Bee Natural, LLC

Darren Sausser - 1628 Big Woods Rd, Smyrna, DE 19977
B/302 382-2370 * Fax/215 629-0800 * Email: beenatural1@juno.com

Propolis is a resinous mixture that honey bees collect from tree buds, sap flows, or other botanical sources. It is used as a sealant for unwanted open spaces in the hive. Propolis is used for small gaps (approximately 6 millimeters (0.2 in) or less), while larger spaces are usually filled with beeswax. Its color varies depending on its botanical source, the most common being dark brown. Propolis is sticky at and above room temperature (20° Celsius). At lower temperatures it becomes hard and very brittle.

Purpose: For centuries, beekeepers assumed that bees sealed the beehive with propolis to protect the colony from the elements, such as rain and cold winter drafts. However, 20th century research has revealed that bees not only survive, but also thrive, with increased ventilation during the winter months throughout most temperate regions of the world.

Propolis is now believed to:

1. Reinforce the structural stability of the hive
2. Reduce vibration
3. Make the hive more defensible by sealing alternate entrances
4. Prevent diseases and parasites from entering the hive, and to inhibit bacterial growth
5. Prevent putrefaction within the hive. Bees usually carry waste out of and away from the hive. However if a small lizard or mouse, for example, found its way into the hive and died there, bees may be unable to carry it out through the hive entrance. In that case, they would attempt instead to seal the carcass in propolis, essentially mummifying it and making it odorless and harmless.

Composition **-** The composition of propolis varies from hive to hive, from district to district, and from season to season. Normally it is dark brown in color, but it can be found in green, red, black and white hues, depending on the sources of resin found in the particular hive area. Honey bees are opportunists, gathering what they need from available sources, and detailed analyses show that the chemical composition of propolis varies considerably from region to region, along with the vegetation. In northern temperate climates, for example, bees collect resins from trees, such as poplars and conifers (the biological role of resin in trees is to seal wounds and defend against bacteria, fungi and insects). Poplar resin is rich in flavonoids. "Typical" northern temperate propolis has approximately 50 constituents, primarily resins and vegetable balsams (50%), waxes (30%), essential oils (10%), and pollen (5%). In neotropical regions, in addition to a large variety of trees, bees may also gather resin from flowers in the genera *Clusia* and *Dalechampia*, which are the only known plant genera that produce floral resins to attract pollinators. *Clusia* resin contains polyprenylated benzophenones. In some areas of Chile, propolis contains viscidone, a terpene from *Baccharis* shrubs, and in Brazil, naphthoquinone epoxide has recently isolated from red propolis, and prenylated acids such as 4-hydroxy-3, 5-diprenyl cinnamic acid have been documented. An analysis of propolis from Henan, China found sinapinic acid, isoferulic acid, caffeic acid and chrysin, with the first three compounds demonstrating anti-bacterial properties. Also, Brazilian red propolis (largely derived from *Dalbergia ecastaphyllum* plant resin) has high relative percentages of the isoflavonoids 3-Hydroxy-8, 9-dimethoxypterocarpan and medicarpin.

Occasionally worker bees will even gather various caulking compounds of human manufacture, when the usual sources are more difficult to obtain. The properties of the propolis depend on the exact sources used by each individual hive; therefore any potential medicinal properties that may be present in one hive's propolis may be absent from another's, and the distributors of propolis products cannot control such factors. This may account for the many and varied claims regarding medicinal properties, and the difficulty in replicating previous scientific studies investigating these claims. Even propolis samples taken from within a single colony can vary, making controlled clinical tests difficult, and the results of any given study cannot be reliably extrapolated to propolis samples from other areas.

Medical uses - Propolis is marketed by health food stores as a traditional medicine, and for its claimed beneficial effect on human health. Natural medicine practitioners use propolis for the relief of various conditions, including inflammations, viral diseases, ulcers, superficial burns or scalds. Propolis is also believed to promote heart health, strengthen the immune system and reduce the chances of cataracts. Old beekeepers recommend a piece of propolis kept in the mouth as a remedy for a sore throat. Propolis lozenges and tinctures can be bought in many countries. Though claims have been made for its use in treating allergies, propolis may cause severe allergic reactions if the user is sensitive to bees or bee products.

Some of these claims are being clinically investigated and several studies are published in the biomedical literature. Since the chemical composition of propolis varies depending on season, bee species and geographic location, caution must be applied in extrapolating results (as above).

As an antimicrobial - Depending upon its composition, propolis may show powerful local antibiotic and antifungal properties.

As an emollient - Studies also indicate that it may be effective in treating skin burns.

As an immunomodulator - Propolis also exhibits immunomodulatory effects.

As a dental antiplaque agent - Propolis is a subject of recent dentistry research, since there is some evidence that propolis may actively protect against caries and other forms of oral disease, due to its antimicrobial properties. Propolis can also be used to treat canker sores. Its use in canal debridement for endodontic procedures has been explored in Brazil.

As an antitumor growth agent - Propolis' use in inhibiting tumorigenesis has been studied in mice in Japan.

Commercial uses

In musical instruments - Propolis is used by certain music instrument makers to enhance the appearance of the wood grain. It is a component of some varnishes and was reportedly used by Antonio Stradivari.

In food - Propolis is used by some chewing gum manufacturers to make Propolis Gum.