



Type of the Paper (Mini-Review)

Dental care using natural items

Tamer M. Hamdy ^{1,*}

Citation: Tamer M. Hamdy. Dental care using natural items. *Biomat. J.*, 2 (7),3 – 5 (2023).

<https://doi.org/10.5281/znodo.5829408>

Received: 25 July 2023

Accepted: 30 July 2023

Published: 31 July 2023



Copyright: © 2022 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

¹ Restorative and Dental Materials Department, Oral and Dental Research Institute, National Research Centre (NRC), Giza, Dokki, 12622, Egypt

* Corresponding author e-mail: dr_tamer_hamdy@yahoo.com

Abstract: Using natural plant extracts as medications or health-improving substances is a field of study known as phytotherapy. The use of herbs in dentistry is not just confined to the field of material sciences. A single herb exhibits numerous properties, including anti-inflammatory, antibacterial, antifungal, and many others. The natural phytochemicals hold promise as a potent antibiotic substitute as well as a potential strategy for treating and preventing dental caries and other oral infections.

Keywords: Natural plant; dental care; therapeutic strategies.

The study of using plant extracts in therapy is known as phytotherapy. Natural origin as drugs or health-improving substances. Herbs with therapeutic qualities are advantageous and efficient. a resource for treating different illness processes. (1) There is a vast collection of medicinal plants that are used in conventional medical treatments. These plants are also a great source of knowledge (2). They are classified as sedatives and anxiolytics, antimicrobial agents, anti-inflammatory agents, and sedatives in dentistry, depending on their intended function (3).

Even though root canal chemo-mechanical preparation can minimise the number of germs, intracanal antibiotic medication is necessary to maximise root canal system sanitation (4). To stop the development of caries or biofilm, a variety of antimicrobial agents and herbal items are added to dentifrice and mouthwash (5).

Curcuma zedoaria, calendula, aloe vera, and other natural remedies have all been used successfully to treat oral illnesses (6). The natural phytochemicals have promise for the treatment and prevention of dental caries and other oral infections, and they might be a good substitute for antibiotics.

Therapeutic applications

As an antibacterial agent against different endodontic infections, herbs have been employed. Besides herbs,

has long shown obtundent and soothing properties when utilised in various endodontic medicines and dressings.

Application in endodontics:

1. Endodontic irrigants

At a 15% concentration, the *Salvadora persica* (Miswaak) extract showed strong antibacterial activity against both aerobic and anaerobic microbes.(7) Because *Azadirachta*

indica (Neem) is a biocompatible antioxidant and less likely to result in serious patient injuries than NaOCl accidents, using it as an endodontic irrigant may be helpful.(8).

2. Endodontic restorative surgery

For endodontic re-treatment, orange oil was recommended as a substitute to chloroform and xylol because both substances have harmful and cancer-causing effects. The main component of this is d-limonene. In addition, it contains long-chain aliphatic hydrocarbon alcohols, including octanal.

It is recommended as a substitute for xylene or chloroform when softening gutta percha and when dissolving endodontic sealants (9).

3. Drugs used intracanal

As an alternate intracanal medication, propolis showed promising in vitro antibacterial action against *E. faecalis* in root canals (10).

Applications for pulp capping:

In pulpotomy and pulp capping, propolis encourages bone repair and induces the creation of hard tissue bridges (11).

Periodontal applications:

Plants with anti-inflammatory properties that reduce gingival inflammation include *Matricaria chamomilla* (Asteraceae), *Echinacea purpurea* (Asteraceae), *S. officinalis* (Lamiaceae), *Commiphora myrrha* (Burseraceae), and *M. piperita* (Lamiaceae). Plants with immune-stimulating and anti-inflammatory properties include *S. officinalis* and *M. piperita*.

Oral mucosal healing applications:

Herbal remedies typically have a palliative purpose. Aphthous ulcers heal more quickly and with less pain when treated with aloe vera gel (12).

Applications for dental trauma:

In vivo investigations revealed that teeth kept in propolis media displayed replacement resorption with substantial lengthening of the tooth, comparable to dried and saliva-maintained teeth (13). Garden sage (*Salvia officinalis*) extracts are used as a storage medium to preserve the viability of PDL cells in avulsed teeth (14). The best media for preserving PDL fibroblasts' cell viability were whole and skim milk, then natural coconut water and HBSS (15). Indian mulberry, or *Morus rubra*, is a good option for transporting avulsed teeth(16). Green tea extract from *Camellia sinensis* is more effective than milk and comparable to HBSS at preserving the viability of human PDL cells (17).

References

1. Patil DR. Cultural History from the Vayupurana. 1st ed. New Delhi: Motilal Banarasidas Publishers; 1973.p.230.
2. Chatterjee A, Pakrashi SC. The treatise on Indian medicinal plants. New Delhi: Publication and Information Directorate, 1991.
3. Groppo FC, Bergamaschi Cde C, Cogo K, Franz-Montan M, Motta RH, de Andrade ED. Use of phytotherapy in dentistry. *Phytother Res* 2008;22:993-8

4. Gomes BP, Souza SF, Ferraz CC, Teixeira FB, Zaia AA, Valdrighi L, et al. Effectiveness of 2% chlorhexidine gel and calcium hydroxide against *Enterococcus faecalis* in bovine root dentine in vitro. *Int Endod J* 2003;36:267-75.
5. Pistorius A, Willershausen B, Steinmeier EM, Kreisler M. 2003. Efficacy of subgingival irrigation using herbal extracts on gingival inflammation. *J Periodontol* 74:616– 622.
6. Somu CA, Ravindra S, Ajith S, Ahamed MG. Efficacy of a herbal extract gel in the treatment of gingivitis: A clinical study. *J Ayurveda Integr Med* 2012;3:85-90.
7. Calixto JB. 2000. Efficacy, safety, quality control, marketing and regulatory guidelines for herbal medicines (phytotherapeutic agents). *Braz J Med Biol Res* 33:179– 189.
8. Bohora A, Hegde V, Kokate S. Comparison of the antibacterial efficiency of neem leaf extract and 2% sodium hypochlorite against *E. faecalis*, *C. albicans* and mixed culture – an in vitro study. *Endodontology* 2010;22:8–12.
9. Oyama KO, Siqueira EL, Santos M. 2002. In vitro study of effect of solvent on root canal retreatment. *Braz Dent J* 13:208–211.
10. Oncag O, Cogulu D, Uzel A, Sorkun K. Efficacy of propolis as an intracanal medicament against *enterococcus faecalis*. *Gen Dent* 2006;54:319–22.
11. Ozorio JE, Carvalho LF, de Oliveira DA, de Sousa-Neto MD, Perez DE. Standardized propolis extract and calcium hydroxide as pulpotomy agents in primary pig teeth. *J Dent Child(Chic)* 2012;79:53-58.
12. Anonymous. Oral ulcers remedy gets FDA clearance. *J Am Dent Assoc* 1994;125:1308,10.
13. Casaroto AR, Hidalgo MM, Sell AM, Franco SL, Cuman RK, Moreschi E, et al. Study of the effectiveness of propolis extract as a storage medium for avulsed teeth. *Dent Traumatol* 2010;26:323–31.
14. Ozan F, Polat ZA, Tepe B, Er K. Influence of storage media containing *salvia officinalis* on survival of periodontal ligament cells. *J Contemp Dent Pract* 2008;9:17–24.
15. Souza BD, Lückemeyer DD, Reyes-Carmona JF, Felipe WT, Simões CM, Felipe MC. Viability of human periodontal ligament fibroblasts in milk, Hank's balanced salt solution and coconut water as storage media. *Int Endod J* 2011;44:111–15.
16. Ozan F, Tepe B, Polat ZA, Er K. Evaluation of in vitro effect of *morus rubra* (red mulberry) on survival of periodontal ligament cells. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2008;105:e66–9. 43. Hwang JY, Choi SC, Park JH, Kang SW. The use of green tea extract as a storage medium for the avulsed tooth. *J Endod* 2011;37:962–7.
17. Fritz TM, Burg G, Krasovec M. 2001. Allergic contact dermatitis to cosmetics containing *Melaleuca alternifolia* (tea tree oil). *Ann Dermatol Venereol* 128:123–126.