



Humboldt County Beekeeper's Association

June 4th, 2026

Apitherapy *Not Just Stings!*

Bob Kloss, EAS Certified Master Beekeeper

Presented by
Kevin Inglin



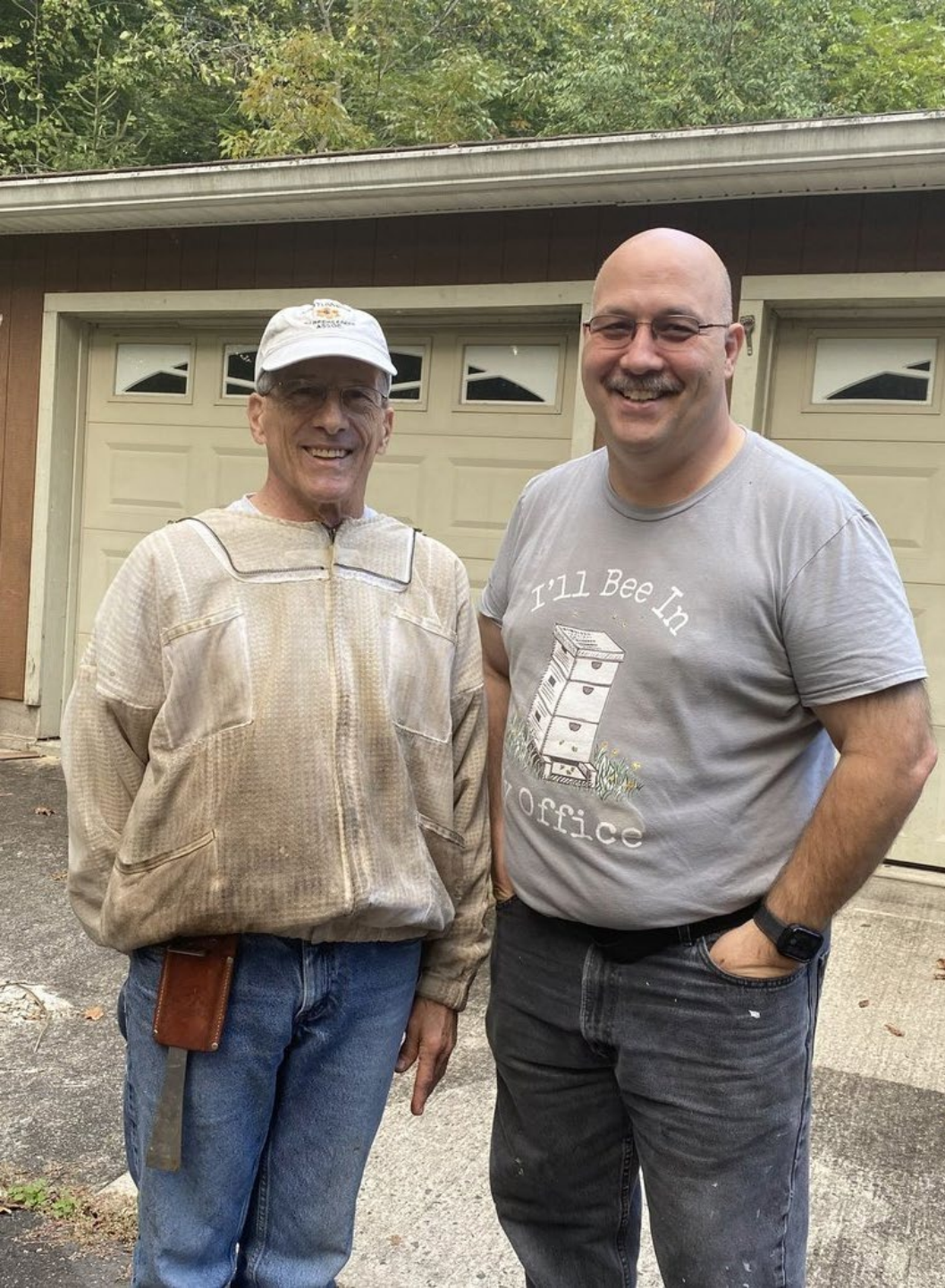
Bob Kloss

- ❑ **Bob Kloss is a hobbyist beekeeper who maintains 10–15 colonies in Readington Township, New Jersey.**
- ❑ **Bob Kloss is an EAS-certified Master Beekeeper and past president of the Northwest New Jersey Beekeepers Association.**
- ❑ **Bob participates actively in the association's public outreach programs and with mentoring beekeepers across the region**



Bob Kloss

- ❑ **Bob holds a B.S. in Psychobiology and an M.S. in Environmental Science, with a background in animal behavior.**
- ❑ **After a 31-year career in the pharmaceutical industry, he retired in 2016**
- ❑ **He has twice traveled to Malawi, Africa, with Villages in Partnership, teaching beekeeping as a sustainable income source for local communities.**



Friends in Beekeeping

- **We've been good friends for some time**
 - We practiced and passed our master beekeeper tests together
 - We've been collaborating on beekeeping escapades almost 20 years
 - Bob has partnered with me on the podcast on many episodes
 - He wrote this presentation and I produced the slides for him



15+ year hobbyist beekeeper – 15 to 20 hives

STOCKTON, N.J.

EAS Master Beekeeper

Past President – NWNJBA

Day Job > IT Administrator, Paper Strategies Inc.

Beekeeping Podcaster

Managed Mentoring Program for Getting Started in Beekeeping

INTRODUCTION
– Kevin Inglin

Our Home Yard



*Please hold
questions
to the end
Thanks....*

The Slides are Available

The slides are on my website: www.bkcorner.org

Click on the PRESENTATIONS link from the menu



WHAT IS APITHERAPY?



BEE VENOM



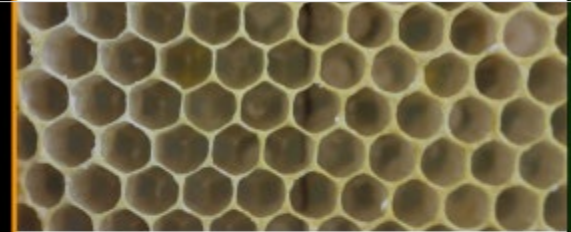
HONEY



PROPOLIS



POLLEN, BEE BREAD and ROYAL JELLY



BEESWAX & HONEYCOMB



BROOD LARVAE (Apilarnil)



BEEHIVE THERAPEUTIC



Q&A





WHAT IS APITHERAPY?

What is Apitherapy?

❑ Medicinal use of products made by honeybees

- *Products include:*

- Honey, Bee Venom, Pollen, Royal Jelly, Propolis, and Beeswax

❑ Alternative Holistic Therapy

- *Apitherapy is considered an alternative holistic therapy*

- Health claims are not supported by scientific evidence



Apitherapy is not...

❑ It is not a medical treatment

- *Apitherapy is not a medical treatment*
 - It is to be used in addition to, not in place of, conventional medical treatment

❑ Holistic, integrated therapy

- *Hive products are used in combination with each other*

❑ Apitherapy is not without risks

Apitherapy is not... *without risks*

TOM FUSCALDO - BEE KEEPER

429 Preakness Avenue
Paterson

— BEE STING AGREEMENT —
(Informed Acknowledgment Of Danger and Release)

This is a release form between the person to be stung hereinafter referred to as I and Tom Fuscaldo hereinafter referred to as Bee keeper.

I the undersigned want to be stung by bees.
I come to the home of a bee keeper to be stung.
This private home has no ramps, guard rails or medical personnel.
Bee keeper is not a doctor druggist or medical professional.
Bee keeper has no obligation to supply bees at any or all times or under adverse conditions.
I assume all risks of stings for myself and anyone I bring with me.
I assume any and all risks of entering property.
These risks include lightning, ice, biting dog, tornado, aircraft accident, earthquake, building collapse or any other problem.
I understand bee stings are harmless to most people.
I understand one bee sting can be fatal to the allergic person.
I do not take medication which may hide or alter allergic reaction to sting.
I understand the extremely allergic person may have only 10 minutes for emergency treatment.
I was tested for allergy with one sting recently.
It is less than 6 months since this test or the last time I was stung by the same kind of bee.
I carry a prescription EMERGENCY BEE STING KIT while being stung and at least 1 hour after a sting.
I understand the person with me is at risk for bee sting allergy.
I will protect this person with the emergency kit I carry.
Emergency Instruction: *(that may never be needed)* As with snake bites use tourniquet and attempt to remove blood and fluid at sting. Tell someone what is wrong. You may be unconscious before he gets you to a hospital emergency room. Use needle and pills in kit if you are far from hospital. Follow instructions in your kit.
Study directions in your kit before any possible emergency.
I agree to all of the above conditions.

SIGNATURE _____ DATE _____

Bee stings are not offered as business.
No payment is specified. Please leave a donation.
Time involved is similar to having your hair done at a beauty parlor.

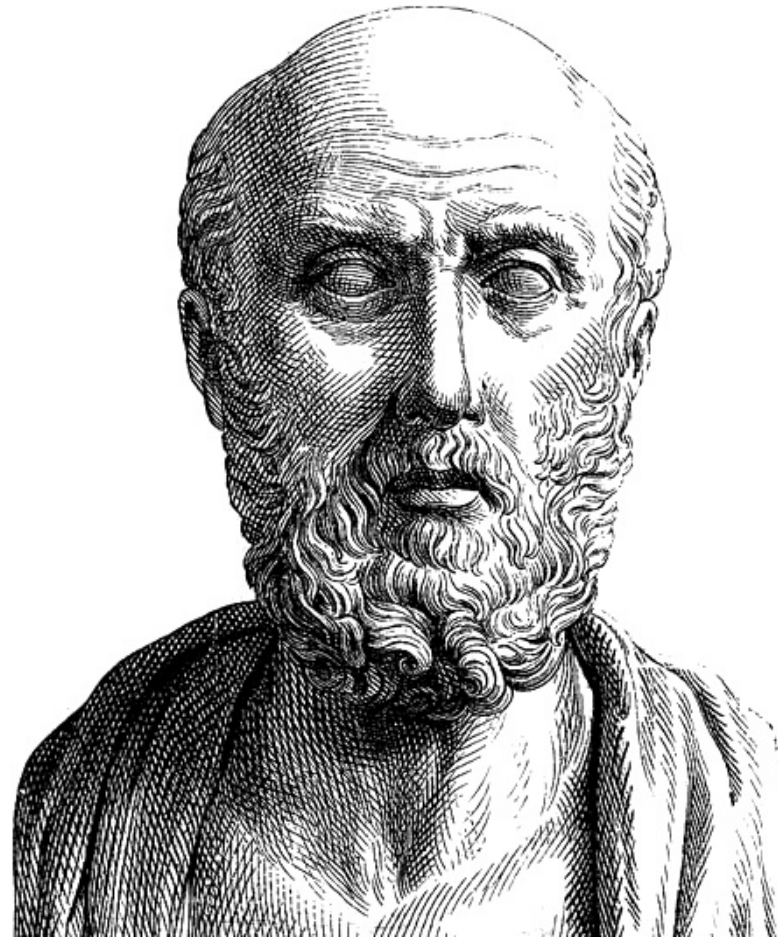


History of Apitherapy

The history of apitherapy dates back 6000 years to ancient Egypt and later in China, Greece, and Rome.

□ Hippocrates

- *460 to 370BC*
 - A Greek Physician known as the "father of medicine,"
 - Used bee venom to treat arthritis and other joint problems.

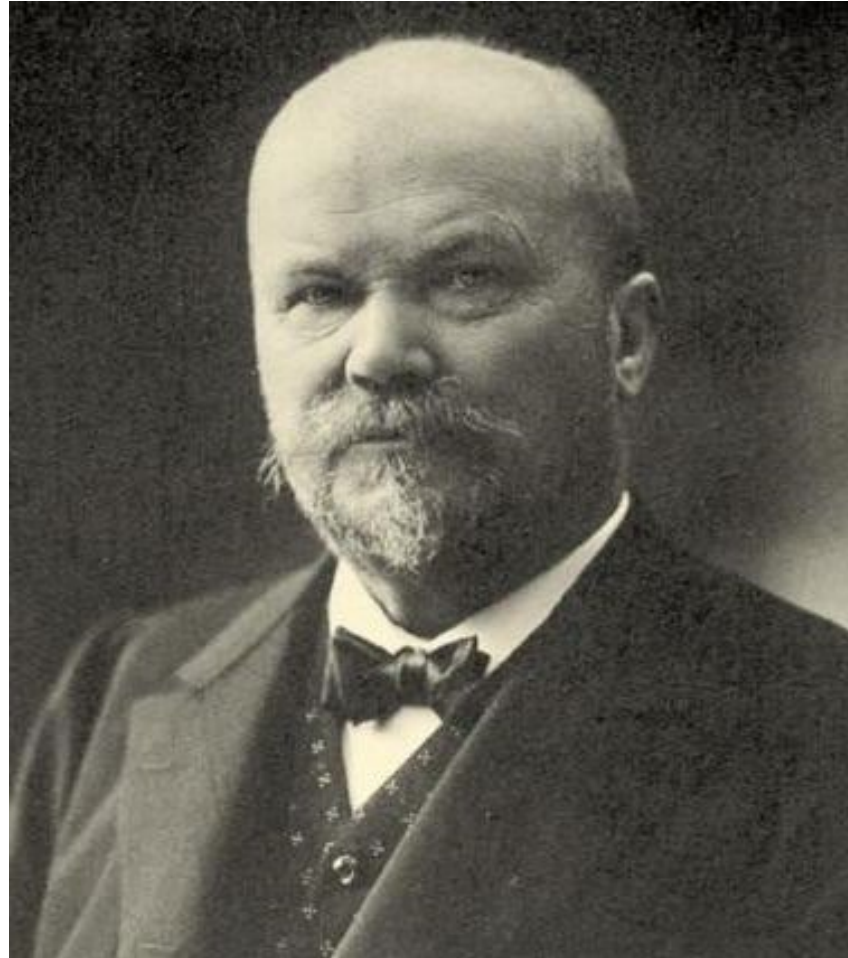


History of Apitherapy

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□ Dr. Filip Terč

- 1888
 - An Austrian Physician
 - Published "About a Peculiar Connection Between the Bee Stings and Rheumatism" in 1888 about bee venom therapy (apitherapy)



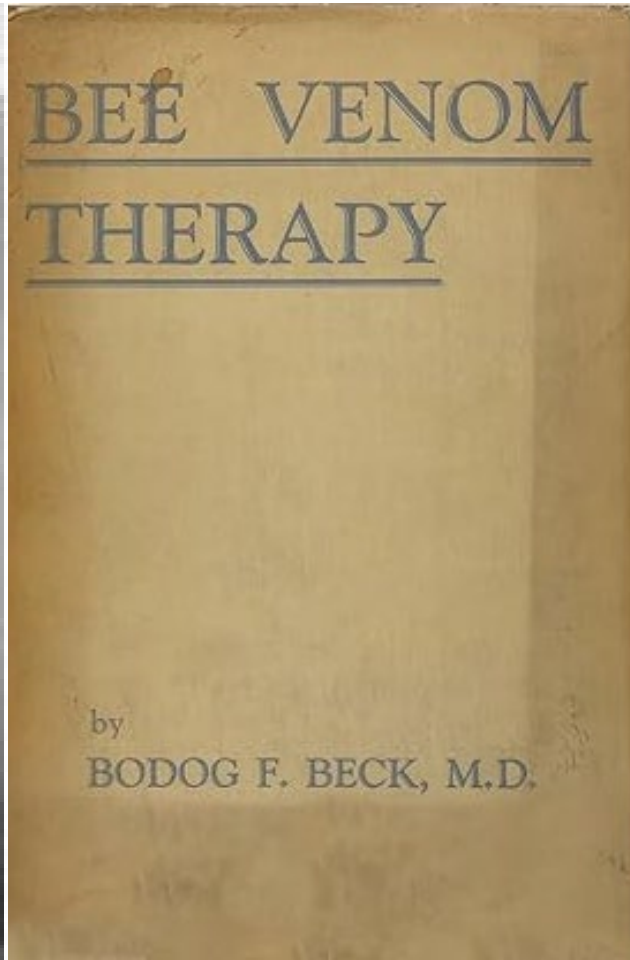
During his observations of the insects, T., who suffered from rheumatism. disease, often stung by bees and gradually noticed a significant decline in the disease. Improvement of his complaints. In 1878 he began with scientific research. investigations into the effects of bee venom on the healthy and the sick organism and became chairman in the same year. of the branch of the Steir. Beekeepers' Association. Marburg. His research has been published. he was born in 1888 in the Ber. "On a Strange Relationship of the Bee Sting to Rheumatism" (in: Wr. med. Presse 29), in which he describes the therapeut. effect of around 39,000 bee stings on 173 patients with rheumatoid arthritis. Although 82 % of the patients could be cured and 15 % had a significant increase in the number of patients. improvement in their state of illness, his theory came up against his first public. Lecture in the same year in the Ges. of the doctors in Vienna met with great rejection. From later Wiss. his research was

History of Apitherapy

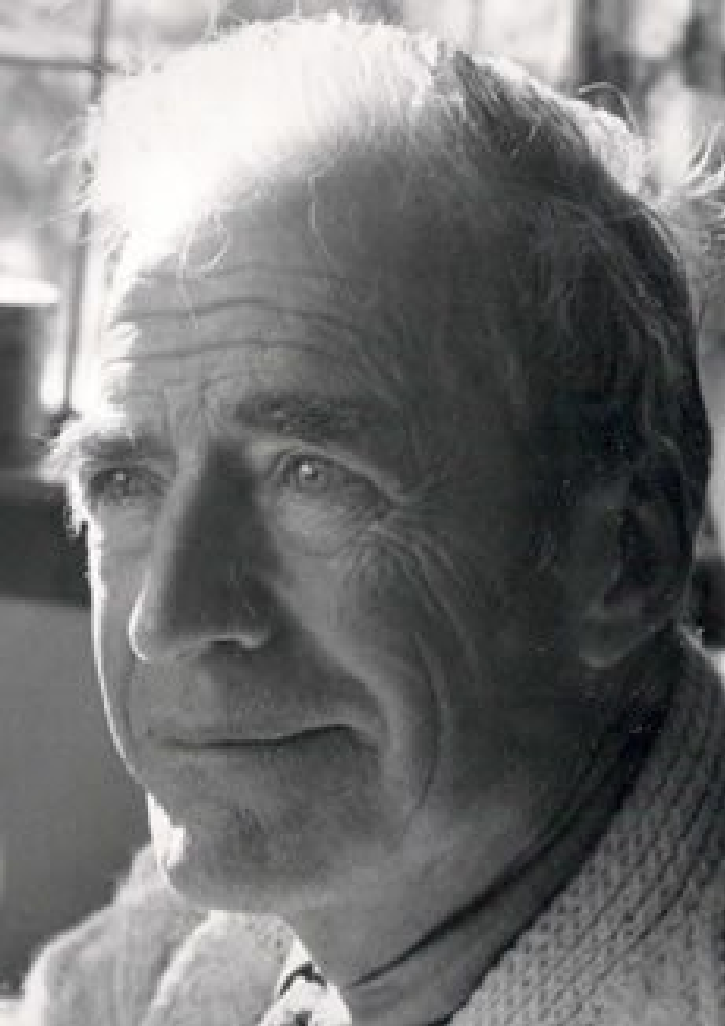
The history of apitherapy dates back 6000 years to ancient Egypt and later in China, Greece, and Rome.

□ Dr. Bodog F. Beck M.D.

- 1935
 - New York City physician
 - Wrote "The Bible of Bee Venom Therapy", its nature, and its effect on arthritic and rheumatoid condicitons



Charles Mraz 1931



❑ Middlebury, Vermont Beekeeper

- *Operated Champlain Valley Apiaries (still in business)*
 - Grandson, Charles Mraz, operates the business
 - Known for selling “naturally crystallized honey”

❑ Traveled the world promoting Apitherapy

- *Was well regarded as a vanguard in the area of Bee Venom Therapy (BVT)*
 - Co-founded the American Apitherapy Society (AAS)
 - Wrote “Health and the Honey Bee”
 - Invented venom collector
 - Worked with medical professionals at Sloan-Kettering Institute, Mayo Clinic, Walter Reed Army Hospital

Met
Dr. Beck
in 1931



During apitherapy treatment, honeybee products may be:

Applied Topically



Taken Orally or Inhaled



Injected Directly into the Blood





BEE VENOM



Active Components in Bee Venom

□ Bee Venom Therapy (BVT)

- *Involves the use of apitherapy—applying bee stings or bee venom extract—to treat various health conditions*
- *While it's considered alternative medicine the proposed mechanisms of action are quite intriguing*
- *Bee venom is a complex mixture of biologically active compounds. Some of the most studied include:*

Melittin, Apamin, Phospholipase A2, Adolapin, Histomine/Dopamine

Melittin

Pronounced: muh-LIT-in

muh — like “ma” in machine

LIT — stressed syllable, like the word lit

in — like the word in

□ Melittin

Approximately 50% of honeybee venom is comprised of melittin. Principally the melittin component of bee venom is to cause pain and destruction of tissue of intruders that threaten a beehive.

□ **Triggering Immune Response and Anti-Inflammatory:**

In Apitherapy melittin stimulates the hypothalamus in the brain to release the corticotropin releasing hormone. This hormone triggers the pituitary gland to secrete adrenocorticotrophic hormone (ACTH) which stimulates the adrenal cortex to produce cortisol. Cortisol produces an immune response and is anti-inflammatory.

Phospholipase A2

Pronunciation: *foss-foh-LY-payz*

foss — like "foss" in *fossil*

foh — like "foh" in *photo*

LY — stressed syllable, like the word *lie*

payz — rhymes with *maze*

❑ Phospholipase A2

Promotes **immune system activation** and contributes to venom's pro-inflammatory initial reaction; paradoxically may lead to downstream anti-inflammatory effects in controlled use.

❑ Immune Modulation:

Small, controlled doses of venom may alter immune system activity. Some researchers suggest it increases cortisol production or stimulates regulatory T-cells, helping reduce autoimmune reactions.

Adolapin

Pronunciation: *ah-DOH-luh-pin*

ah — like the “a” in *father*

DOH — stressed syllable, like *dough*

luh — soft, like “luh” in *lullaby*

pin — like the word *pin*

❑ Adolapin

Has anti-inflammatory and analgesic properties, possibly contributing to pain relief.

❑ Anti-inflammatory Response:

Despite the initial inflammatory sting response, melittin and adolapin may reduce chronic inflammation by modulating cytokine levels and suppressing inflammatory pathways.

❑ Pain Relief:

Through inhibition of pain pathways (e.g., COX-2 inhibition), bee venom may have analgesic effects, especially in musculoskeletal disorders like arthritis

Apamin

Pronunciation: AY-puh-min

AY — like the letter "A"

puh — soft, unstressed

min — like "min" in *minnow*

□ Apamin

Acts as a neurotoxin that blocks calcium-activated potassium channels, potentially improving nerve signaling and modulating pain perception.

□ Neurological Effects:

Apamin's ability to influence nerve transmission has led to exploratory use in neurodegenerative disorders like Parkinson's and MS

Histamine and Dopamine

❑ Histamine

Stimulates immune response and affects vascular permeability

❑ Vasodilation & Vascular Permeability:

Causes blood vessels to expand and become more permeable. Helps active components of bee venom penetrate tissues more effectively, potentially boosting their anti-inflammatory and analgesic effects.

❑ Immune System Stimulation:

Modulates the activity of white blood cells helping promote immune surveillance and, paradoxically, it may support immune regulation when used in precise, therapeutic doses.

Did you Know?

Histamine contributes to the initial sting sensation, but this transient irritation may actually stimulate protective pain pathways that trigger healing or modulate chronic pain perception over time.

Histamine and Dopamine

- ❑ **Dopamine:**

Present in trace amounts in bee venom and plays several potential therapeutic roles

- ❑ **Neuromodulation:**

In bee venom, it may help activate underperforming neural pathways—especially in neurological conditions like Parkinson's.

- ❑ **Mood & Pain Perception:**

Tiny dopamine boosts from venom might reduce pain sensitivity and lift mood, especially when paired with other neuroactive compounds like apamin.

Bee venom is a promising treatment for the following conditions:

- ❑ Gout
- ❑ Rheumatoid arthritis
- ❑ Osteoarthritis
- ❑ Fibromyalgia
- ❑ Tendonitis
- ❑ Skin diseases,
 - *Such as eczema and psoriasis*
- ❑ Autoimmune disorders
 - *Such as lupus, Lyme disease, and multiple sclerosis (MS)*
- ❑ Central nervous system diseases,
 - *Such as Alzheimer's disease, amyotrophic lateral sclerosis (ALS), and Parkinson's disease*

Other Potential Uses of BVT

Dutch researchers have trained bees to identify samples infected with COVID 19.

□ SARS\COVID-19

- *Bee Culture, May 2020*
 - Surveyed 5115 beekeepers during the outbreak of COVID
 - Outcome: None developed COVID-19 symptoms; all reported normal health
 - Surveyed five Apitherapists in Wuhan ; out of 121 of their patients, none had covid.

□ HIV

- *Research is underway*
 - Melittin is cytolytic (increases permeability of cells).
 - Researchers are attempting to employ melittin-loaded nanoparticles to attack HIV
 - This approach could lead to the development of a gel that stops HIV transmission or a form that could be administered intravenously to aid those infected with HIV

Melittin and Cancer

□ Considerations for Cancer

- *Breast, Ovarian, Prostate, Melanoma, and Lung*
 - A vast number of studies have been dedicated to the effects of melittin's regulation of apoptosis and to the factors that induce apoptosis in cancer types
 - The venom works by destroying cancer cell membranes within minutes, leading to cell death, while leaving healthy cells largely unaffected
 - The research is in early stages and currently in laboratory exploration stages

Definition

Apoptosis:

the death of cells which occurs as a normal and controlled part of an organism's growth or development. Also called programmed cell death

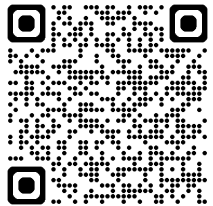
- In combination with chemotherapy was effective against cancer in mice.
- The incidence of cancer-caused deaths in a group of French farmers was 100 times higher than the group of beekeepers.

Real World: *The tale of two Bobs*

Bob Binnie

❑ Shingles

- *Pain Relief*



- Well known beekeeping YouTuber Bob Binnie spoke of using stings to relieve the side effects of Shingles
- Expressed his personal belief that it worked for him

Bob Kloss

❑ Gout

- *Administered stings to relieve Gout*

- Stung my ankle 10 times and found relief within a day
- Normally gout symptoms persist for a week or more and this was a great relief



HONEY



Honey Components

□ Main Chemicals, Compounds, Components

- ***Sugar, Water, Proteins, and Amino Acids***
 - Sugar and water are the main ingredients of honey
 - Sugar makes up about 95% of honey's dry weight
 - 38% glucose, 31% fructose, 1% sucrose
 - These ratios vary from sample to sample

Honey Components

□ Main Chemicals, Compounds, Components

- *Sugar, Water, **Proteins**, and **Amino Acids***

- Proteins

- Honey contains trace amounts of proteins, including free amino acids and enzymes such as diastase, invertase, and glucose oxidase

- Amino Acids:

- Proline is most abundant (50 to 85% of the makeup)
- Acids Include: acetic, butanoic, formic, citric, succinic, lactic, malic, pyroglutamic and gluconic acids
- Gluconic acid is formed when glucose is broken down by glucose oxidase.

Honey Components

□ Main Chemicals, Compounds, Components

- ***Vitamins, Minerals, and Antioxidants***

- Vitamin B, riboflavin, niacin, folic acid, pantothenic acid, and vitamin B6
- Darker honeys contain more anti-oxidants

Properties of Honey

□ Antimicrobial

- *Antimicrobial activity of honey is attributed to low moisture content*
 - Hygroscopic (osmotic effect) kills microorganisms by dehydrating them
 - Honey has a low PH and is acidic due to presence of organic acids (such as gluconic acid) as well as the osmotic effect due to its high sugar concentration
 - Additionally, honeybees add an enzyme (glucose oxidase) which converts glucose into hydrogen peroxide

Properties of Honey

□ Antibacterial

- *It has antimicrobial properties and outstanding wound healing effects (Antibacterial, antifungal, antiviral)*
 - Depends on origin of bees, origin of nectar and honey storage origin
 - Medical grade honeys have potent in vitro bactericidal activity against antibiotic-resistant bacteria.
 - All honey contains small amounts of methylglyoxal (MG).
 - MG causes alterations in the structure of bacteria, killing microorganisms and/or stopping their growth

Uses of Honey

Given its antimicrobial, antibacterial, antifungal, and antiviral properties, it has outstanding wound healing effects

❑ Used on...

- *External wounds*
- *Burn wounds*
- *Bed sores*
- *Cataracts*
- *Acne*

❑ Used for...

- *Sore throat – as good as dextromethorphan*
- *In vitro bactericidal activity against antibiotic-resistant bacteria.*
- *Hard-to-heal wounds, such as diabetic leg ulcers, burns, even wounds with gangrene.*



Better tolerated by diabetics (doesn't raise Hgb A1C)

Properties of Honey

□ Antibacterial

- *Manuka honey is high in methylglyoxal (MG)*
 - Methylglyoxal or MGO is a compound that's responsible for the potent antibacterial effects of manuka honey
 - Honeys are rated by a unique manuka factor (UMF) scale



Manuka honey needs a minimum rating of 10 UMF to be considered therapeutic.

No Manuka; No Problem

Perhaps some Lantern Fly honey will fit the bill

- *Lantern fly honey is suggested to rival in some ways Manuka honey*
- *The mid-Atlantic region has seen collection of this type of honey because of the invasive lantern fly infestation*
 - The infestation started in Reading Pennsylvania
 - It has spread from PA to: NY, NJ, MD, CT, and will likely spread out to other regional states.





PROPOLIS



History of Propolis and Humans

- **The use of Bee Propolis for wellness of in humans' dates back centuries.**
 - *Greeks, Romans, Persians, Egyptians, and others*
 - The Greeks and Romans already knew that propolis would heal skin abscesses and through the centuries its use in medicine has received varying attention.
 - The ancient Egyptians learned from the bees to use it for embalming and mummification.
 - Africans knew about the benefits of propolis, and it is still used there today

The use of propolis dates back at least to 300 B.C,

Propolis Overview

□ Origin of the word Propolis (Etymology)

- *The word, propolis, is Greek in origin*
 - The word propolis is derived from Greek, in which **pro** stands for “at the entrance to” and **polis** for “community” or “city,” which means this natural product is used in hive defense.

- *Propolis Makeup*
 - It is a resinous mixture produced by mixing saliva and beeswax with resins gathered from tree buds, sap flows, or other botanical sources
 - Bees gather propolis from different plants in different temperate climatic zones

Propolis Overview

□ Propolis Content

- *Contains more than 300 compounds such as phenolic compounds, aromatic acids, essential oils, waxes and amino acids.*
 - Resins (50-70%)
 - Beeswax (30-50%)
 - Pollen (5-10%)
 - Essential oils (depends on the region, usually basil, thyme, and geranium) (5-10%)
 - Other compounds such as acids, sugars, and vitamins (B, C, and E) (5%-7%)

Common Sources of Propolis

Propolis collection depends upon your local region as to what resins the bees can collect

Some of the common trees and plant resins for Propolis

- ❑ Poplar (*Populus sp. L*)
- ❑ Ash (*Fraxinus sp.*)
- ❑ Willow (*Salix sp.*)
- ❑ Birch (*Betula verrucose*)
- ❑ Chestnut (*Castanea sativa*)
- ❑ Pine (*Pinus sp.*)
- ❑ Beech Trees (*Fagus spp.*)
- ❑ Bee-Balms (*Monaras spp.*)
- ❑ Rosemary (*Rosmarinus offinalis*)
- ❑ Plum (*Prunus domestica L.*)
- ❑ Redwood (*Sequoia*)
- ❑ Elm (*Ulmus sp.*)
- ❑ Oak (*Quercus sp.*)
- ❑ Alder (*Alnus glutinosa*)

Honeybees collecting propolis resins from a seam in a tree trunk



Oral Dosing: Propolis Powders/Capsules

❑ Dosing Amounts

- *No recommended daily dose of propolis exists*
 - There are not enough human studies to determine how much propolis should be taken to support health conditions.

❑ 400-500 mg tablets daily

- *Propolis has most often been used by adults in doses of 400-500 mg by mouth daily for up to 13 months. [WebMD]*



Propolis and Humans

❑ Beware of Unintended Consequences

- *Generally Safe, but use must be monitored*
- **Use with Care:** *Propolis is generally safe when used appropriately for humans, but there are possible side effects to consider*
 - **Allergic Reactions:** Especially in people who are allergic to other bee products.
 - ❑ One should take care when taking it orally and/or placing it on the skin if know to have allergies to bees. Contact can lead to irritation and ulcers.
 - **Bleeding Disorders:**
 - ❑ Propolis can slow blood clotting, and those with bleeding disorders should use care.

Kevin Moment

□ Propolis for Warts and Injuries

- *Treated finger warts through application of propolis under a band-aid*
 - A pinch of raw propolis under a band-aid for one month; or until the wart dissipates
 - Find the 'mother wart' and if you can arrest it, the rest of the warts will disappear
 - The MOTHER WART is typically the first wart that appears on your skin
 - All warts in an outbreak are secondary to the first wart present in the affected area
 - Eliminate the first one, and the rest will abate and disappear

Properties of Propolis

❑ Anti-Inflammatory

- *Propolis contains compounds like flavonoids and phenolic acids, which are known to reduce inflammation*
 - Research suggests that propolis can inhibit the production of inflammatory molecules and reduce swelling, making it potentially beneficial

❑ Antioxidant

- *Inhibits oxidation (oxidative stress).*
 - Oxidation is a chemical reaction that can produce free radicals, thereby leading to a chain reaction that can damage the cells of an organism. Antioxidants terminate these damaging chain reactions.

Properties of Propolis

The properties and abilities of propolis are grounded on the species of pollen being collected and utilized

Anti-Inflammatory

Anti-inflammatory: the property of a substance or treatment that reduces inflammation or swelling

Antioxidant

Antioxidants are compounds that inhibit oxidation which can lead to degradation of organic compounds, including living matter

Antibacterial

An antimicrobial substance active against bacteria.

Antimycotic/Antifungal

Used to prevent fungal growth; substances that act selectively against a fungal pathogen

Antiulcer

Tending to prevent or treat ulcers and especially ulcers of the wall of the stomach or duodenum

Immunomodulatory

Immunomodulatory refers to substances or treatments that modify or regulate the immune system. These agents can either activate or suppress immune function.

Uses of Propolis

Given its properties, propolis is quite versatile

□ **It is used for...**

- *Colds, flu and sore throat*
- *Dental cavities and gum disease*
- *Cold sores and genital herpes*
- *Lowering blood pressure*
- *Warts*
- *Ulcers*

Uses of Propolis

Given its properties, propolis is quite versatile

□ It can help with...

- *Candidiasis (an infection caused by Candida Albicans, a yeast-like fungus)*
- *Giardiasis (a parasitic infection that can occur in the small intestine)*
- *Seasonal allergies*
- *Killing prostate and colon cancer cells*
- *Food poisoning*



POLLEN, BEE BREAD and ROYAL JELLY



Pollen Overview

□ Bee pollen contains:

- 30% digestible carbohydrates
- 26% sugars (mainly fructose and glucose)
- 23% protein (including 10% of essential amino acids)
- 5% lipids (including essential fatty acids)
- 2% phenolic compounds (including flavonoids)
- 1.6% minerals (including calcium, phosphorus, magnesium, sodium, potassium, iron, copper, zinc, manganese, silicon and selenium)
- 0.6% water-soluble vitamins and acids (including B1, B2, B6 and C)
- 0.1% fat-soluble vitamins (including vitamins A, E and D)



Pollen Overview

□ Additionally, Bee pollen contains:

- *A wide range of secondary plant metabolites*
 - Tocopherol
 - Niacin
 - Thiamine
 - Biotin
 - Folic acid
 - Polyphenols
 - Carotenoid pigments
 - Phytosterols
 - Enzymes and co-enzymes

Properties of Pollen

- Like Propolis, Pollen shares some similar beneficial properties
 - Antioxidant
 - Anti-inflammatory
 - Anti Microbial
 - Immune Enhancing

Anti-Carcinogenic

Tending to inhibit or prevent the activity of a carcinogen or the development of cancer

Anti-Atherosclerotic

Anti-Atherosclerotic refers to an agent that prevents or counteracts atherosclerosis (a condition which plaque builds up in the arteries)

Hepatoprotective

Hepatoprotective refers to the ability of a chemical substance to prevent damage to the liver. Describes substances that prevents damage to the liver

The properties and abilities of pollen are predicated on the species of pollen being collected and utilized

Uses of Pollen

Allergies

- Very few studies as a remedy for seasonal allergies, but some animal-based research that bee pollen may provide anti-allergy effects.
- Japanese study found that bee pollen does have anti-allergic action because of its ability to inhibit the activation of mast cells, which play an important role in the early and late phases of allergic reactions.
 - Mast cells act as the bodies alarm system, trigger inflammatory responses

Reduces High Cholesterol

- Two animal studies in 2017 and 2018 found bee pollen lowers LDL and total cholesterol levels.

Hepatoprotective

- Animal studies show bee pollen help protect the liver against damage and may even help repair liver damage from alcoholism and drug use.

Uses of Pollen

Diabetes

- Bee pollen helps in managing diabetes by having a hypoglycemic (sugar-lowering) effect.
- Polysaccharides from bee pollen have been shown to alleviate insulin resistance and have the potential to treat diabetes.

Ulcers

- Reduces inflammation and supports overall digestive health



Bee Bread Overview

□ What is Bee bread

- *Naturally fermented bee-processed pollen*
 - It is produced by honeybees from pollen, nectar, honey, and saliva.
 - Forager bees mix pollen with nectar and saliva, stored in honeycomb cells.





Bee Bread Overview

□ Nutritious, digestible food resource

- *Utilized by the bees to feed the larvae*
 - Rich in protein, carbohydrates, beneficial enzymes, and microorganisms
 - Pollen is hard to digest naturally; Enzymes contributed to breaking down the pollens to making it easier to digest



Contains 27 essential minerals, proteins, amino acids, fatty acids, enzymes, carbohydrates and basic vitamins (it has high nutritional value).

Uses of Bee Bread

Improves Liver Function

- Improves liver function
- Can be useful for treating hepatitis, cirrhosis and digestive diseases

Blood Impacts

- Reduces triglycerides and cholesterol in the blood
- Prevents and treats anemia

Digestion

- Acts as a detoxifying agent and stimulates digestion
- Helps to restore the intestinal flora, preventing development of pathogenic microorganisms

Stress, Fatigue and Well Being

- Reduces stress and fatigue, giving more energy
- Relieves headaches and makes migraines happen less often
- Anti-aging, stimulates longevity
- Natural energizing product, increasing endurance
- Supports and stimulates brain activity, improving concentration and memory capacity.

Antibacterial and anti-inflammatory

- Has antibacterial and anti-inflammatory effects



Royal Jelly Overview

❑ **Royal jelly is a honeybee secretion that is used in the nutrition of larvae and adult queens**

- *Characteristics of Royal Jelly*

- It is secreted from the glands in the hypopharynx of nurse bees, and fed to all larvae in the colony
- Contains about 60% to 70% water, 12% to 15% proteins, 10% to 16% sugar, 3% to 6% fats, and 2% to 3% vitamins, salts, and amino acids
- Composition varies depending on geography and climate



Royal Jelly Overview

- ❑ **Royal jelly is a honeybee secretion that is used in the nutrition of larvae and adult queens**
 - *Royal Jelly is less studied than honey or propolis*
 - Positive effect seems to come from its unique proteins
 - ❑ Specifically beneficial: Royalactin and amino acids
 - Touted as “the fountain of youth and beauty”

Uses of Royal Jelly

Uses of Royal Jelly

- Symptoms of menopause
- Diabetes
- Improvement in average blood sugar and blood insulin levels
- Asthma
- Premenstrual Syndrome (PMS)
- Obesity
- High cholesterol
- Inflammation
- Kidney disease
- Slows aging by eliminating free radicals



BEESWAX & HONEYCOMB



Composition of Beeswax

❑ A multifaceted substance

- *Beeswax has a complex makeup*
 - Contains over 250 compounds, including long-chain alkanes, acids, esters, polyesters and hydroxy esters.
 - Hentriacontane forms around 9% of beeswax and provides its impermeability to water
- *The mixing of pollen into beeswax wax turns the white wax into a yellow or brown color.*
- *Beeswax shares common properties with honey and propolis*
 - Antimicrobial and Antifungal



Uses of Beeswax

Burns

- Applying a gauze with a mixture of beeswax, olive oil, to second-degree burns speeds up healing
- Beeswax creams can decrease the itching that occurs when a burn is healing.

Diaper rash

- Applying a mixture of beeswax, honey, and olive oil to the affected area four times daily for 7 days reduces symptoms of diaper rash.

Cholesterol

- Beeswax helps lower cholesterol levels

Swelling and sores inside the mouth (oral mucositis)

- Helps speed up recovery time to mouth sores caused by cancer treatment

Hemorrhoids

- Applying a mixture of beeswax, honey, and olive oil to the affected area for 12 hours reduces pain, bleeding, and itching due to hemorrhoids

Honeycomb



- Consuming minor amounts of honeycomb may benefit your heart by increasing blood flow and “good” HDL cholesterol levels while lowering blood pressure, triglycerides, and “bad” LDL cholesterol.

❑ Raw honeycomb:

- *Some simply chew honeycomb, which contains edible beeswax, though it's not digestible.*
 - Also people consume comb honey and eat the wax.
 - Beneficial compounds will be absorbed in small amounts.

❑ Beeswax alcohol supplements:

- *D-002 Capsules*
 - D-002 is a purified extract of beeswax alcohols
 - Available in capsule form; for cholesterol-lowering effects.

❑ Functional foods:

- *Occasionally, trace amounts are used in processed foods*
 - Not typically in amounts high enough to impact cholesterol.

Honeycomb



- Veterinarians can stuff the shell full of medical-grade honeycomb, or place it on the exterior
- They are leveraging its natural antibacterial properties.
- Additionally, some use honey to seal any wounds under the shell



BROOD LARVAE (Apilarnil)

Apilarnil Therapy

□ Healing by use of Bee Larvae



Definition

Homogenate: The slurry of tissues from grinding and mixing

- *The larvae of the honeybees has a long history of use in various cultures*
 - Apilarnil therapy, also known as bee larva therapy, is an alternative healing approach that harnesses the therapeutic potential of bee larvae
- *Homogenate*
 - Drone brood homogenate are created from 7-8 days old drone larvae
 - Includes nutrients (larval food, honey, bee bread) are also sometimes used when creating products for consumption; Considered the **“Male” equivalent of “Royal Jelly”**

Medical Testing

□ Some potential use cases in Medicine

- *Sepsis*

- Neuro-protective effect against brain damage
- Prevents liver damage

- *Alzheimer's Disease*

- Positive effect on gray cells in Alzheimer's disease

Uses of Apilarnil

□ Traditionally uses **for children**

● *Health and Vitality*

- Poor/ delayed growth in infants; Delayed puberty
- Loss of appetite, states of de-nutrition; anemia
- Marked improvement in exercise capacity and concentration; physical and intellectual fatigue in premature ages
- Nocturnal enuresis – improves control of sphincter and treats urinary tract infections
- Epilepsy
- Improves concentration and memory

Definition

Enuresis: Medical term for involuntary discharge of urine (bedwetting)

Uses of Apilarnil

□ Traditionally uses **for adults**

- *Health and Vitality*

- Hepatoprotective: treats hepatic diseases like liver insufficiency, acute or chronic viral hepatitis, cirrhosis
- Severe fatigue in workaholic people
- Corrects deficiencies of aging, especially those related to the immune system, hormonal balance and emotional self-adjustment.
- Antiviral properties: respiratory infections, measles, rubella, chickenpox, mumps.

Uses of Apilarnil

□ Traditionally uses **for adults**

● *Health and Vitality*

- Increase muscle mass in men as an anabolic stimulant
- Optimizes sexual function and enhances fertility, especially in men
 - Drone bees are well-known as genuine “sex-machines” and human males can take advantage of their contributions to their **male stamina** and **performance**
 - Kind of like “Viagra” but from bees
- Stimulates the pituitary and supra-renal gland.





This Beekeeper we encountered in Malawi was all too pleased to make a **midday snack** out of this section of comb that we took from one of the top bar hives we were working that day

"Tastes like Coconut"





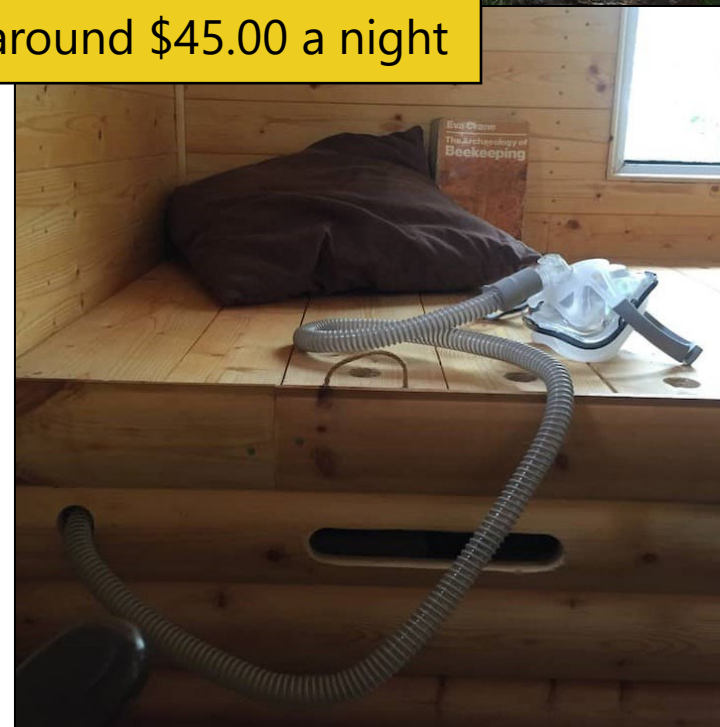
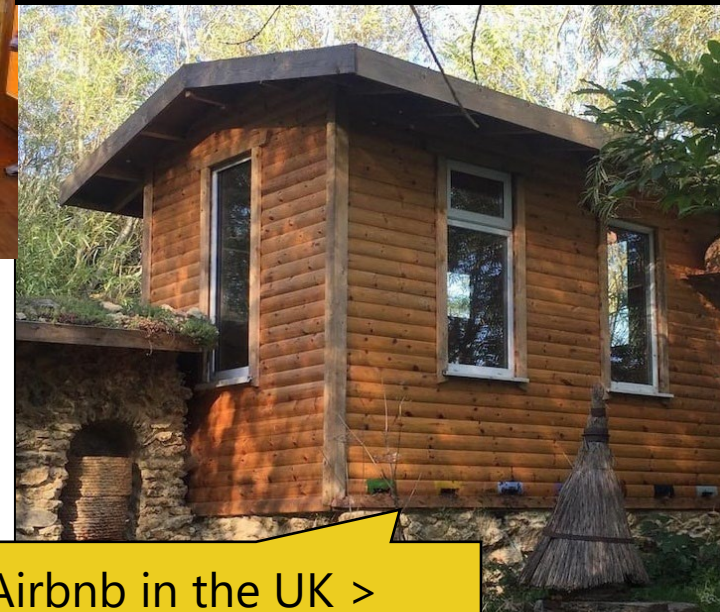
BEEHIVE THERAPEUTIC



❑ Beehive Air for Respiratory Therapy

- *Warm humid air, with valuable volatile ingredients from honey, propolis and beeswax*
 - Bees keep humidity around 70 to 75% humidity; giving of warm humid air as a byproduct of work within the hive and respiration
 - Purported to help with COPD, Hay Fever (pollen allergies), Asthma, Weakened Immune Systems
 - Can also be an accompanying treatment to Bronchitis

Airbnb in the UK >
around \$45.00 a night



Apiary Therapy

□ Colony Level Apitherapy

- *Hives to Heroes | Heroes to Hives | Honeybees for Heroes*
 - Beekeeping for Veterans, and first responders, w/PTSD
- *Apiary therapy focuses on:*
 - Practicing mindfulness, grounding, and distress tolerance, by spending time with honeybees in the apiary - Experienced beekeeper and clinical social worker



This Beehive Experience Empowers People Who Struggle With Mental Health Issues • Half Mad Honey

BY LAUREN PIOT • JULY 2, 2021



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TOP PLANS

12 Wonderful Ways To Spend 24 Hours In Philly According To Philadelphians

SEPTEMBER 10, 2021

Your Mission In This Interactive Adventure Is To

**HEROES
TO HIVES**
HELPING VETERANS HEAL

The Inquirer SIGN IN / SIGN UP

Video

Philly apiary uses bees to practice mindfulness



MISSION BEEBELIEVE
HEROES FOR HONEY



Mission Beelieve's newly dedicated therapeutic bee house and training apiary



The therapeutic bee house features a sitting room, and a bunk bed that is built over the beehives in the interior.

The AZ Slovenian style hives allow you to work the bees from inside the building. The building is purposefully wheelchair accessible

The extensive training apiary is designed to facilitate the beekeeping program





Q&A



Questions

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Propolis Tincture

Insights of how to produce a propolis tincture

Typical Steps in the Preparation Processes

- ❑ **Collect and Clean**
- ❑ **Freeze**
- ❑ **Pulverize to Powder**
- ❑ **Extract**
- ❑ **Filter, and Bottle**

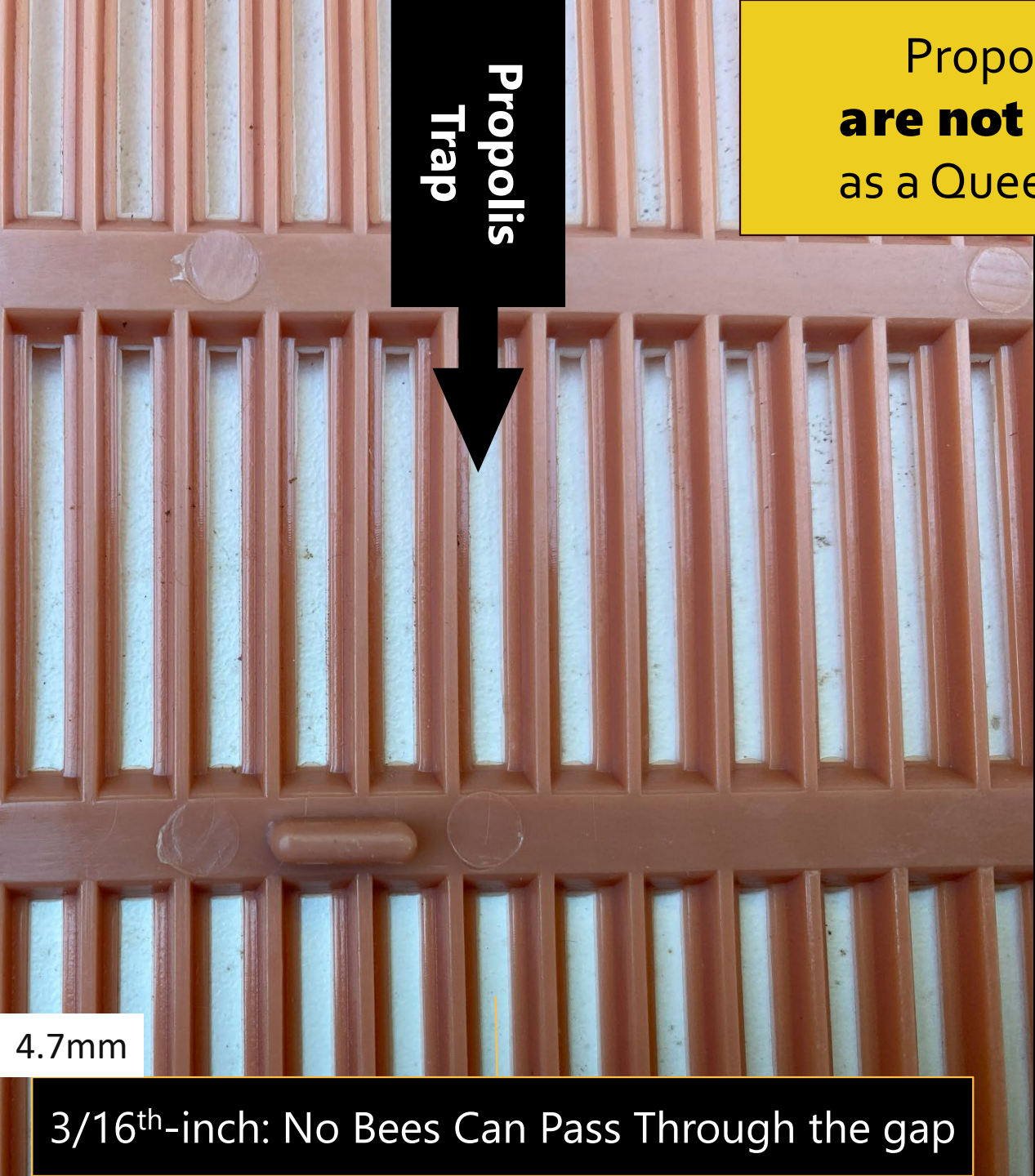
Collecting Propolis

❑ **Collect as you Go: Small Bits at a Time**

- *Scraping propolis of hive surfaces with a hive tool*
 - Small pieces at a time; indiscriminatory, over a period
 - ❑ Collected from the inner cover, box edges, frame rests, frame edges and insides of boxes
 - ❑ This has one benefit in that propolis collected may be more diverse in makeup
 - Store in a zip-top bag kept in your kit. Leave in cool dark place

❑ **Collect with a Propolis Trap**

- *Next Slide....*



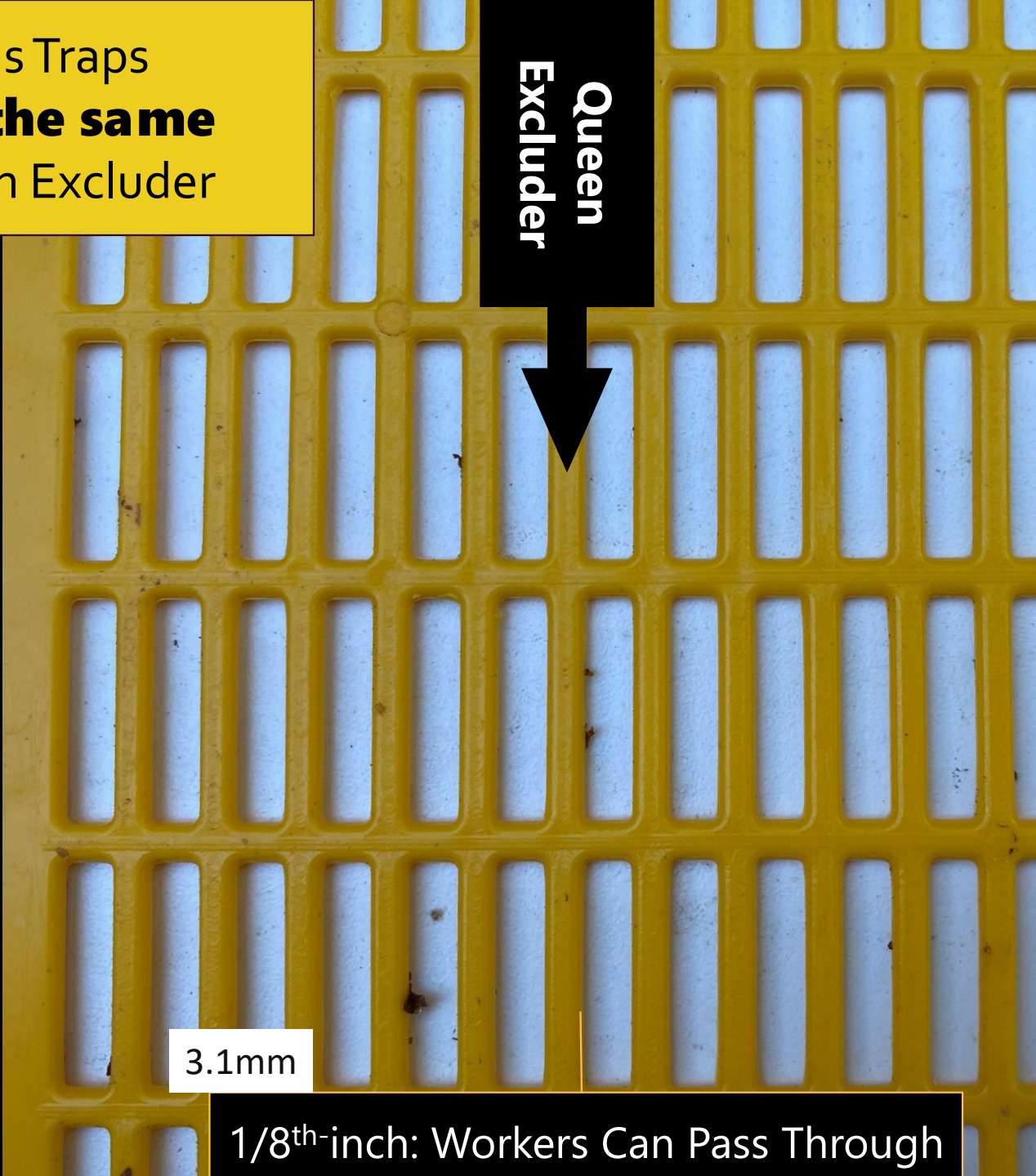
Propolis
Trap



4.7mm

3/16th-inch: No Bees Can Pass Through the gap

Propolis Traps
are not the same
as a Queen Excluder



Queen
Excluder



3.1mm

1/8th-inch: Workers Can Pass Through

Propolis Trap Equipment

- *Deploy Propolis Traps*
 - A trap is affixed at a Periodic Times of the Year
 - It is typically harvested over a period of a single season
 - It can be collected over different parts of the yar
 - Spring Nectar Flow
 - Summer Dearth
 - Fall to Winter Period
 - It is an equivalent of collecting it over a season of hive inspections

Timing: Collect in Fall

□ Some markers to consider

- *When the fall flow is underway with bees actively foraging – Winter Onset is in play*
 - Ideally it will be warm enough for the bees to work with it, yet cold at night so they will want to use it to apply it where they require in the hives normally
 - In and around the start of active yellowjackets is another marker
- *While fall is more traditional, spring forage is also viable*

Holding Propolis During Collection

□ Stability of Collected Propolis

- *Propolis is a rather stable and durable substance*
 - It does not contain the nutrients or moisture conducive for microorganisms to grow.
 - It also has natural antioxidant and antimicrobial properties that help preserve it.
 - **It will however spoil over time;** especially if not cared for
- *Items that will degrade quality and potency*
 - Exposure to heat, light, air, or moisture; these cause oxidation or crystallization
 - Moisture can lead to mold problems: Leave it in common air with light air movement

Quick Run-through

□ When you are ready...

- *Confirm the propolis to be used is not degraded*
 - Check for some signs of deterioration; Signs include changes in color, texture, smell, or taste.
 - Most beekeepers are familiar with the consistency and appearance of propolis. If your propolis product looks and smells normal, it is typically safe to use.
 - If you notice any of the degradation signs, consider sourcing fresh propolis

Clean from Foreign Detritus

Detritus: waste or debris of any kind:

□ Propolis Cleansing

- *Propolis collected with traps tends **to be free of foreign materials.***
- *Propolis scraped from periodic collections on the other hand is often laden with **errant pieces of debris and wax***

Clean from Foreign Detritus

Detritus: waste or debris of any kind:

□ Propolis Cleansing

- ***Propolis scraped from periodic collections on the other hand is often laden with **errant pieces of debris and wax*****
 - Some forgo cleaning and extract (filtering it without cleansing it of foreign materials)
 - The assumption here is that **the extraction will do the job** and there is no need to separate out the wax and other detritus. **This is up to you and personal preference.**
 - **To get a purer product, decide if you want to take the extra step to separate the propolis**

Cleaning Propolis

A clean Chinese Food Soup Container works well for this



□ How to clean your propolis with a hot water bath

- *The method I used*
 - Place your propolis in a disposable container
 - Heat a kettle, and pour **hot water*** over your collected propolis bits
 - Give it a stir
 - **Only use as much water as needed** to create a loose slurry
 - Wax will separate out of the slurry and float to the top
 - Most debris will fall out to the bottom as you stir
 - Let it settle and separate out the propolis layer

A Smooth Chopstick Works Well for this

***Water**

Keep it between
80-90°C (176-194°F).



1 Stirring in water separates foreign matter



5 Clean Propolis Ready to be pulverized



2 Wax that has separated out

3 Strata of dead bee parts, wood chips etc.

Wax Collects at the top when cooled **4**

Cleaning Propolis (Continued)

□ When it cools, pour off the water

- *Separate the propolis from the strata*
- *If it still contains foreign elements repeat the process*
- *Keep this up until the wax is separated*
 - You will know you are close on your separation when little **dots of wax** appear across the top of the propolis after cooling.
 - This happens after only a few rounds of mixing the slurry

Note: Reserve the water; this is after all an aqueous extraction





There are several thin sheets here separated by plastic wrap

Thin 'Pancakes

□ Shape the cleaned propolis into flat pancakes for freezing

● *This makes it easier to transform into a powder*

Or... Leave it in a large ball is ok but it takes a bit more work to pulverize it

Prepared for Freezing

□ Prepped in **ZipTop Bag**

- *The Zip top bag prevents the propolis from picking up off flavors, odors and bacteria from the freezer*





Pulverize it

- *Once frozen, place it in a zip-top bag and hammer away.*
 - You can pulverize the pieces into flattened powdery masses
 - It doesn't take a lot of force, really it is a series of taps to break it up
- *This also will work with large chunks; it just takes a bit more work*



The Final Powder Form

□ **Once it is a powder...**

● *You can:*

- USE IT IN POWDER FORM
- BLEND IT IN WITH OTHER SUBSTRATES
- PLACE IT IN AN EXTRACTION



A word on Coffee Grinders

- They can work, **but...**
 - *The grinding action works well until heat builds up due to friction.*
 - During operation, the **friction causes heat.**
 - Once the heat gets to a certain level, it will melt the propolis.
 - **The propolis becomes super sticky and it will get stuck on the blades**
 - *Many use this approach with success*
 - It is an alternative, but you should do it with care

Beyond Powder: Why Extraction?

❑ Breaking powders down with Extraction

- *Extraction will deconstruct the powder and **breaks down its constituents**, unlocking what is inside*
 - This leads to improved consumption or contact in the case of topical applications
 - Different extraction methods will yield different elements extracted from the propolis

❑ Shelf Stable

- *Processing the propolis into a tincture or extract with alcohol or other preservatives extends its shelf life.*

Definition

Extract: a product prepared by extracting

Especially: a solid or liquid substance containing the essence of a food, plant, or drug in concentrated form



Extraction Process Overview: 5 Steps



ADD

Add the propolis to a suitable container

1



POUR

Pour over the Extraction Fluid

2



STIR

Stir/Shake to combine. Seal to steep; agitating occasionally

3



FILTER

Strain/filter into a container

4



STORE

Store in a proper way

5

Alcohol Extract

□ For beekeepers...

- *Alcohol is likely the most common approach for creating **tinctures***
- *The alcohol chosen impacts the extraction power of the extract*
- *Common choices for the extraction*
 - Grain Alcohols - Ethanol (e.g. Everclear 95%)
 - Distilled Spirit (e.g. Vodka 70%)



Definition

Tincture:
a medicine
made by
dissolving a
drug in alcohol

Alcohol Ratios

Guides Inform of the ratios of propolis to alcohol

- *The FAO guide (from Italy)*
- *Propolis Tincture guide from **University of Minnesota (UoM: Gary's Honeybee Page)** are the most referenced*
 - The good news they are both consistent
 - The **University of Minnesota is more expansive** so we will use that as our base

Food and
Agriculture
Organization

Things you can not find elsewhere!

Gary's Honeybee Page

Home Good information Kids Stuff Mead Pictures Plans

Propolis tincture

Making Propolis Extract to download PDF [click here](#)

Value-added products
from beekeeping

124



UoM (Gary's) Measurements

	Concentration		GRAMS	GRAMS	<i>milliliters</i>
▪ 1:9	10%	▶	100	900	1129
▪ 1:4	20%	▶	200	800	1004
▪ 3:7	30%	▶	300	700	878
			Propolis	Alcohol	Alcohol

VODKA, etc. **70%**

UoM (Gary's) Measurements

	Concentration		GRAMS	GRAMS	<i>milliliters</i>
▪ 1:9	10%	▶	100	900	1073
▪ 1:4	20%	▶	200	800	953
▪ 3:7	30%	▶	300	700	834
			Propolis	Alcohol	Alcohol

It can be said that **the longer the propolis is soaked in alcohol the more ingredients will be dissolved.**

However, soaking beyond two or three weeks **does not seem to increase the extent of extraction.**

FAO AGRICULTURAL SERVICES BULLETIN



“Washed” Filters

❑ Recommended prior to filtering

- *Rinsing a filter wets the paper and washes away the ‘papery’ taste that you get with some filters.*
 - Additionally priming the paper with water is said to negate some of the absorption for an aqueous extract
- *Pour hot water over the filter and allow it to sit until the water drains. A lightly damp filter is okay.*
 - Discard the rinse water and proceed with straining your aqueous extract. When it dries out of excess water, it is not a compromise to filtering alcohol, PG, and others



Car Paint Filters

□ Nested Filters

- *Rinse the filter and set one inside the other*
- *When the first one is clogged pour it into the next one*
- *Can set these into a coffee filter at the base*
 - Cheap – come in packs of 50





Finer filtration, like a coffee filter for example, **may take time** (hours and hours)
You may consider several filters for the process, rotating out filters that become clogged with propolis slurry

Unlike the photo, keep the liquids covered so they do not evaporate during filtration

Fill and Seal your Extracts

❑ Fill the bottles:

- *Carefully pour the propolis extract into the sterilized bottles or jars.*
 - Use dark bottles that do not permit light to pass through
- *Leave a small amount of space at the top to allow for expansion and prevent leakage when sealing.*

❑ Seal the bottles:

- *Tightly seal the bottles to create an airtight environment.*
 - This helps preserve the propolis extract and prevent contamination.



Fill Seal, Label and Store Properly

❑ Label the bottles:

- *Label each bottle with:*

- Consider information such as:

The Date Produced | Dilution Ratios | Any other important information

❑ Store the bottles properly:

- *Store the propolis extract bottles in a cool, dark place away from direct sunlight, heat, and humidity.*
- Keep the bottles out of reach of children and pets.

Links and Resources

Several Links for REFERENCE and to continue your Journey



Resources

QR CODE LINKS



Propolis | Bee Culture



FAO Value Added Products
from Beekeeping



Gross Composition of Propolis



University of Minnesota
Gary's Bees: Propolis Tincture



Antibacterial properties
of propolis (bee glue)



Propolis: Wikipedia



Propolis Tincture Procedure



ResearchGate: Propolis
Science Topic



Processing Propolis
Part 1 | Bee Culture



Bee Propolis:
A Comprehensive Review



QUESTIONS

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