



SOURCING GUIDE · ORIGINS

How to read a propolis spray with hive variation

This guide is for household buyers who keep honey, propolis or royal jelly sprays on the shelf and read labels closely. After reading it they will be able to ask for apiary origin, extraction solvent and recent lab results before they restock.



Hive yield

Expect 50 to 100 grams of propolis per hive per season, with wide variation.



Solvent choice

Alcohol extracts more resin than glycerin and keeps longer on the shelf.



Lab limits

Flavonoid numbers show chemistry, not proof of an effect in people.

By Dana Kessler · Updated Aug 17, 2026 · 9 min read

CONTENTS

01	Start at the apiary: place and season	05	What flavonoid testing can and cannot prove
02	How propolis is harvested	06	Checks, variation and buying questions
03	Cleaning without ruining it	07	The checklist
04	Alcohol versus glycerin extraction	08	Sources and further reading

A small spray bottle rarely explains itself. The resin inside may come from poplar buds in one season and birch in another, scraped from frames or lifted from a trap, then soaked in grain alcohol or glycerin. Once those steps are clear, buying gets simpler because each question has a place to land.

01

Start at the apiary: place and season

Propolis and honey change with plant species, season, climate, environmental conditions and genetic factors. Bee species and geographical and botanical source shape propolis variation, so two jars from different regions can look and smell different while both being honestly made. In central and eastern Europe including Poland, propolis comes mainly from black poplar or birch, and origin affects color and chemical composition.

Royal jelly follows a different rhythm inside the hive. Hypopharyngeal gland activity in worker bees peaks between day 6 and day 12 after emergence, and royal jelly output depends on pollen intake for gland development. Staff scientist Emily O’Neil at The Best Bees Company puts the field check plainly: “You can often tell if a colony has adequate amounts of pollen/bee bread by looking at the larvae in a hive. If the larvae are ‘swimming’ in pools of royal jelly, this indicates that there is enough pollen for nurse bees to consume to produce royal jelly.”

Regional scale adds context without deciding quality. Taiwan records about 160,000 colonies and royal jelly output as one example of how much managed beekeeping can sit behind familiar products. For a buyer, the useful step is smaller. Ask where the apiaries sit, which plants the bees worked, and which season the lot was harvested. A brand that names growers, places and harvest dates gives you something to trace.

02

How propolis is harvested

On average, 50 to 100 grams of propolis can be harvested per hive per season. Yield varies by hive, with some hives making little and others sealing parts so well the hive is hard to open. That spread is normal and worth remembering when one batch tastes stronger or looks darker than the last.

Two harvest methods dominate. Scraping takes propolis straight from frames and boxes with a hive tool. It is fast and needs no extra equipment, but scraping propolis from painted equipment or treated hives risks paint and varroa treatment chemicals in the material. Paint flakes and residues from mite treatments can travel with the scrapings into the jar.

A propolis trap takes another path. The device is a queen excluder like sheet with smaller holes, sold for around \$10, placed atop the top box with the outer cover propped open to admit light. Bees dislike the light and draft through the small holes and seal them with resin. Filled traps are chilled in a fridge or freezer to harden propolis, then harvested by bending, scraping or tapping while still in a bag. The cold makes the resin brittle, so it pops free instead of smearing.

FROM THE EDITORS

Propolis traps reduce contact with paint and hive surfaces, while scraping costs less and needs no extra gear. Either method can produce sound material when the equipment is clean and mite treatments are recorded, so ask how the lot was collected and what surrounded it.

03

Cleaning without ruining it

Fresh propolis carries wax, wood bits, bee parts and dust. Cleaning uses hardened propolis broken into small pieces, swirled in cold water where propolis sinks and dirt floats for skimming, then dried cool on parchment out of direct sun. Cold matters because warm water softens the resin and traps debris instead of releasing it. Gentle drying protects aroma and keeps the pieces free flowing.

Cleaned propolis is stored in the fridge or freezer until use. Cool storage slows change in aroma and texture during the wait before extraction. Small beekeepers often keep cleaned lots in labeled bags with harvest place and date, which later becomes the lot identity on a certificate of analysis.

Heat needs care at every later step. Oil propolis preparations are heated gently and kept under 122 degrees F, and wax propolis creams under 130 degrees F, because heat causes loss of beneficial properties. The same caution applies to drying and melting around honey blends. A maker who notes temperatures and drying conditions shows process control rather than habit alone.

Alcohol versus glycerin extraction

Ethanol and glycerin pull different fractions from the same resin. Alcohol tinctures use 40 to 70 percent ethanol, extract alkaloids, resins, glycosides, terpenes and essential oils, with 60 to 70 percent ethanol needed for resinous material. Ethanol has a broader extraction range than glycerin, and diluted ethanol captures more water soluble compounds while less diluted ethanol captures oil soluble resins, essential oils and some alkaloids.

A home scale recipe shows the ratio logic used in larger production. A 10 percent tincture uses 1 part propolis by weight to 9 parts grain alcohol of 75 proof or higher, such as vodka or Everclear, and rubbing alcohol must not be used. The jar is stored dark and shaken 2 to 3 times per day for up to 3 weeks, then strained and stored dark. Shaking keeps fresh solvent in contact with the resin, and dark storage limits light exposure during the soak.

Glycerin as the alcohol free path

Glycerites use 55 to 70 percent vegetable glycerin and capture about 60 to 70 percent of active compounds versus alcohol baseline, so 1 mL tincture roughly equals 2 to 3 mL glycerite. Finished glycerin extracts must be at least 55 percent glycerin for effective preservation. That threshold explains why label glycerin content is worth checking rather than assuming any sweet tasting extract will keep.

Shelf life follows the solvent. Alcohol tinctures last 3 to 5 years, glycerites last 14 to 24 months, and vinegar oxymels last 6 to 12 months. A shorter date on a glycerin spray does not mean poor making. It reflects preservation chemistry, storage and how often the bottle is opened.

FEATURE	ALCOHOL EXTRACT	GLYCERIN EXTRACT
Solvent range	40 to 70 percent ethanol, 60 to 70 percent for resinous material	55 to 70 percent vegetable glycerin, at least 55 percent for preservation
What it captures	Broader range including resins, essential oils and some oil soluble compounds	Narrower range, about 60 to 70 percent of active compounds versus alcohol
Dose comparison	Baseline at 1 mL tincture	Roughly 2 to 3 mL glycerite for a similar material input
Shelf life unopened	3 to 5 years stored dark	14 to 24 months stored cool and dark

What flavonoid testing can and cannot prove

Makers often quote total phenolics or flavonoids. Folin Ciocalteu and aluminum chloride assays estimate total phenolic and flavonoid content, while DPPH and ABTS evaluate radical scavenging, but they give global rather than compound specific information. In plain terms, they estimate groups of compounds and laboratory activity, not the exact mix in the bottle.

Honey enrichment studies show why detail matters. Tracing the batch back to the hive and forest shows honey enrichment with propolis extract raised polyphenols including flavonoids and phenolic acids, with chrysin, pinocembrin, p-coumaric acid and ferulic acid reaching the highest levels. Enrichment raised in vitro antioxidant, antiradical and reducing activity with increasing propolis addition, but worsened color, smell, texture and taste. Those laboratory measures describe chemistry in glassware, not effects in people.

Spectrophotometric total phenolic and flavonoid tests and DPPH and ABTS give global estimates only, and need LC MS for compound detail. Liquid chromatography paired with mass spectrometry can separate and name individual compounds, which helps compare lots across seasons. Major royal jelly protein 1 and 10-hydroxy-2-decenoic acid are the most abundant protein and fatty acid in royal jelly and serve as critical quality markers, a reminder that hive products often need their own marker rather than one shared number.

Propolis composition is highly variable by plant, geography, bee species and processing, which limits direct comparison across studies. Clinical evidence for medicinal uses is described as limited, so tinctures should not replace professional treatment. As Dr. Ryszard Maleszka of the Australian National University notes, "With our current knowledge we only scratch the surface of biological systems, and honey bee biology is no exception." A flavonoid figure can support identity and batch comparison when methods stay constant, yet it cannot prove what a spray will do for the reader.

FROM THE EDITORS

Ask which test was used, which solvent the sample came from, and whether the lab ran LC MS alongside the global assays. A number without method, solvent and date is difficult to compare across brands or seasons.

Checks, variation and buying questions

Adding propolis changes honey chemistry in predictable ways. Propolis addition had no significant effect on HMF, sugar content or specific conductivity, but significantly increased free acidity and water insoluble substances. Free acidity and water insoluble matter therefore help track how much resin went into a blend, while sugars and conductivity may stay flat. On the tongue the tradeoff shows. Adding propolis to honey raises phenolics and in vitro antioxidant activity but worsens sensory properties, so formulation is a tradeoff between measured chemistry and color, smell, texture and taste.

Contamination checks sit beside composition tests. Exact pesticide and heavy metal levels in any given bottle cannot be known without a batch specific lab report. Shoppers can reasonably ask for recent third party results tied to a lot or batch number, plus notes on apiary treatments and harvest equipment. The label rarely has room for that detail, which is why a linked certificate of analysis matters more than front label wording.

Batch variation is normal in hive products because plants, weather, bee genetics and cleaning steps all shift the starting mix. The best dose or duration for sprays is not established here, since the preparations give ratios for making the spray and not clinical dosing. It is still untested how time and temperature during storage shift the potency of propolis spray once opened. Keep bottles dark, cool and closed, note the opening date, and speak with a qualified professional about use, especially for children, pregnancy or allergy history.

Useful buying questions fit on an index card. Where were the apiaries and when was harvest. Was propolis scraped or trap collected, and how were mite treatments managed? Which solvent and ratio were used, and what is the glycerin percentage when relevant. Which lab ran the tests, which methods were used, and does the report match the lot in hand. Brands that answer with places, dates and paperwork earn repeat buying. Where those answers stay vague, treat that step as still opaque.

07

The checklist

-
- ☐ Note apiary country and region for the lot
 - ☐ Note harvest season and plant source when stated
 - ☐ Ask scraped or trap collected propolis
 - ☐ Check hive paint and varroa treatment notes
 - ☐ Confirm grain alcohol proof or glycerin percentage
 - ☐ Match solvent ratio to label directions
 - ☐ Look for third party lot specific lab report
 - ☐ Compare total phenolic method across batches
 - ☐ Track free acidity and water insoluble matter
 - ☐ Expect sensory shifts with higher propolis share
 - ☐ Record open date and store dark and cool
 - ☐ Ask a professional about household use
-

08

Sources and further reading

- Mechanistic exploration of royal jelly production in caged honey bees (*Apis mellifera*) · [pmc.ncbi.nlm.nih.gov](https://pubmed.ncbi.nlm.nih.gov)
- Thriving Hives: Propolis - Harvest and Usage · extension.usu.edu
- The Effect of Enriching Honey with Propolis on the Antioxidant Activity, Sensory Characteristics, and Quality Parameters · [pmc.ncbi.nlm.nih.gov](https://pubmed.ncbi.nlm.nih.gov)
- Phenolic content, flavonoid distribution, and radical-scavenging activity of honey, propolized honey, and propolis extracts from Cauca, Colo · link.springer.com
- Phytochemical profiling and characterization of flavonoid derivatives from propolis sample and investigation of cytotoxic and antiprotozoal · [nature.com](https://www.nature.com)

For information only, not medical advice. Statements about supplements have not been evaluated by the Food and Drug Administration, and no product here is intended to diagnose, treat, cure or prevent any disease. Ask a doctor or pharmacist before starting a supplement, especially if you are pregnant, nursing or taking medication.



WRITTEN BY

Dana Kessler

Dana runs the news desk and the sourcing guides at Seed to Capsule. She files every certificate of analysis a brand sends her by lot number, and keeps a second list of the ones that never arrived.
