- Soares AK, Bonvini B, Fukushigue CY. Avaliação do potencial antimicrobiano profilático de enxaguatórios bucais contendo em sua formulação clorexidina e óleos essenciais. *RevSalusvita*. 2019;38(1):87–96.
- Juiz P JL, Alves RJC, Barros TF. Uso de produtos naturais como coadjuvante no tratamento da doença periodontal. *Rev Bras Farmacogn*. 2010;20(1):134–139.
- Hellstrom MK, Ramberg P. The effect of a dentifrice containing Magnolia extract on established plaque and gingivitis in man: a six-month clinical study. *Int J Dent Hyg*. 2014;(12):96–102.
- Philip N, Leishman SJ, Bandara HMHM, et al. Randomized controlled study to evaluate microbial ecological effects of CPP-ACP and cranberry on dental plaque. *JDR Clin Trans Res*. 2019;20(10):1–9.
- Howshigan J, Perera K, Samita S, et al. The effects of an Ayurvedic medicinal toothpaste on clinical, microbiological and oral hygiene parameters in patients with chronic gingivitis: a double-blind, randomized, placebo-controlled, parallel allocation clinical trial. *Ceylon Med J*. 2015;60(4):126–132.
- Arweiler NB, Pergola G, Kuenz J, et al. Clinical and antibacterial effect of an anti-inflammatory toothpaste formulation with *Scutellaria baicalensis* extract on experimental gingivitis. *Clin Oral Invest*. 2011;15(6):909–913.
- Azaripour A, Mahmoodi B, Habibi E, et al. Effectiveness of a miswak extract-containing toothpaste on gingival inflammation: a randomized clinical trial. *Int J Dent Hyg*. 2017;15(3):195–202.
- Cheng L, Liu W, Zhang T, et al. Evaluation of the effect of a toothpaste containing Pudilan extract on inhibiting plaques and reducing chronic gingivitis: A randomized, double-blinded, parallel controlled clinical trial. *J of Ethnopharmacol*. 2019;240:111870.
- Hrishi TS. Effect of adjunctive use of green tea dentifrice in periodontitis patients—a randomized controlled pilot study. *Int J Dent Hyg*. 2016;14(3):178–183.
- Kumari M, Naik SB, Martande SS, et al. Comparative efficacy of a herbal and non-herbal dentifrice on dentinal hypersensitivity: a randomized, controlled clinical trial. *J Investig Clin Dent*. 2016;7(1):46–52.
- Saliasi I, Llodra JC, Bravo M, et al. Effect of a toothpaste/mouthwash containing *Carica Papaya* leaf extract on interdental gingival bleeding: a randomized controlled trial. *Int J Environ Res Public Health*. 2018;15(12):2660.
- Lobo PL, Fonteles CS, Marques LA, et al. The efficacy of three formulations of *Lippia Sidoides* Cham. essential oil in the reduction of salivary *Streptococcus mutans* in children with caries: a randomized, double-blind, controlled study. *Phytomedicine*. 2014;21(8-9):1043–1047.
- Pradeep AR, Agarwal E; Naik SB. Clinical and microbiologic effects of commercially available dentifrice containing aloe vera: a randomized controlled clinical trial. *J Periodontol*. 2012;83(6):797–804.
- Domingues JJ, Oliveira LTA, Costa MDMA, et al. Uso de fitoterápicos e demais componentes vegetais e minerais na fabricação de produtos odontológicos naturais: revisão de literatura. *Research, Society and Development*. 2021;10(3):10.