

PERIODONTITIS TREATMENT WITH BRAZILIAN GREEN PROPOLIS GEL

Renata Cairo do Amaral, Rafael Tomaz Gomes, Wellington Márcio Santos Rocha, Sheila Lemos Rago Abreu, Vagner Rodrigues Santos.

Laboratory of Microbiology and Biomaterials, School of Dentistry, Universidade Federal de Minas Gerais, Belo Horizonte, Brazil.

Summary

Propolis has been shown to exhibit *in vitro* antimicrobial activity against periodontal pathogens. The aim of this study was to evaluate the efficacy of Brazilian Green Propolis Gel (BGPG) for the treatment of patients diagnosed with gingivitis and Chronic Periodontitis (CP). Four patients, 1 male (36 years) and 3 females (42, 46, 51 years) with dental calculus, gingivitis, oedema, bleeding, gingival recession, pocket depths, attachment loss, suppuration, tooth mobility and alveolar bone loss were submitted at BGPG 10% treatment. Dental arches were divided in the following quadrants. Superior Right (SR) - BGPG irrigation; Superior Left (SL) - scraping/smoothing dental root (RAR) and BGP irrigation inside the periodontal pocket; Inferior Right (IR) - RAR; Inferior Left (IL) - control. Dental brushing with BGPG and washing mouth with propolis solution daily was carried through during the treatment. BGPG was applied in each periodontal pocket once a week, during 5 weeks, having used barren dismissable syringe. The results shown a regression of 95% gingivitis and suppuration in all the teeth irrigated with BGPG, as well as a pocket depths reduction in all unsubmitted and submitted teeth previously to the RAR. It was not observed alveolar bone reorganization. Increase of gingival contraction and dental mobility reduction was noted. In this clinical study, the patient treated with the BGPG showed periodontitis/gingivitis regression. The results suggest that 10% BGPG used could be used as an adjuvant therapeutic method assigned for the treatment of CP. Other studies need to be conducted with more significant number of patients in order to establish this treatment as an alternative approach for periodontal infectious conditions.

Key-words: Propolis, Gel, Chronic Periodontitis, Gingivitis, Treatment, Natural Product.

Corresponding Author's Contact Details:

Dr. Vagner Rodrigues Santos
Faculdade de Odontologia UFMG
Av. Antônio Carlos 6627 - Campus Pampulha
Belo Horizonte - Minas Gerais - Brasil - CEP: 31270-901.
Phone: +55 31 34992406 FAX: +55 3134992430
e-mail: vegneer2003@yahoo.com.br

Introduction

Periodontal disease is an infectious condition initiated by microbial plaque, which accumulates on the tooth surface at the gingival margin and induces an inflammatory reaction (1). The function of the inflammatory process is to protect the host, however the process may also contribute to tissue destruction (2).

Porphyromonas gingivalis, *Treponema denticola*, *Tannerella forsythensis*, *Actinobacillus actinomycetemcomitans*, *Fusobacterium nucleatum*, *Eikenella corrodens* are considered to be associated with Chronic Periodontitis (3) and some studies have shown that these microorganisms are susceptible to ethanolic and gel formulations of propolis (4, 5).

Clinical treatment of periodontal diseases is initiated by controlling the accumulation of dental plaque associated with scaling-root planing that allows the elimination of biofilm and calculus. However, sometimes this treatment is not enough to control the severity of the disease, needing the antibiotic use.

Development of effective strategies for treatment of chronic periodontitis has posed a challenge, considering the increase in opportunistic bacterial infections. Some of the drugs used in the treatment of refractory periodontitis, such as metronidazole/amoxiciclin association are limited because of the high rate of allergy, resistance of periodontopathic bacteria and elevated cost. Thus, searching for alternative antibacterial compounds has been a major concern in recent years. Propolis are widely employed in folk medicine, mainly in communities with inadequate conditions of public health and have been studied in order to discover more effective and less toxic compounds. Brazilian Green Propolis (BGP) is collected by bees *Apis mellifera* of the *Baccaris dracunculifolia* and exhibits effectivity in vitro against gram positive and gram negative oral microorganisms (5, 6). The aim of this study was to evaluate in vivo activity of propolis gel formulation in treatment of human patients with gingivitis and chronic periodontitis.

Material and Methods

Green Propolis was collected from the honey bee *Apis mellifera* in Minas Gerais State, Southwestern of Brazil. The propolis used in this study was extracted by Pharma Néctar®, Belo Horizonte, Brazil. Crude propolis samples were further dehydrated with a low-vacuum pump, and the extracts of the dried propolis were prepared as described elsewhere (7). The dried propolis samples were ground into fine powder, and 2.0g of propolis was mixed with 25 ml of 80% aqueous ethanol in a test tube and shaken at 70°C for 30 min. After extraction, the mixture was centrifuged at 8.000 g to obtain the supernatants. After that the original extract was prepared a gel, by PharmaNéctar®, and applied topically in periodontal pocket lesion with the use of a syringe.

This research was approved by the UFMG Ethic Committee. Four patients were selected from the Clinic of Periodontology at IPSEMG (CEO-MG). All patients were informed about the research assigned and signed a responsibility term. Four patients, 1 male (36 years) and 3 females (42, 46, 51 years) presented root calculus, gingivitis, oedema, bleeding, gingival recession, pocket depths, attachment loss, suppuration, tooth mobility and alveolar bone loss was submitted at BGGP gel treatment.

The patients mouth were divided in four quadrants. Superior Right (SD) - BGPG irrigation; Superior Left (SL) – scraping/ smoothing dental root (RAR) and pocket depths BGPG irrigation; Inferior Right (IR) - RAR; Inferior Left (IL) - control. Dental brushing with BGPG and washing mouth with propolis solution daily was carried out during the treatment. BGPG was applied in each periodontal pocket once a week, during 5 weeks, having used barren dismissable syringe.

Results

The results showed a regression of 95% gingivitis and suppuration in all the periodontal pockets irrigated with BGPG. It was also noted pocket depth reduction in all unsubmitted and submitted teeth previously to the RAR. It was not observed alveolar bone reorganization in dental x-rays. Increase of gingival contraction and dental mobility reduction were detected in all patients. In this clinical study, the patients treated with the BGPG showed regression signs of periodontitis/gingivitis.



Figure 1 - Clinical appearance of a patient's periodontium before propolis gel treatment.



Figure 2 - Clinical appearance of a patient's periodontium after the propolis gel treatment.

Discussion

Periodontal diseases are inflammatory conditions resulting from a bacterial aggression in the dental-gingival area; they are modulated by the host's immunologic factors that determine disease progression. Clinical examination must seek for all bacterial factors, together with the general and environmental factors that are likely to influence the disease.

The chemical composition of propolis is very complex and depends of the area where it was collected (8). Therefore variations in the antimicrobial activity according to the propolis origin are not surprising (8, 9).

Propolis antibacterial and antifungal activities has been attributed to phenolic compounds, especially flavonoids, phenolic acids and their esters (10). The antibacterial and antifungal activities of Brazilian Green Propolis has been reported and its activity was associated with volatile compounds, dipertenic acids and different flavonoids (11, 12, 13, 14). In this work BGPG was capable to inhibit all the microorganism sample. The present study demonstrated the periodonatl clinical result of the antibacterial activity of Brazilian Green Propolis Extract (BGP).

Although the antimicrobial properties of propolis have been the subject of many investigations, it is difficult to compare the results of different studies, due to the difference of composition of propolis and/or the different methods used for the evaluation of propolis antibacterial activities (15).

The results of the clinical treatment shown significant difference in gingival status of the patients. The efficacy of propolis gel in Chronic Periodontitis treatment is of great relevance in Public Health of developing countries, such as Brazil, since the disponibility of propolis has low cost and is acessible to population. Other studies need to be conducted with a significant number of patients in order to compare with positive controls and also confirm the possible statistical differences between the groups tested.

It means that, in this study, the formulation, in the therapeutic method assigned in this research is effective in the treatment of Chronic Periodontitis.

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