

Propolis

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Composed primarily of resinous substances collected by honey bees from deciduous trees (such as poplar, cottonwood, birch, and alder), propolis is used as both a building material & sterilizing/disinfecting material within the hive.

Typical Composition

- 45-55% Resins
- 25-35% Waxes and Fatty Acids
- 10% Essential Oils and Aromatic compounds (Phenolics) - 14 kinds Including Vanillin
- 5% Pollen
- 5% Other Ingredients and Materials including:
 - 24 Flavonoids- (or bioflavonoids), also collectively known as Vitamin P and citrin

Medicinal Forms Of Propolis

- Water liquefied or Hydrolyzed whole propolis
- Alcohol tincture
- Powdered – tablets or capsules made from powdered propolis
- Propylene Glycol extract

Propolis – Antioxidant Activity

- Pretreatment of cyclists' blood cells with a component of propolis, Caffeic acid phenethyl ester (CAPE), reversed or reduced hyperthermia-induced survival inhibition, necrosis, superoxide production, glutathione depletion, and intracellular superoxide burst in a dose-dependent manner. These results suggest that CAPE may reduce hyperthermal stress and resulting free radical generation that impairs endurance capacity and immune cell redistribution during prolonged exercise. - Caffeic Acid Phenethyl Ester, an Antioxidant From Propolis, Protects Peripheral Blood Mononuclear Cells of Competitive Cyclists Against Hyperthermal Stress, Chen, Y.J., et al., *J Food Sci*, August 2009; 74(6):H162-7
- While pollen exhibited strong antioxidant effects, propolis was the most powerful antioxidant of all the bee product examined (propolis, pollen, royal jelly). Comparison of Bee Products Based on Assays of Antioxidant Capacities, Nakajima, Y., *BMC Complement Altern Med*, February 2009; 26:9:4

Propolis – Antibiotic/Antimicrobial/Antifungal Activity

- Known as Russian penicillin.
- Antibacterial activity was highest in samples from locations characterized by a wet-tropical rain forest-type climate - Comparative Study of the Antibacterial Activity of Propolis From Different Geographical and Climatic Zones, Seidel, V., et al., *Phytother Res*, September 2008; 22(9):1256-63
- Propolis from USA, Australia, and Turkey were all found to have strong antifungal activity and aided wound healing. - The effect of Bee Propolis on Oral Pathogens and Human Gingival Fibroblasts, *J Ethnopharmacol*, December 2005; 102(3):371-6. Epub 2005 Aug 3
- Propolis compounds exhibit strong antimicrobial activity against Gram (+/-) bacteria and fungi. Chemical Analysis and Antimicrobial Activity of Greek Propolis, Melliou, E., Chinou, I., *Planta Med*, June 2004; 70(6):515-19

Propolis – Synergy with Antibacterial Drugs

- Alcohol based propolis tincture had a significant antimicrobial activity towards all tested clinical strains (8 Staphylococcus spp. strains and 11 S. aureus). It drastically increased the antimicrobial effect of antibiotics ampicillin, gentamycin and streptomycin, moderately chloramphenicol, ceftriaxon and vancomycin, while there was no synergistic effect with erythromycin. Multifactorial Aspects of Antimicrobial Activity of Propolis, Scazzocchio, F., et al., *Microbiol Res*, 2006; 161(4):327-33. Epub 2006, Jan 19
- Propolis demonstrated synergism with five common antimicrobial drugs.- Propolis: Anti-Staphylococcus Aureus Activity and Synergism with Antimicrobial Drugs, Mem Inst Oswaldo Cruz, Aug 2005; 100(5):563-6. Epub 2005, Sept 15

Propolis – Antiviral Activity

- Propolis extracts may help when used as a topical application against herpes infection (cold sores) - Antiviral Activity and Mode of Action of Propolis Extracts and Selected Compounds, Schnitzler, P., et al., *Phytother Res*, May 27, 2009, Epub ahead of print (Pubmed.gov)
- The Brazilian propolis possess anti-influenza virus activity and ameliorated influenza symptoms in mice making it a possible candidate for an anti-influenza dietary supplement for humans.- Anti-Influenza Virus Activity of Propolis in Vitro and its Efficacy Against Influenza Infection in Mice, Shimizu, T., et al., *Antivir Chem Chemother*, 2008; 19(1):7-13

Propolis – AntiCancer Activity

- Alcohol based propolis tincture contains components that may prevent colon cancer - Growth Inhibitory Activity of Ethanol Extracts of Chinese and Brazilian Propolis in Four Human Colon Carcinoma Cell Lines, Ishihara, M., et al., *Oncol Rep*, August 2009; 22(2):349-54
- Propolis may be able to help with over 70% of human cancer cases - Artepillin C (ARC) in Brazilian Green Propolis Selectively Blocks Oncogenic PAK1 Signaling and Suppresses the Growth of NF Tumors in Mice, Messerli, SM, et al., *Phytother Res*, March 2009; 23(3):423-7
- Components of propolis exerts cytotoxicity in cancer cell lines by targeting the control of cell cycle progression, indicating that the mechanism of action of such compounds involves interference with the cell cycle machinery - Mucronulatol From Caribbean Propolis Exerts Cytotoxic Effects on Human Tumor Cell Lines, Diaz-Carballo, D., et al., *Int J Clin Pharmacol Ther*, May 2008; 46(5):226-35
- Mexican propolis possess a strong antiproliferative activity on cancer cell lines. Sonoran Propolis: Chemical Composition and Antiproliferative Activity on Cancer Cell Lines, Hernandez, J.A, et al., *Planta Med*, November 2007; 73(14):1469-74. Epub 2007, Oct 19
- Propolis extract had a significant inhibitory effect on the proliferation of human prostate cancer cells. Propolis shows promise as chemotherapeutic agents as well as preventive agents against prostate cancer. - Antiproliferation of Human Prostate Cancer Cells by Ethanolic Extracts of Brazilian Propolis and its Botanical Origin, Li, H., Kapur, A., et al., *Int J Oncol.*, Sept 2007; 31(3):601-6
- Water soluble derivative of propolis combined with chemotherapeutic agents in order to maximize their antitumor activity and minimize post chemotherapeutic or radiotherapeutic deteriorated reactions - Antitumor, Hematostimulative and Radioprotective Action of Water-Soluble Derivative of Propolis (WSDP), [Orsolić N](#), [Basić I.](#), *Biomed Pharmacother*, December 2005; 59(10):561-70. Epub Aug 10, 2005

Propolis – Dental Benefits

- Forty-one young volunteers performed 21 mouth rinses divided into three rinses per day for 7 days, with no other changes in their oral hygiene and dietary habits. A reduction in the concentration of *S. mutans* was observed in 49% of all samples collected after use of the extract, 26% showed no alterations, and an increasing in *S. mutans* was observed in 25%. Propolis extract possesses in vivo antimicrobial activity against *S. mutans* present in the oral cavity and might be used as an alternative measure to prevent dental caries. Effect of a Propolis Extract on Streptococcus Mutans Counts in Vivo, *J Appl Oral Sci*, October 2007; 15(5):420-3
- Due to increased antimicrobial resistance of bacteria, propolis may be kept in mind in the treatment of oral cavity diseases. In Vitro Antimicrobial Activity of Propolis Samples From Different Geographical Origins Against Certain Oral Pathogens, Koru, O., et al., *Anaerobe*, June-Aug 2007; 13(3-4):140-5 Epub March 7, 2007
- Propolis found effective in reducing dental caries in rats. - In Vitro and In Vivo Effects of Isolated Fractions of Brazilian Propolis on Caries Development, Hayacibara, MF., et al., *J Ethnopharmacol*, Oct 3, 2005; 101(1-3):110-115
- Data revealed that exposure of PDL cells or pulp fibroblasts to 4 mg/ml or lower concentrations of propolis resulted in >75% viability of cells. On the contrary, calcium hydroxide 0.4 mg/ml was cytotoxic and <25% of the cells were found to be viable. Calcium hydroxide paste is typically used as an anti-microbial agent during root canal procedures and is known as a strong anti-microbial and bone-regeneration stimulant. Further investigations may find propolis to be a possible alternative for an intracanal antimicrobial agent. Effect of Propolis on Human Fibroblasts From The Pulp and Periodontal Ligament, Al-Shaher, A., et al., *J Endod*, May 2004; 30(5):359-61

Propolis – Additional Properties

- Anesthetic – Activity is 3.5X stronger than cocaine and 5.2X higher than procaine (novocaine)
 - Doses of 0.012 g/kg
- Anti-inflammatory
- Spasmolytic
- Hypo/Hyper glycemc thyroid conditions
- Strengthens capillaries
- Good for liver (Cirrhosis, Hepatitis B&C, Liver atrophy due to chemical assault)
- Stimulates Immune System - Speeds recovery from colds or flu
- Healthy skin and tissue -Eczema and psoriasis
- Safe to use in combination with allopathic medicine (antibiotics, chemo, vaccines)

Possible Negative Effects

- Propolis sensitivity generally expresses itself as dermatitis which soon resolves when discontinued.
- May cause diarrhea in large therapeutic doses

Propolis is fully metabolized after 8 hrs. Important to spread out dosage intake 3x /day min. 4x/day is even better (every six hours) if possible.