



Propolis, which bee product is that?

Propolis is often commonly described as bee glue. It is the resin-rich waxy material which is collected by bees from various plant sources and used to cement the hive together and seal all the surfaces. The resins collected from a variety of flora are masticated by the bees and subjected to enzymatic breakdown before being used to block off pieces of the hive where insect intruders have entered.¹ It is not to be confused with 'royal jelly' which is another bee product. Its chemical composition depends on the geography and flora of the region but specimens from a range of continents have been shown to have significant anti-bacterial, anti-viral and anti-fungal activity.²

Constituents – The major constituents are phenolic acid esters (58%), beeswax (24%), flavonoid aglycones (6%), triterpenes (0.5%) and lipids and wax (8%). It is rich in minerals and micro-nutrients such as manganese, zinc and copper.¹ Propolis may contain up to 5% pollen.³

Mechanism of action – Phenolic esters and flavonoids have been shown to have some anti-bacterial activity.^{1,2} Samples from a variety of different geographic sources demonstrate *in vitro* antibacterial activity against *Staphylococcus aureus* and *Escherichia coli* and anti-viral activity against avian influenza virus, in addition to anti-fungal activity against *Candida albicans* in extract hydro-alcoholic extracts with concentrations of 70% ethanol.² It is also notable that this research on anti-bacterial action of individual constituents isolated from propolis also demonstrates that no one single constituent of propolis has an activity greater than that of the whole extract.^{2,3} Due to the flavone content it is anti-inflammatory.^{3,4}

Dosage and preparations – Mouth rinse: 5ml of 1:2 hydroalcoholic extract of propolis in 25ml of water. Use three to four times daily.⁴

Lozenges: 5-10% propolis content. Used as needed in mouth ulcers and pharyngitis and tonsillitis.

Fluid extracts: 1:2 hydroalcoholic extracts with a 70-90% ethanol content.

Dosage: .5-1.5ml TDS³

Vaginal douche: 5% solution to be used for seven consecutive days.⁵

Ointment: 3-5% ointment applied locally for cervicitis and herpes simplex virus for 10 days in a row.⁶

Clinical trials – Propolis is more widely used in Europe than in Australasia and the trials on its use, while largely positive, are small and need further elaboration before propolis can be considered to be well supported by evidence.

Oral hygiene – There are a number of conflicting small studies about the use of propolis in dental caries, gingivitis and dental pain.⁷ It seems to have an impact in controlling the development of plaque and decreasing gingivitis but it is unclear how clinically significant these results are.⁸ Further large scale research is needed before meaningful clinical suggestions can be made.

Asthma – A small pilot study of 46 patients with asthma on standard medication suggests that propolis may be used as an adjuvant in the treatment of asthma. Patients taking a propolis preparation in a milk base, in addition to their medication, showed significant improvement in inflammatory mediators and marked reduction in the severity and frequency of nocturnal asthma attacks.¹⁰

Upper respiratory tract infections – A recent trial of 430 children aged 1-5 using a combination product containing 50 ml *Echinacea purpurea* and *angustifolia*, propolis 50mg/ml and Vitamin C 10 mg/ml for 12 weeks as a preventative agent, showed a significant reduction in the frequency of illness episodes. There was also a significant reduction in the days of fever for each child, and in use of concurrent medications such as antipyretics and antibiotics and a reduction in rhinitis and daytime cough.¹¹

Herpes simplex – A small study comparing acyclovir, propolis and placebo demonstrated that patients using propolis showed significantly reduced intensity of herpes attacks, faster healing and reduced superinfections with pathogens, than either the acyclovir group or the placebo group.⁶ In a small open study of the use of a 5% propolis solution as a douche in recurrent vaginitis, there was a significant reduction in vaginal pain, discharge and impairment in everyday life and sexual relationships in the treated women.⁵ More methodologically robust trials of larger

groups are required to further support this research.

Contraindications – Propolis is considered relatively non-toxic and has a high NOEL (NO Effect Level) of 1400mg/kg of body weight in mice.³ There are many case reports of contact dermatitis, erythema, eczema, vesiculitis, and pruritis associated with contact with propolis by hypersensitive individuals.⁹

Those who are allergic to bee pollen and bee stings should avoid using propolis.

Pregnancy and lactation – There are no clinical studies of the use of propolis in pregnancy and lactation.

Interactions – None known

Adverse reactions – In clinical trials these have been recorded as rare, mild and transient comprising of mild gastrointestinal symptoms.¹¹

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