

Brazilian Propolis: A Promising Adjunct to Dental Care, Cancer Treatment, Vaccines

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Editor's note

Propolis is a resinous substance that honeybees collect from trees and plants. In addition to filling in cracks in the hive, it helps to protect against predators, maintain temperature, and promote hygienic conditions. Whereas propolis' main sources in temperate zones are poplar trees, most of the propolis in Brazil comes from Baccharis dracunculifolia.

Brazilian propolis, known as green propolis, has its own chemical and biological characteristics. Even so, like other types of propolis, it has anti-inflammatory, antioxidant, antiparasitic, and anticarcinogenic effects. Green propolis is an integral part of folk medicine in Brazil, especially in regions where public health services are minimal.

As researchers have sought alternatives to costly antibacterial compounds that can lead to allergies and bacterial resistance, numerous antimicrobial studies are being done on green propolis. In this issue we summarize three of these papers, recently published online: two on dental care and one on propolis's value as an adjunct to vaccines. All three studies used propolis supplied by Nectar Farmaceutica Ltda, a bee products company in Brazil. Permission to adapt the summaries for our use has been given by José Alexandre S. Abreu, Nectar Farmaceutica's president and CEO. Also presented is a literature review on propolis as a supplement to cancer therapy: among its coauthors are Mr. Abreu and two others affiliated with Nectar Pharmaceutica.

Green propolis for chronic periodontitis

Researchers in Brazil have found that periodontal diseases—inflammatory conditions resulting from bacteria in the mouth and gums—are amendable to treatment by green propolis.

The study was of four patients at a periodontics clinic in southeastern Brazil who had varying degrees of dental problems: tartar, gingivitis, bleeding, fluid accumulation, receding gums, loose teeth, pus formation, and bone loss.

Green propolis was collected from honeybees in Minas Gerais State in southeastern Brazil. Crude propolis samples were dehydrated with a low-vacuum pump, and the extracts were ground into a fine powder. The resulting mixture contained 2.0 g of propolis and 25 mL of 80% aqueous ethanol.

Treatment consisted of daily tooth brushing with propolis and washing the mouth with a propolis solution. The propolis was applied in certain periodontal pockets once a week for five weeks.

All the periodontal pockets irrigated with propolis showed a 95% decline in gingivitis and pus. Because propolis is cheap and accessible to the population, its effectiveness in treating periodontal disease is extremely relevant to public health in Brazil. The authors therefore recommend that 10% Brazilian green propolis be used in conjunction with treatment of chronic periodontitis.

Source: "Periodontitis treatment with Brazilian green propolis gel," Cairo de Maral et al., Pharmacologyonline 3 (2006), pp. 336-341.

For oral candidiasis

According to Brazilian researchers, green propolis is effective against oral candidiasis.

Eighteen patients at a clinic at Minas Gerais Federal University Dentistry School, wore dentures and had associated oral candidiasis (*candida albicans*).

Green propolis was collected from honeybees in southeastern Brazil. A 20% ethanol propolis extract was then produced. Crude propolis samples were further dehydrated with a low-vacuum pump, and the extracts were ground into a fine powder. The resulting mixture contained 2.0 g of propolis and 25 mL of 80% aqueous ethanol.

Twelve patients were treated with propolis. After cleaning their prosthesis and their oral cavity, they dried the infected area and applied the propolis extract topically in candidiasis oral mucosa lesions with a swab, four times daily for a week. A control group of six patients performed the same treatment with Nystatin, a standard antifungal product.

All 18 patients—whether treated with propolis extract or Nystatin—showed a remission of the candidiasis lesion in less than three weeks: 11 patients after 7 days, and 6 patients after 15 days.

Source: "Oral candidiasis treatment with Brazilian ethanol propolis extract," V.R. Santos et al., *Phytotherapy Research* 19 (2005), pp. 652-654. Available online at www.interscience.wiley.com

In vaccines

To be effective, most vaccines typically depend on the inclusion of substances known as adjuvants that stimulate an immune response. Researchers seeking to develop a vaccine against Suid herpesvirus type1 (SuHV-1), which causes an infectious disease among swine, combined green propolis with an ethanol extract and tested it on mice. The mice showed an increased cellular immune response and increased protection against SuHV-1.

This response did not occur with propolis alone, but only when the antigen was absorbed in a particulate adjuvant, like aluminum hydroxide. Thus, when associated with auxiliary substances like aluminum hydroxide, green propolis extract may increase the potency of vaccines, especially those that depend on the cellular immune response for protection.

Source: "Immunomodulation produced by a green propolis extract on humoral and cellular responses of mice immunized with SuHV-1," Geferson Fischer et al., *Vaccine* 25 (2007), pp. 1250-1256. Available online at www.sciencedirect.com

In cancer treatment

A literature review finds that propolis's pharmacological properties make it safe and effective as an adjunct for patients receiving cancer treatment:

- ***Biological therapy.*** Biological therapy works hand in hand with the immune system. Propolis's biological activities such as antitumoral activity, DNA protection, free-radicals scavenging, and immune stimulation act in synergy with each other and with conventional chemotherapy medication.
- ***Synergy with chemotherapy.*** Antioxidants may boost the effects of anti-carcinogenic drugs, thus enabling a decrease in the administered dose and in turn leading to a reduction in side effects. They may also influence the response to chemotherapy.
- ***Anti-inflammatory activity.*** This results from propolis's inhibitory effect on prostaglandins, leukotrienes, and histamine release.
- ***Healing activity.*** Propolis promotes epithelial formation as well as vascular and fibroblastic neof ormation of the connective tissue.
- ***Antimicrobial activity.*** Propolis' flavonoids and phenolic acids are pharmacologically active compounds that have effects on bacteria, fungi, and viruses.

Source: "Biological Therapy Using Propolis as Nutritional Supplement in Cancer Treatment," J. Galvao et al., *International Journal of Cancer Research* 3:1 (2007), pp. 43-53. Available online at www.academicjournals.net/2/detail.php?id=2&jid=ijcr&theme=2&issueno=8&articulo=73

*Published in the AAS Journal,
March 2007*