

# THE HONEY PHENOMENON

HOW THIS LIQUID GOLD HEALS  
YOUR AILING BODY



The Alternative Daily

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## The Healing Powers of Honey

**M**y mother-in-law winced in pain as she cautiously took the bandage off her leg. Three weeks before, she had a large, deep skin cancer removed. The surgical wound had been repeatedly infected and was not healing well at all. Her surgeon had recommended all sorts of different ointments and topical treatments, but nothing was working. Her next step was an appointment with a wound care specialty clinic.

What I saw underneath that bandage was a deep, raw, open wound... it looked like somebody had taken a tablespoon and scooped out a large chunk of her leg. There were a bunch of non-squeamish family members gathered around and everybody, including my mother in law, was shocked at what I said next. I told her that I wanted her to pack the wound with honey.

You've got to understand that this was like the ultimate "practice what you preach moment" for me. Yes, I told my mother-in-law to pack a deep surgical wound with honey. It was also a major "leap of faith" for her - do I trust my naturopathic

physician son-in-law's advice and fill up a hole in my leg with something I usually only drizzle over oatmeal or spread on toast?!

It should come as no surprise that this story has a happy ending. Mom took my advice and we treated the wound with a topical application of manuka honey. It was apparent within 24 hours that there was progress. We could see granulation tissue developing within the base of the wound, which is evidence that new connective tissue cells and blood vessels are being formed. Then gradually, as you would expect, the healing process continued until the wound healed over completely. All that's left now is a scar... and a pretty good story.

**Fact:** Honey never, ever goes bad. Archaeologists found 2000-year-old jars of honey in Egyptian tombs and they still tasted amazing!

## First Things First

**B**efore we get into the details of all of the science and remarkable research that has been done on the medicinal properties of honey, I welcome you to be in awe of the fact that honey even exists. Here's how it works:

Flowers need help to reproduce. They need to get the pollen from the "anthers" of one flower to the "stigma" of another. Bees are perfectly adapted to this task... but they don't do it for free. Flowers that need to be pollinated produce a sweet nectar that lures in the bees with a promise of a sweet treat.





As the bees are gathering this nectar, their bodies get covered in pollen which they carry from one flower to another, pollinating the flowers as they go. The sweet nectar is then brought back to the hive where it is concentrated into this liquid gold... and that's the miracle of honey.

**Did you know:** Honey bees do a dance when they get back to the hive to tell all the other bees where the flowers are!



### A Look Back in Time

Humans have been enamored with honey for thousands of years. In fact, an 8,000-year-old rock drawing found in Spain depicts a honey-seeker robbing a wild hive. Honey has been found buried with Pharaohs in Egypt, and after thousands of years it was still edible.



Honey was the most popular ancient Egyptian healing remedy, and was mentioned over 500 times in 900 remedies ( Al-Jabri AA. Honey, milk and antibiotics. Afr J Biotechnol.2005;4:1580–1587.)

Ancient Egyptians, Assyrians, Chinese, Romans and Greeks used honey for treating wounds and to heal conditions of the gut. The actual prescription for wound salve dating between 2600 and 2200 BC called for a mixture of grease, honey and lint or fiber. Even ancient physicians recognized the therapeutic value of this natural gift.

Hippocrates himself used honey and vinegar for pain, honey and water for thirst and honey mixed with water and other substances for fever.

Both the Bible and the Qur'an mention the value of honey. The Old Testament refers to the land of Israel as the "land flowing with milk and honey." John the Baptist survived on locusts and honey, and God nourished Jacob with honey from the rock and provided Israel with fine flour, olive oil and honey. The Qur'an mentions that honey is "healing for humankind."

“ Eat honey, my child for it is good. - Proverbs 24:13 ”

### Properties of Honey

Honey contains glucose, fructose, and numerous minerals including calcium, phosphate, sodium chlorine, magnesium and potassium.

According to BeeSource, a typical profile of the sugars in honey looks like this:

- ◆ Fructose: 38.2%
- ◆ Glucose: 31.3%
- ◆ Maltose: 7.1%
- ◆ Sucrose: 1.3%
- ◆ Water: 17.2%
- ◆ Higher sugars: 1.5%
- ◆ Ash: 0.2%
- ◆ Other/undetermined: 3.2%



Honey is quite acidic, with a pH between 3.2. and 4.5. This helps prevent the growth of bacteria. It is also loaded with antioxidants. Of course, its exact properties vary depending on the specific flora that was used to produce it, as well as its water content.

## Therapeutic properties

**H**oney is truly a healing gift from nature, and is rich in medicinal properties including:

- 🔥 **Hygroscopic property:** In its natural state, honey has a very low water content, but it absorbs moisture when exposed to air. This hygroscopic property makes honey highly beneficial to dry skin by allowing it to better retain moisture. It also helps to speed up wound healing time.
- 🔥 **Antibacterial property:** One especially vital component in honey, glucose oxidase, is an enzyme that produces hydrogen peroxide. Research indicates that this is one of the main reasons why honey seems to have such powerful antibacterial and wound-healing capabilities. The production of hydrogen peroxide is just one of the remarkable ways that honey helps to kill bacteria and heal wounds.
- 🔥 **Antioxidant property:** Although darker honey generally contains more antioxidant power than light colored, both are still a rich source of valuable antioxidants. Antioxidants go to work against free radicals and encourage new tissue growth. This, in turn, helps expedite healing of damaged tissue and also helps skin appear younger and more radiant.

“...every spoon of honey contains TINY quantities of these floral flavonoids...usually referred to as antioxidants. There are at least 16 of them found in honey at last count...Trace amounts of these floral flavones exert POWERFUL influences.”

~The Honey Revolution, 2008 p.5

## Honey vs. Table Sugar



They're both sweet, right? So don't they have the same effect on my body? This is a common question... many people don't understand that there are significant differences in the way the body responds to honey versus table sugar. Although both honey and sugar contain both glucose and fructose, there are chemical differences in the way that these sugars are linked together.

When table sugar is extracted from sugar cane (or sugar beets) and then processed, the proteins, nitrogen elements, and enzymes found in the natural sugar cane are destroyed.

In contrast, honey is a natural sweetener that is only minimally processed, and is loaded with antioxidant and antimicrobial properties.





Table sugar (sucrose) is comprised of two sugar molecules (fructose and glucose) bound together. Before table sugar can be used for energy, we must break it down using an enzyme that will separate these molecules. When bees produce honey, they supply the enzyme needed so we don't have to use our own energy to break the bonds. What a wonderful gift this is!

Table sugar, unlike honey, is void of any vitamins or minerals. This is why it is often referred to as a source of "empty calories." In fact, the calories from table sugar are even worse than empty... they are dangerous. When we consume table sugar in the amounts commonly consumed today, we see clear evidence of increased risks of diabetes and cardiovascular disease.

Gram for gram, honey is sweeter than sugar. This effect allows us to use less honey than table sugar to achieve the same level of sweetness. Although one tablespoon of sugar contains 46 calories and one tablespoon of honey has 64, you can use far less honey than sugar due to its innate and intense sweetness.

### Types of Honey



**B**ecause bees use the nectar from a variety of plants to make honey, there are many different types of honey, hailing from all over the world. The characteristics, including the aroma, flavor and color of honey, are relative to the specific plant from which it was made.

The following are some popular honey types, as well as blends (mixtures of more than one type of honey):

- 🔥 **Acacia:** Pale in color, almost glass-like, this honey is amongst the most popular of all types and comes from the black locust tree (also called the false “Acacia” tree) native to North America. It has a very mild and sweet flavor which allows it to be used in a variety of ways. Many people enjoy acacia honey in beverages because it does not change the taste of the drink. Although this honey is very sweet, it has a very low sucrose and fructose level, making it a good choice for diabetics.
- 🔥 **Alfalfa:** Obtained from the purplish flowers of the alfalfa plant, this honey is one of the best substitutes for sugar in tea. It is light in color with a fresh floral scent and is less sweet than some other varieties.
- 🔥 **Avocado:** If you love fruit, this is the honey for you. Dark in color with a slightly buttery taste, this honey is widely produced in Mexico, Australia and some parts of America. It is often used in dressings and sauces.
- 🔥 **Blueberry:** Derived from the flowers of blueberry plants, this honey is light amber to amber in color, with the subtle reminder of its origin. Used in sauces and baked goods, this sweet treat is produced mainly in England, as well as in Michigan in the United States
- 🔥 **Buckwheat:** This honey is the darkest and most strongly-flavored of all honey varieties, and is loaded with iron. Buckwheat honey is particularly popular in Europe. The darker the color, the better the honey.



- 🔥 **Clover:** Although it originated in Canada and New Zealand, clover honey is now available all over the world. This floral-scented honey is generally white to light amber in color and mixes well into salads and baked goods.
- 🔥 **Fireweed:** The perennial herb that produces the sweet nectar for this honey is grown largely in the Northern and Pacific states, and in Canada. Used mostly for cooking and baking, fireweed honey is also tasty on grilled meat and fish.
- 🔥 **Manuka:** This popular honey comes from the tea tree bush of New Zealand and has numerous applications. It is the most widely studied honey for medicinal purposes. Manuka honey is prized for its antibacterial properties and, although generally used therapeutically, is completely safe and delicious to eat every day.
- 🔥 **Orange blossom:** Obtained from orange blossoms, this honey is a light color and has a fruity aroma. With its mild citrus taste, this honey appeals to fruit lovers and pairs well with cheeses.
- 🔥 **Pumpkin blossom:** Produced from the nectar of a pumpkin blossom, this honey is dark amber in color with a sweet floral fragrance. It is used widely in cooking and is especially nice as a dessert topping.
- 🔥 **Rainforest:** Rainforest trees found in Australia, Thailand, Tasmania, Brazil and some parts of America provide the nectar for this honey. It is often used in sauces, for baking and is delicious in a warm glass of organic milk.
- 🔥 **Rata:** This honey is from New Zealand, and is light in color with a sweet, but not strong, taste. Many people use this honey in smoothies and it makes a great addition to energy drinks.

- ♦ **Red gum:** This dark honey is loaded with antioxidants and has a strong flavor. It is highly valued for its therapeutic properties, but is also widely enjoyed as a natural sweetener in drinks and food.
- ♦ **Rewarewa:** The flowers that produce the nectar for this honey grow in the hills of New Zealand and sport red, needle-like flowers. The honey has a slight caramel taste and leaves a somewhat burnt aftertaste.
- ♦ **Pinetree:** This honey also goes by the name of forest honey, tea honey, fir honey and honeydew. It hails from Greece, is loaded with minerals and proteins and has a strong aroma but a delightfully sweet taste. Pinetree honey never crystallizes no matter how long it sits.
- ♦ **Sage:** There are a number of different types of sage plant that produce this very light, almost water-white, honey. Due to its very sweet flavor, many people enjoy this honey with cheese.

**Did you know:** A honey bee visits 50 to 100 flowers during a collection trip.





- ♦ **Sourwood:** The sourwood tree grows in the Appalachian Mountains, all the way from Southern Pennsylvania to Northern Georgia. With a sweet and spicy aroma and taste, this honey is often used in glazes.
- ♦ **Tawari:** This honey is a stunning golden color, and has a sweet butter-scotch flavor which allows it to be paired well with gluten-free pancakes and homemade ice cream.
- ♦ **Tulip poplar:** The tulip poplar tree has strikingly beautiful blossoms and produces a dark amber honey with a surprisingly mild taste. Many people use this rich honey in cooking and baking.
- ♦ **Tupelo:** The trees that produce this sweet honey's nectar have greenish-colored flowers that grow in clusters and eventually turn into berry-like fruit. This honey ranges from white to light amber in color with a slight greenish tint. The flavor is very sweet as this honey is high in fructose.
- ♦ **Wildflower:** Because bees collect nectar from a number of different wild-flower species, this honey is sometimes called mixed floral or multifloral honey. The taste is fruity with a tangy overtone.
- ♦ **Yellow Box:** Native to Australia, and produced from a species of eucalyptus tree, this honey is smooth and used commonly in baking and cooking. It is also a nice addition to a warm cup of tea.



### Popular Honey Blends:

- 🔥 **Aster:** Light honey produced in the United States that crystallizes quickly.
- 🔥 **Basswood:** Slightly woody taste and aroma make this honey great for marinades and dressings.
- 🔥 **Beechwood:** Very dark honey that is often used in sauces and known for its ability to aid in digestion.
- 🔥 **Blue gum:** With a slightly minty taste, this honey comes from Tasmania and South Australia.
- 🔥 **Dandelion:** This honey is amber colored and has a very sweet taste. Often used in preparing Chinese medicines and herbal treatments.
- 🔥 **Eucalyptus:** Different species of eucalyptus make up this honey, which is most often used as a sweetener in tea and coffee.
- 🔥 **Ironbark:** This amber-colored honey is perfect for baking and adding to smoothies.
- 🔥 **Leatherwood:** With a strong, spicy, floral taste, this honey is used in many gourmet products.



- 🔥 **Linden:** Used extensively in Denmark, this honey is light yellow in color and has a fresh woody aroma. It is well-known for its sedative properties.
- 🔥 **Macadamia:** Originally found in Australia, this honey is now available in the United States, often in sauces or used to sweeten tea.
- 🔥 **Neem:** This honey is bitter and not used in baking or cooking, but is valued for its medicinal properties in Ayurvedic medicine as an antibiotic for throat and oral disease, allergies and lowering blood pressure.

“ The careful insect ‘midst his works I view, Now from the flowers exhaust the fragrant dew, With golden treasures load his little thighs, And steer his distant journey through the skies. ”

~ John Gay, Rural Sports (canto I, l. 82)

### Beware of THIS Honey

**T**urkish honey, also known as MAD HONEY, or deli bal in Turkey, is made from a rhododendron species that grows in Turkey and can contain a highly poisonous toxin. This dark reddish-colored honey contains a natural neurotoxin that even in small doses can bring on lightheadedness and even hallucinations.

In the early 1700s, this honey was traded with Europeans who mixed it with alcohol for an indistinguishable “buzz.” Too much of the honey can cause low blood pressure, numbness, fainting, seizures and even death.

Although there are over 700 species of rhododendron, only a few contain the dangerous grayanotoxin in their nectars. One particular species with the toxin thrives on the slopes around the Black Sea. Because there are few other flowers for bees to collect nectar from, the honey is potent with the toxin.

Turkish honey was even used as an early war tool. In 67 BC, Roman soldiers invaded the Black Sea area under the direction of General Pompey. Those who were still loyal to the reigning King Mithridates placed pieces of mad honeycomb along their path. When the army ate this honey they became intoxicated and were easily slain.

Honey producers in the region claim that the Mad Honey is only a very small amount of the honey that they produce, and that when taken in small doses, it actually has some medicinal value. While the honey is self-regulated in Turkey, it is widely available on the Internet with a whopping price tag of about \$166 per pound.

*Curious buyer beware: It takes little more than one teaspoon to possibly bring on mad honey poisoning!*

“ The only reason for being a bee that I know of is making honey....and the only reason for making honey is so I can eat it. ”

~ Winnie the Pooh



## One Gift, Many Forms



**D**epending on how honey is processed, it can take on a number of forms, making it suitable for a number of different uses.

**Raw honey:** Raw honey is honey in its purest state. According to the National Honey Board, there is no exact definition for raw honey. A

honey label that says “untreated” or “unpasteurized” may be an indication, but not a guarantee that the honey is raw. Obviously, any honey labelled pasteurized is not raw. Don’t be fooled by words like “natural” or “pure;” they mean nothing in regards to honey processing.

Many beekeepers will say that they consider honey raw only if it has not been heated above 105 degrees Fahrenheit.

Once processing heat exceeds 105 degrees, the consistency of raw honey changes along with the taste. Raw honey is smooth and creamy, can be found in liquid form, and has no aftertaste, while highly processed honey often has a somewhat smoky aftertaste.

Raw honey is obtained by extraction, settling or straining, and contains both pollen and small wax particles. This purest form of honey is alkalinizing and does not ferment in the stomach. It also contains amylase, an enzyme that helps break down foods containing starch.

To be sure that the honey you are purchasing is raw, it is best to get it from a local beekeeper who will tell you how the honey was obtained. The very best raw honey will also be organic - beekeepers must adhere to very strict regulations in order to be certified organic.

**Strained honey:** Also known as filtered honey, strained honey is honey that has been filtered to remove particles, but not pollen, prior to packaging.

**Micro-filtered honey:** When honey is micro or ultra-filtered, all particles, including the beneficial pollen, are removed and the honey is very clear. This honey can be stored for long periods of time. Be especially leery of ultra-filtered honey that has added sugar - this is sometimes the case - just read the label very carefully.

**Pasteurized:** Pasteurized honey is heated to increase shelf life and prevent crystallization. However, when honey is heated to a high temperature of 161 degrees Fahrenheit or higher, many of its beneficial properties are compromised.

**Liquid honey:** To get liquid honey, extractions are made in the comb so that the honey flows out. It can also be extracted by straining or centrifugation. This type of honey is sold widely throughout the United States.

**Comb honey:** A honeycomb is the natural storage compartment for honey created by honey bees. Comb honey is made of beeswax, which is made from nectar. It is a very pure form of honey, and was the original form of honey before extraction tools were invented. Comb honey is usually eaten as an appetizer, or can be spread or dunked in teas.



**Fact:** Honey is the ONLY food produced by insects that humans can eat.

**Cream honey:** This honey is made by blending nine parts liquid honey with one part granulated honey. The mixture is stored until it becomes firm. Many people use this product as a spread like they would jams or jellies.

**Chunk honey:** This is just a mixture of comb and liquid honey, and is also called liquid-cut comb combination.

**Naturally crystallized honey:** The glucose in this honey is naturally in a crystallized state.

### Testing Your Honey



**M**ost grocery store honey is loaded with cane sugar, corn syrup, invert sugar and water. To be sure that you are getting the best honey, here are two tests that you can perform:

Water dissolving test: Real honey will not dissolve readily in water, but adulterated honey will. Combine one tablespoon of honey and one cup of water and stir to test for authenticity.

**Flame test:** If water has been added to honey it will not burn. Place a cotton wick in a dollop of the honey and light it - pure honey will burn.

**Worried about crystallization?** Don't be...all honey will crystallize over time - it is actually a very good sign that the honey is raw. To re-liquify, all you have to do is gently heat the honey jar in warm water until it becomes liquid again - stir a bit and put back in the warm water if needed. There are some honeys that will not crystallize because they have very low glucose levels, including sourwood, honeydew, black locust-acacia, sunflower, sage and tupelo.

## Other Products From the Hive



### Beeswax

Used at one time as currency, beeswax is noted as the second most important product from the beehive. Worker bees have glands on their abdomens that produce wax scales for the colony. When more wax is needed for the expanding hive, bees generally aged 14 to 18 days gorge on honey and cluster together to raise their body temperature. After this, they make wax slivers.

It takes a whopping 6 to 10 pounds of honey and 33,000 worker bee hours to produce 1 pound of wax, which contains about 450,000 wax slivers or scales and can hold about 22 pounds of honey.



Beeswax has been used since ancient times medicinally, and farmers in France even used it to pay their taxes in the 1300s. Beeswax is used around the world today for cosmetics, lubricants, candle making, inks, paints, electronics and more. In addition, beeswax is also recycled and put back into the honey industry - used for new honeycombs and queen cell cups.

## Propolis

**P**ropolis is also known as “bee glue,” and is used to attach the combs to the tops and sides of hives, fill in cracks in the hive and embalm intruders.

It is made up of a combination of plant resins, beeswax, balm, pollen and hive debris.

This sticky residue has been used medicinally since before 350 BC, mostly on wounds but also as a remedy for ailments including cancer, acne, itching, tuberculosis and osteoporosis. Propolis is used today to make chewing gum, creams and ointments, and is being investigated for use as a dental sealant and tooth enamel hardener. Some recent studies show that propolis may hold some promise for the treatment of burns, wounds, infections, dental pain and inflammatory conditions.



## Brood

**S**elling of honey bee queens and worker bees is a special type of beekeeping that is highly lucrative. Worker bees are sold mostly in 3 lb packages that contain up to 10,000 bees. Queens are usually sold for more because of specific genetic origin or because they have desirable

attributes. Queens are used by beekeepers to re-queen existing colonies where original queens may have been lost or are ill. Beekeepers can also expand their business by purchasing additional queens.

## Pollen

**B**ee pollen is the male seed of a flower blossom, collected by honey bees and combined with the insects' digestive enzymes. It's a mixture of sticky pollen granules that can contain up to five million pollen spores each.

Raved about by many as a perfect superfood, bee pollen is considered one of nature's most complete foods when it comes to nourishment, containing nearly all nutrients humans need to thrive, including protein.

In fact, it's made up of 40 percent protein, with about half in the form of free amino acids that are ready to be used directly by the body. It's even richer in protein than any animal source and contains more amino acids than beef, eggs or cheese of equal weight. And, because it's so highly assimilable, it's an excellent source for meeting one's protein needs.

Of course this near-miracle food is nothing new – it may be one of the oldest foods on the planet, with bees and flowers evolving around the same time, roughly 150 million years ago. Bee pollen has been used for medicinal purposes for centuries, written about in many ancient records, and described by the ancient Egyptians as “life giving dust.”



Bee pollen is rich in minerals, beneficial fatty acids, carotenoids and bioflavonoids which are antiviral and antibacterial, as well as essential vitamins, including B-complex and folic acid. Bee pollen is the only plant source that contains the important vitamin B12.

### Bee venom

Although bee venom sounds like something you would want to avoid, scientists say that bee venom (and venom from snakes and scorpions) contains proteins and peptides that can be the source of valuable therapeutic compounds. Medicines derived from toxic venoms may have benefits in a wide range of diseases.

Bee venom therapy, also known as “apitherapy,” involves the direct application of bee venom via injection into the skin. This unusual therapy may be beneficial for people suffering from arthritis, asthma, hearing loss, premenstrual syndrome, high blood pressure and multiple sclerosis.

## Royal jelly

Even though the word “jelly” is incorporated into the name of this powerful superfood, royal jelly is a far cry from the sweet stuff you spread on toast. Rather, this potent jelly-like substance is secreted from the glands of worker bees in order to feed the queen bee and her larvae.

This often bitter-tasting substance is a combination of 60-70 percent water, 12-15 percent protein, 10-16 percent sugar, 3-6 percent fat and 2-3 percent vitamins, salt and amino acids. The specific combination is dependent on geography and climate.

In a typical bee colony, all bees start out as unisex larvae and develop into one of three roles: worker bees, drones or queen bees. All larvae begin their lives consuming the nutrient-rich royal jelly.

A typical worker bee or drone will be cut off from the premium royal jelly supply within a few days, and will enjoy an average lifespan of three to four months. Queen bees, however, continue their royal jelly diet and can live for as long as seven years.

Humans who have studied the development and differentiation of bees in the hive recognize that the key to the queen bee's longevity must be in her royal jelly-rich diet. This milky, jelly-like substance has been studied extensively for its effects on human health, specifically as a means of both preventing and treating diabetes.



While royal jelly exhibits promise in the realm of diabetes treatment, other research has found it to have bone-building effects in females, as well being helpful in easing the symptoms of menopause. Early research has also pointed at anti-cancer, anti-inflammatory and energy-enhancing properties.



You can find royal jelly in most health food stores, often in either pill or capsule form, as a powder or in its natural state (often frozen). Individuals with bee allergies should be especially careful when taking royal jelly, and those taking blood thinning medication like coumadin should avoid royal jelly as it is known to interfere with this medication and can result in increased bleeding or bruising.

“ If the bee disappeared off the surface of the globe,  
then man would only have four years of life left. ”  
~ Albert Einstein

## The Plight of the Honey Bees

It would be remiss to write a book about honey without some mention of the current state of the honey bee. After all, the health of the honey bee population is directly related not only to honey production, but also the world's food supply.



As you put your honey into your tea this morning, did it cross your mind that the bees that produce this wonderful, sweet treat are rapidly disappearing without a trace?

The honeybee population of our planet has been on a steady decline since the 1940s. In fact, in the 40's it was estimated that there were over 5 million honeybees in America, while today it is thought that there remain a scant 2.5 million. In the winter of 2012/2013, there was a 30 percent loss in honeybee colonies, which is the highest recorded loss in recent history.

Commonly referred to as colony collapse disorder (CCD), the disappearance of the bees is somewhat stumping researchers, who are scurrying to identify the problem and remedy the situation.

Everything from pathogens to parasites, environmental stressors to management stressors, are being reviewed in an effort to understand what is going on. At this point in time, there is no firm agreement as to why we seem to be losing our bees.

While lending a sympathetic ear to this tragic occurrence is a good place to start, it should not stop there. Even if you don't enjoy the sweet goodness of honey, the implications of losing honeybees is much further-reaching.

When you sit down at the dinner table, it is important to understand that one out of every three bites of food you put into your mouth comes from plants that have been pollinated by bees. Without bees, one third of all of our food would be gone. Bees contribute over 44 billion dollars a year to the United States economy.

To demonstrate the severity of the problem and to raise awareness, Whole Foods Market partnered with a nonprofit group called Xerces Society in a campaign labelled "Share the Buzz." To bring the point home, one Whole Foods store actually removed all produce that relies on bee pollination from their store shelves. Seeing the empty produce sections really created a visual impact for customers.

Over 237 of the 453 products in the store were removed. Among those gone were apples, bok choy, green onions, kale, leeks, limes, lemons, mangos, broccoli, summer squash, carrots, honeydew, cauliflower, cucumbers and celery. All of these foods and more are entirely dependent on bees.



More than 85 percent of the Earth's food system relies on pollinators to exist. Many of these foods are ones that provide us with the most nutrition, which makes matters much worse. We can all do without a toasted pastry, but if our fruits and veggies disappear, the health and economic implications will be vast.

### What can be done?

**W**hile you may feel helpless when it comes to assisting bees, there is actually quite a bit that you can do. The first is to understand what is happening and commit to making a difference. Organizations such as the Xerces Society help farmers create wildflower habitats for bees and adopt less aggressive, less pesticide-intensive practices.

Beekeepers, concerned citizens and advocacy groups such as the Natural Resource Defence Council are begging for a stop to the use of dangerous pesticides called neonicotinoids. These chemicals are thought to be causing the bees to demonstrate the same symptoms that humans have with Parkinson's and Alzheimer's disease.

Just making this difference alone can do a great deal to create desirable habitats for bees. We can help save the bees and our food in other ways, as well. Adopting natural methods of running our homes and our gardens without the use of toxic pesticides is a start. Buying organic also supports the pollinators.

Planting bee-friendly flowers and fruits will help to provide habitats for the bees, and we can also shop in places where we see "Share the Buzz" signs.

**Fact:** It takes one ounce of honey to fuel a bee's flight around the world.



**Good news...** While the use of an insecticide class known as neonicotinoids is still widespread in the United States, some cities are taking action on a local level and banning their use, in an effort to both protect bee populations and the environment as a whole.

In June of this year, the city of Spokane, Washington banned the use of neonicotinoids within its borders. In 2013, Eugene, Oregon became the first city to enact such a ban.

These communities are responding to the severity of worldwide colony collapse disorder – the mass death of honeybees around the globe – and the growing scientific associations between this phenomenon and neonicotinoid insecticide use.

A recent review of 800 studies concluded that neonicotinoid use is connected to the mass deaths of insects, including bees and other pollinators. While not the only factor at play, the researchers state that they are playing a major role. According to Dr. Jean-Marc Bonmatin, one of the study's lead authors, "we are witnessing a threat to the productivity of our natural and farmed environment equivalent to that posed by organophosphates or DDT."



The United Kingdom branch of the Pesticide Action Network (PAN) asserts, “neonicotinoids, especially seed treatments of imidacloprid and clothianidin on arable crops, have become of increasing concern to beekeepers and bee researchers in recent years with many of them suspecting that they may be connected to current bee declines.”

Because of these concerns, the European Union began a two-year ban on three different neonicotinoids, imidacloprid, clothianidin and thiamethoxam, in 2013.

The United States Environmental Protection Agency is reportedly “carefully watching” to see how this ban unfolds, and what results it produces.

Spokane, Washington, however, does not wish to wait for the federal government to determine how much damage these insecticides are doing. On the recent ban, City Council President Ben Stuckart stated, “this ordinance simply says Spokane prioritizes the protection of our food supply over the ornamental use of pesticides.”

We hope that other communities take the examples of Spokane and Eugene to heart, and take a serious look at whether using these dangerous insecticides is worth the risk.

## PART I Honey for Health

There are mountains of scientific research and clinical studies related to the medicinal properties of honey. A simple search on PubMed using the search term “honey” yields over 7,000 scientific papers dating back to 1884. The scientific and medical research community has invested heavily into understanding honey’s remarkable therapeutic value. Unfortunately, much of this vast literature has gone largely unnoticed.

Below you will find summaries of the therapeutic uses of honey for a wide range of medical conditions. Each section is based on a body system, and you’ll find information about how honey has been used therapeutically for medical conditions within that system. At the end of each section, you’ll find practical applications for home use.

### Skin Health



The skin is the body’s largest and fastest-growing organ. Skin is the protective coat that keeps us warm when it is cold, cool when it is hot and keeps all of our inside parts inside, where they should be. It also keeps stuff like germs and water out.

Dermatology is a distinct medical specialty, concerned with the many illnesses and conditions that affect the skin. Dermatology is also the area where the therapeutic effects of honey have been the most widely studied. There are many illnesses,

infections, and afflictions that can impact the skin and cause everything from minor irritation to serious life threatening illness. Honey has repeatedly been proven to be a safe, effective and valuable tool in keeping skin healthy, and looking and feeling great.

**Seborrheic dermatitis:** A common inflammatory condition that causes yellow and flaking skin, mostly in oily areas including on the face, in the ear and nose and on the scalp. It is also known as “cradle cap” when it occurs in infants. Although the exact cause is not known, it is thought that a weakened immune, endocrine or nervous system, or a yeast known as *Malassezia*, may play a part.

A study published in the European Journal of Medical Research looked at the effectiveness of raw honey in relieving seborrheic dermatitis and dandruff. Thirty participants suffering from seborrheic dermatitis and dandruff applied a mixture of 90 percent raw honey diluted in warm water to lesions every other day for four weeks. Those participants who showed improvement were included in a six month study where half were treated with topical honey weekly, and half served as a control group.

Researchers found those receiving the honey therapy had reduced itching and scaling within one week. At the two week mark, skin lesions healed completely and participants noted less hair loss. None of the participants who received a weekly application of honey had a relapse, while 12 out of 15 in the control group did. It was concluded that “crude honey could markedly improve seborrheic dermatitis and associated hair loss and prevent relapse when applied weekly.”

In addition to making suggestions about dietary improvements and adding nutritional supplements like omega-3 fatty acids that can improve the general health of the skin, I recommend that patients with dandruff and seborrheic dermatitis



use a topical application of diluted raw honey. I recommend making a paste using 90 percent raw honey and 10 percent warm water, just like what was done in the research. This paste should be applied to the affected areas, left on for three hours and then rinsed off. Do this treatment every other day for one month.

Atopic dermatitis (eczema): This is one of the most common skin conditions, and one of the most irritating. Eczema causes skin to be itchy and red, and repeated scratching often leads to thickening called lichenification. Eczematous areas are very prone to infection, which adds insult to injury. Although common in children, it can occur at any age and tends to be chronic with periodic flare-ups. Eczema is an allergic condition at its core, although the exact cause or trigger is often very difficult to pin down. There is also likely a genetic component that increases individual susceptibility, and there is mounting evidence our modern, “hyper-sanitary” environment may also contribute to an increased risk of eczema.

Researchers investigated the effects of a mixture of honey, olive oil and beeswax in a 1:1:1 ratio on patients who had atopic dermatitis. Twenty-one of the patients had no prior treatment before the honey mixture, and eleven used a topical corticosteroid cream before the trial.

Those participants who had received no prior treatment applied the honey mixture to affected areas on one side of their body and Vaseline to the affected areas on the other side of their body. This treatment was repeated three times a day for two weeks.

Those participants who were using the medicated cream prior to the trial applied a mixture of the cream and honey to one side of the body and a Vaseline and steroid cream mixture to the other side. After the trial, patients were assessed for common eczema symptoms including skin thickening, redness, scaling, itching and oozing.

Eighty percent of those who had not used steroid creams before the trial had significant improvement with the honey mixture, and almost half of the patients who used the steroid cream before the trial did not have a worsening of symptoms when the steroid cream was replaced by the mixture of cream that contained three parts honey mixture and one part corticosteroids.

Honey can be used both internally and topically for this stubborn, itchy dermatitis. I advise eczema patients to add locally-produced raw honey to their diet, up to two tablespoons per day... usually added to herbal tea. Honey can be used topically for eczema as well. There are many commercially available honey-containing creams and ointments, but they are also really easy to make at home. Here's the recipe I give out to my patients:

### Ingredients:

- 🔥 One ounce raw honey (preferably Manuka)
- 🔥 One ounce olive oil
- 🔥 One ounce beeswax (a chunk about the size of an ice cube)

### Instructions:

1. Melt the beeswax slowly in a saucepan.
2. Remove from heat and add the honey and olive oil.
3. While the mixture is still warm, add to a jar with an airtight lid.
4. Store in the refrigerator for up to three months.
5. Apply to affected areas up to three times per day.



**Tinea versicolor:** This is a very common skin condition, especially in tropical and subtropical areas of the world. Tinea versicolor is a fungal infection that produces a rash of variable colors which typically become more prominent as the skin tans, hence its name, “versicolor.” In addition to the skin discoloration, tinea versicolor can also cause a sharp itching sensation. It is considered a minimally contagious infection.

A 2004 study out of Dubai Specialized Medical Center and Medical Research Laboratories investigated using honey as an alternative treatment for tinea versicolor. Thirty-seven patients used a mixture of one-part honey, one-part beeswax and one part olive oil to treat the fungal infection. The mixture was applied to lesions three times a day for four weeks. Over 70 percent of those treated with the honey mixture experienced healing from the condition.

In another study, 61 high school students with tinea versicolor were instructed to apply a thin coating of pure honey (collected from a 6 month old beehive) to affected areas twice a day for 30 days. At the end of the study period, a 98.36 percent cure rate was observed.

I have found that the same recipe used for eczema (honey/beeswax/olive oil in a 1:1:1 ratio) can also be applied to tinea versicolor. This mixture can be alone or in addition to other treatments like selenium sulfide applications.

**Intertrigo:** This is an infection and inflammation of the skin folds in areas such as the armpits, genital area, and beneath the breasts and the abdomen. It is a painful, bright red rash that often has a discharge with a foul odor and cracked, crusty or oozing skin.

Thirty-one patients with symmetrical intertrigo in skin folds were instructed to use a routine therapy of zinc oxide on one side of their body and honey as a barrier

cream on the other side of their body. The study period lasted 21 days, and at the end, both therapies appeared to be effective, although the honey actually reduced patient itching complaints more than the zinc oxide. It was determined that honey barrier cream is a suitable alternative treatment for intertrigo, and also promotes patient comfort.

I advise patients with this rash within skin folds to use topical honey directly. There are some commercially available products, such as MediHoney barrier cream, which have been used in research, but manuka honey straight from the jar seems to work just as well.

**Diaper rash:** Anyone who has had children has probably experienced diaper rash, also known as “napkin rash” (they call diapers napkins or “nappies” in the UK). This painful condition often occurs as a reaction to a new food, diaper chafing, a yeast infection or irritation from urine.

A New Zealand study investigated using topical pharmaceutical-grade kanuka honey in place of traditional barrier cream for treatment of redness, itching and inflammation. The kanuka tree (*Kunzea ericoides*) is native to New Zealand and is similar in appearance to the manuka shrub. It has been found that kanuka honey has greater anti-inflammatory capability than manuka. Participants were instructed to apply a thin layer of honey in the same fashion as they would barrier cream. Researchers found that compliance was high and that symptoms were improved in a similar fashion to using barrier cream.

Whether diaper rash is caused by simple irritation or is complicated by infection (often yeast), topical honey can be very helpful. I recommend that parents add equal parts of honey to their favorite diaper cream and apply directly to the rash at each diaper change.



**Herpes simplex:** This common viral infection results in cold sores or fever blisters. Even when sores are not visible, this condition is contagious, spreads easily and can be highly uncomfortable.

In a study, sixteen adults who had frequent labial and genital herpes attacks used honey to treat one attack and a common prescription cream, Acyclovir, to treat another. The honey provided significantly better results than the cream. For labial herpes, the mean healing time was forty-three percent better, and for genital herpes it was fifty-nine percent better than the prescription cream.

- The honey reduced pain and crusting and caused no side effects, while the cream caused local itching in three subjects.

Pain and crusting were also significantly reduced with the honey compared to the drug. Two cases of labial herpes and one case of genital herpes remitted completely with the honey treatment, whereas none remitted while using Acyclovir.

The researchers concluded, “topical honey application is safe and effective in the management of the signs and symptoms of recurrent lesions from labial and genital herpes.”



There are many natural and nutritional recommendations that I advise to patients with recurrent herpes outbreaks on the lips (cold sores) or in the genital area. With respect to the use of honey, I recommend that they do exactly what was done in the research studies. This protocol involves pressing honey-soaked gauze firmly on the lesions for 15 minutes four times per day. Make sure to use new gauze each time.

**Staphylococcus aureus:** Many people have this bacteria on their skin and in their noses and it never causes a problem. However, when the skin is broken, the bacteria can enter and cause a host of issues. Staph bacteria can spread through contaminated surfaces or between people.

Manuka honey can be applied directly to superficial infections or be added to a bandage or wound dressing. Any skin infection that is rapidly spreading or causes a fever needs immediate medical attention.

**Candida albicans:** This condition, commonly known as a yeast infection, is caused by the overgrowth of a common organism called Candida albicans. Although candida is a normal inhabitant of multiple sites in and on our bodies, its growth is normally kept in check by our own immune system and other beneficial microorganisms. Overgrowth of yeast can affect the skin, genitals, throat, mouth and blood. Certain medications (especially antibiotics) and conditions like diabetes can cause this naturally-occurring yeast to overgrow.

It always surprises patients when I suggest that honey can be useful in the treatment of yeast infections. Many patients with chronic or recurrent problems with yeast have been advised to follow very low carbohydrate diets and avoid all sugars, including honey. However, there have in fact been many studies that demonstrate that honey is a safe, effective, broad spectrum antifungal agent. Raw or manuka honey can be applied directly to candida infections two to three times per day.

**Pressure ulcers:** Also known as bedsores, these uncomfortable sores on the skin can be caused by any number of things, including lying in bed or sitting in a wheelchair. These sore spots can also result from diabetes and other vascular diseases.

In a research study, two groups, each with pressure ulcers, were studied. One group received a honey dressing while the other was treated with ethoxy-diaminoacridine plus nitrofurazone dressings. After the five-week study period was up, the group who received the honey dressings experienced four times the rate of healing as the group that received the medicated dressings.

If you or a loved one has a deep pressure ulcer, consider applying a honey-soaked gauze pad to the wound and covering with a second semipermeable bandage to prevent leakage.

● **Surgical wounds:** Surgical wounds are made by using a cutting instrument during a medical procedure. Although these incisions are made in a sterile environment, they can sometimes be hard to heal or become infected.

Studies have shown honey to be effective in the treatment of infected surgical wounds. Researchers found that unboiled honey accelerated wound healing when applied topically - this they attributed to its hydrogen peroxide-producing effect, and its antimicrobial and hygroscopic properties.

I advise my patients with surgical wounds to begin using topical raw manuka honey dressings as soon as they can after surgery. Honey can be applied directly to the surgical wound or can be added to a bandage or wound dressing. Fresh honey should be used with each dressing change, at least once per day.

**Skin grafts:** A skin graft is a type of graft surgery involving the transplantation of skin, often used to treat burns or other serious skin trauma.

In 2003, a study published in the journal Dermatologic Surgery looked at the use of honey in healing a split-thickness skin graft donor site. Study leaders concluded that using gauzes impregnated with honey is a safe and practical

application, and a good alternative to traditional skin graft dressings material for healing. In the study, part of the group received the honey bandages while the others received paraffin gauzes, saline-soaked gauzes and hydrocolloid dressings. Those that received the honey dressings had faster epithelization time and less pain than the others.

In my practice, I do not tend to see skin grafts until long after they are healed. That said, there is some very compelling literature that suggest that honey can be safely and effectively used in the fixation and healing of skin graft sites. Only medical grade honey preparations should be used for this purpose.

**Burns:** Heat, electricity, chemicals, radiation and chemicals can cause serious injury to the skin. Deep or very widespread burns can leave skin very vulnerable to bacterial infection, which may increase the risk of sepsis.

Honey has proven itself to be a highly effective treatment in the case of burns. Research out of New Zealand points to the effectiveness of manuka honey in treating burns. The Journal of Cutaneous and Aesthetic Surgery published a paper based on an analysis comparing the use of medicated dressings (Silver Sulfadiazine) with honey dressings over a five-year period. The analysis involved 108 patients with first and second degree burns over less than 50 percent of their bodies. Of the patients, 57 received the medicated bandages and 51 the honey dressings.

When burn healing time was compared, those patients with the honey dressings healed in an average of 18.16 days, while those with the medicated bandages healed in 32.68 days. In addition, the wounds of patients treated with the honey bandages became sterile in less than 7 days, while wounds of patients treated with the medicated bandages became sterile in 21 days.



Researchers concluded that the honey dressings made wounds sterile in a shorter time period and also improved healing time.

For superficial burns that can be treated at home, honey can be very effective at improving healing and decreasing the risk of infection. Apply raw honey directly to the burn three times per day. Alternatively, use a bandage soaked in honey or the homemade honey/beeswax/olive oil recipe as a burn cream.



**Wound healing:** There are many things that can impact wound healing time, including severity, promptness and type of medical care and how sterile the wound is kept.

Hospitals all over the world are now using active manuka honey alongside conventional medication to treat a number of conditions, with wound healing topping the list. During the Civil War, honey was applied liberally to the wounds of soldiers, and today, scientists are finding out that manuka honey has the ability to stop dangerous infections in their tracks.

Professor Elizabeth Harry, from the University of Technology, Sydney, reported in the journal PLOS ONE that manuka is the best honey for stopping bacterial infections and wounds. In addition, manuka honey has been shown effective in the treatment of eczema, burns, dermatitis and abscesses.

A study conducted in 1992 showed that manuka honey sped healing after caesarean sections. The Journal of Lower Extremity Wounds found positive findings on honey in wound care reported from 17 randomized control trials including

more than 1,965 participants, as well as from 16 trials involving wounds on over 500 experimental animals.

Six years ago, the FDA authorized the very first honey-based medical product for use in America. Derma Sciences uses manuka honey for their Medihoney burn and wound dressings, which you can find online and in medical supply stores.

Raw honey can be applied to a Band-Aid, or onto a gauze pad, and applied directly to the site. Dressings or bandages should be changed at least every 24 hours.



## Endocrine and Metabolic Systems

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**T**he endocrine system is the factory, the warehouse and the shipping department for hormones. Hormones are produced by a network of glands, which secrete them directly into the bloodstream. Endocrine hormones have an influence on virtually all bodily functions, including important effects on metabolism. Collectively, the endocrine system regulates every cell and organ in the body, controlling such functions as metabolism, sexual functions, mood, cell growth and development.

The term “metabolism” refers to a series of chemical reactions used to produce cellular energy by burning fuel. There are thousands of metabolic reactions that occur constantly within our cells to keep them vital and functioning optimally.

There are a number of disorders that can affect the endocrine and metabolic systems and lead to a variety of dysfunctions, diseases and medical conditions.

**Fasting blood sugar levels in diabetics:** Diabetes is a common metabolic ailment that is caused by a disorder in the regulation and control of blood sugar.

People who have diabetes have elevated glucose, also called hyperglycemia or high blood sugar.

Although honey is sweet, it has a fairly low glycemic index. The natural sugars in honey have a “slow-release” effect, which means it does not cause the sharp peak in blood sugar that other sweet substances (like refined sugar) do. The sugars in honey are therefore more slowly absorbed and metabolized. Despite its sweetness, honey will not cause blood sugar levels to spike as high or as fast as other high-sugar foods.

● In a study conducted on healthy, diabetic patients who also were hyperlipidemic, honey had the following impact:

Blood sugar levels were not elevated to the same extent as with glucose and sucrose.

- 🔥 Lowered bad cholesterol and raised good cholesterol.
- 🔥 Reduced C-reactive protein - a marker for inflammation.
- 🔥 Lowered homocysteine - another blood indicator of disease.

Even the biggest supporters of the medicinal uses of honey have been surprised at the research on honey and diabetes. Based on studies in rodents that have demonstrated improvements in several measures of diabetes complications, researchers have begun to test the effects of honey consumption on humans with diabetes as well. Although it is generally wise for diabetics to avoid sugar and sweets, these early studies have suggested that there may be an exception to the rule when it comes to honey. It has been shown that honey has a lower glycemic effect than simple sugar. While it may seem completely crazy to suggest honey to someone with diabetes, I now tell my diabetic patients that they can use up to 1 tablespoon (about 20 grams) of honey per day.

“Honey consumption (as compared to refined sugar or HFCS) leads directly to the formation of liver glycogen, thus stabilising blood sugar levels. Honey thereby reduces metabolic stress and improves fat metabolism and disposal, thus combating two of the key parameters of the metabolic syndrome, Type 2 Diabetes and obesity.”

~Dr Ron Fessenden, The Honey Revolution

**Homocysteine levels:** Homocysteine is an amino acid which is a product of protein metabolism. When found in high concentrations, this product has been linked to an increase in the risk of heart attack and stroke. Elevated homocysteine levels may contribute to the formation of plaque and arterial wall damage. There is also some evidence to suggest that persons with elevated homocysteine levels may have up to twice the normal risk of developing Alzheimer's disease.

As mentioned above, honey appears to lower homocysteine levels, thereby reducing the risk of heart attack and stroke.

Although the general rule for lowering plasma homocysteine levels involves the use of B vitamins, there is also some limited evidence that honey can help as well. When patients have elevated homocysteine levels, I tell them that they can safely consume up to 40 grams (about two tablespoons) of honey per day.

**Blood glucose control in Type 1 diabetes:** Once known as juvenile diabetes or insulin-dependent diabetes, Type 1 diabetes is a chronic condition in which the pancreas fails to produce sufficient insulin. Insulin is the hormone that allows sugar (glucose) to leave the blood and enter the cells so the absence of insulin causes the blood sugar to rise while the cells are starving. This is why diabetes is sometimes referred to as “starving in the midst of plenty.”

A review of scientific literature indicates that honey has a positive impact on the treatment of diabetes. Research findings reinforce the therapeutic prospects of using honey, or other potent antioxidants such as vitamin C or E, as an adjunct to standard anti-diabetic drugs in the management of diabetes mellitus.

The study authors wrote, “the beneficial effects of honey in diabetes might not only be limited to controlling glycemia but might also extend to improving the associated metabolic derangements in this complicated metabolic disorder.”

I encourage my Type I diabetes patients to keep their diets as low-glycemic as possible. I also tell them that of all of the available sweeteners on the market, honey is the best choice.

**Antioxidants in blood:** Human blood has fascinated scientists, philosophers, artists and children for millennia. It is the source of all that nourishes us, as it carries oxygen, vitamins, minerals and proteins that are pumped through miles of vessels within our body. The quality of our blood is vital to all systems, and to our overall health and well-being. A low red blood cell count can cause fatigue, anemia and weakness. Healthy blood supports the immune system and protects us from infections and disease. Healthy blood contains high levels of antioxidant compounds, some of which are made internally and others that are consumed in the diet.

Antioxidants help to prevent oxidation... a common underlying cause of a wide variety of illnesses. There are many conditions that have been linked to low antioxidant levels and the resultant “oxidative stress.” Diseases such as diabetes, hypertension, heart disease, Alzheimer’s disease and cancer are on the rise. These conditions and many more are known to be associated with increased oxidative stress.



So, what are antioxidants? Antioxidants are natural substances that prevent or slow cell damage. When our blood cells and vessels contain high levels of antioxidants, this leads to decreased risks of a variety of diseases including cardiovascular disease, diabetes, and cancer.

According to a report published in the journal *Molecules* in 2012:

“Honey is a natural substance with many medicinal effects such as antibacterial, hepatoprotective, hypoglycemic, reproductive, antihypertensive and antioxidant effects.”

Antioxidants found in foods are a valuable nutritional resource. Fresh fruits and vegetables are the most commonly cited sources of antioxidants in food, but numerous research studies indicate that honey (especially dark honey) also contains potent antioxidants. Adding raw honey into one's diet (especially dark honey) can help keep antioxidant levels high in the bloodstream.

## Immune System and Infections

The immune system is our department of defense, our intelligence agency, and our military. It is comprised of cells, tissues, and organs which work together as our primary defense against infectious organisms and other dangerous invaders. The immune system can recognize and attack these organisms before they cause us problems. There are a wide range of conditions that can impact the strength and agility of our immune system and when it is compromised, we invite in a host of dangerous organisms that can cause illness.

“ It may seem odd that straight exposure to pollen often triggers allergies but that exposure to pollen in the honey usually has the opposite effect...In honey the allergens are delivered in small, manageable doses and the effect over time is very much like that from undergoing a whole series of allergy immunology injections. ”

~Thomas Leo Ogren, “Allergy-Free Gardening

**Allergies:** Millions of Americans suffer with allergies. There are hundreds of substances that can provoke allergic symptoms in susceptible individuals. Allergic triggers can be airborne (ie. pollen, dust or animal dander), foodborne (ie. peanuts or shellfish) or via skin exposure (ie. latex or poison ivy.) Allergy symptoms can vary from minor irritations to life threatening illness. There are many approaches to the treatment of allergy, by far the most common are pharmaceuticals. Both over-the-counter and prescription medications may help to un-stuff your sinuses, but they often come with a host of unpleasant side effects. Some antihistamines might leave you feeling groggy and foggy, others cause people to feel jittery and anxious. Beyond that is a long list of other potential adverse effects, including symptoms like altered taste and smell and possibly more serious issues such as female infertility. Non-drug approaches to allergy treatment are in high demand, and honey can really help.

A 2011 study published in the International Archives of Allergy and Immunology found that patients who were diagnosed with birch pollen allergy were able to reduce 60 percent of their allergy symptoms and decrease the number of days with severe symptoms by 70 percent by taking birch pollen honey pre-seasonally. This was a specialized honey that had tiny amounts of birch pollen added for an additional “desensitization” effect.

Thousands of people swear by this remedy, but buying just any honey off the grocery store shelf won't do the trick. It's got to be local honey, as bees produce it by traveling around local plants and gathering local pollen, which is what you're reacting to when you have allergies. By ingesting local honey, it helps to create immunity to those specific allergens in your area. Eat local honey all year round to derive the most benefits.

Locally-produced honey is one of my favorite treatments for seasonal allergies. It can improve markers and symptoms of immunity with people with allergies. I tell allergy patients to find a local beekeeper (they're often at farmers markets) and ask them for honey that was made during the season that they get allergies. Local, seasonal honey can then be consumed daily at doses of up to two tablespoons per day. I often suggest that the honey be added to a tea made with nettle (*Urtica dioica*) leaf, which has additional anti-allergy benefits.

**E. coli:** While *E. coli* bacteria live in the intestines of healthy people and animals and most are quite harmless, some strains can cause severe stomach cramps, bloody diarrhea and vomiting. You can be exposed to *E. coli* from food or water that has been contaminated - especially raw vegetables or undercooked ground beef.

Studies have clearly demonstrated that honey inhibits the growth of *E. coli* in petri-dishes and in animal models of infection. Although I don't recommend using honey exclusively to treat this infection, it is reasonable to include herbals teas sweetened with honey as an adjunct to treatment for *E. coli*.

**Fournier's gangrene:** Although rare, this disease is life-threatening and is an infection in the genital area that normally impacts men. If the infection spreads to the blood, sepsis can occur and result in death.

First of all... I hope you never encounter this problem. It is a dreadful and dangerous urogenital infection. That said, a team of Turkish urologists have studied and published the results of their work using honey in addition to standard hospital care for this infection, and have demonstrated impressive results.

**Antibiotic resistant superbugs:** A troubling new report issued by the World Health Organization (WHO) sheds light on the severity of the rising global problem of antibiotic resistance, and cautions that if significant changes are not soon made, the world could be headed for a “post-antibiotic era,” in which diseases that were once under control by modern medicine could threaten once again. Antibiotic resistance is, according to the CDC, a leading world health problem. Doctors first began to notice resistance problems almost a decade ago, when kids with middle-ear infections stopped responding to the drugs they were being given.

Penicillin has also become less effective over time, and a new strain of staph bacteria has arisen that does not respond to antibiotics at all. This makes honey an attractive option for treating wounds, burns and skin problems that could develop into serious infections.



Dr. Ralf Schlothauer, PhD, the CEO of Comvita, New Zealand's largest supplier of medicinal manuka, explains that the UMF (Unique Manuka Factor) certification of manuka honey is a concentration of the individual antioxidant phenols that are in the honey. These phenols inhibit bacterial growth and promote healing. These antioxidants are not like synthetic antibiotics that promote the spread of antibiotic-resistant superbugs.

It is entirely clear that raw honey is an impressive antimicrobial agent against a broad spectrum of bacteria and other infectious organisms. When my patients have infections, including tough-to-treat infections like MRSA and other antibiotic-resistant organisms, I will include the internal and external use of raw manuka honey.

## Eyes, Ears, Nose, Throat and Mouth

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**T**he eyes, ears, nose, throat and mouth are subject to a variety of painful conditions and infections. ENT (ear, nose and throat) infections are one of the most common reasons for visits to primary care physicians. It is common for physicians to use either antibiotics or prescription steroids to treat many of the problems that arise in the eyes, ears, nose and throat. Although pharmaceuticals do play an important role in the treatment of these problems, often, non-drug therapies including honey can be safe, effective alternatives.

**Tonsillectomy:** This is a procedure that removes the tonsil glands located on the back of the throat. These glands are often removed along with the adenoid glands. Pain following the surgery can vary between moderate and intense. I always try to help my patients avoid surgery whenever possible, including tonsillectomy. There are times though when the tonsils are such a problem that surgical removal is necessary. In those cases, honey after surgery is not only a sweet treat, but can actually help with recovery.

Researchers have found that postoperative honey administration reduced patient pain and need for analgesics. It was also noted that compared to analgesics, honey has negligible side effects.



I recommend that after tonsillectomy, patients take one teaspoon of honey every two to three hours while they are awake. It can be taken right off of a spoon, or diluted in about one ounce of warm water.

**Fungal sinusitis:** The sinuses are cavities within the skull that are warm, dark and moist. They make cozy little homes for microbes including fungi. Fungal infections can cause inflammation and pain in the sinuses, just like bacterial infections. Bacterial sinusitis is most commonly treated with antibiotics and often a nasal steroid spray to reduce inflammation. Fungal infections require a totally different approach and can be difficult to treat, because these organisms are not killed by antibiotics and steroid nasal sprays can often make fungal infections worse. However, honey can help.

I recommend that sinusitis sufferers try making their own honey nasal spray. The recipe used in the studies is simply 50/50 raw manuka honey and saline, used as a nasal spray two to three times daily.

This solution can be prepared using store-bought saline (which can be purchased in a convenient nasal spray bottle) or be made at home using this recipe:

### Simple Saline:

- 🔥 ¼- ½ teaspoon of finely ground non-iodized salt
- 🔥 ¼ teaspoon baking soda
- 🔥 1 cup distilled water

**NOTE:** Another really easy way to make saline is to buy the prepackaged packets of salt/baking soda that are used to prepare the solution for nasal irrigation. Simply add 1 packet to 1 cup of distilled water and you are good to go.

These packets are inexpensive, convenient, and can be found near the nasal sprays at any drugstore.

**Allergic rhinitis (runny nose):** Allergic rhinitis is an annoying and uncomfortable condition that is caused by an allergic inflammation in the nasal airways. Inflammation may result when pollen, dust or animal dander is inhaled by people with sensitive immune systems. As you've learned, good quality local honey actually contains pollen, often pollen derived from plants that cause seasonal allergies. Although it seems counter-intuitive to consume the pollen from the plants that you are allergic to, it seems that ingesting the pollen in honey can actually help in cases of pollen allergy. Immunologists are still working on why this might be; it's possible that the action of enzymes found in honey and the "low and slow" doses of pollen may help to improve immune tolerance in a similar way that allergy shots are known to work.

Allergic rhinitis and hayfever responds really well to honey both internally, and topically as a nasal spray. I advise seasonal allergy patients to consume local, seasonal raw honey at a dose of 1 tablespoon per day. I also suggest that they use a daily nasal spray made with equal parts honey and simple saline.



**Meibomian gland dysfunction (MGD):** MGD is thought to be the leading cause of dry eye syndrome. Meibomian glands are a special type of sebaceous gland located at the rim of the eyelid. This gland is responsible for making meibum, an oily substance that prevents evaporation of the eye's tear film.

Preliminary studies have suggested that eye drops made from sterilized manuka honey can be useful in treating dry eyes related to meibomian gland dysfunction. These drops must be sterile and prepared for ophthalmic use. Two or three drops are added to the lower lid three times per day.

● **Corneal erosions:** Corneal erosions impact the cornea, the clear dome covering on the front of the eye. The cornea is comprised of five layers, and the outermost layer is called the epithelium. When this layer does not stay attached to the tissue below it can cause a corneal erosion. This condition is painful, and usually feels worst in the morning when waking up because the eyes tend to get dry at night.

There is some preliminary evidence that adding honey to usual care for corneal abrasions and erosions can be helpful in decreasing the potential for infection and speeding healing, as well as for helping to ensure that vision is preserved. Eye drops made with manuka honey are used for this purpose - these drops must be sterile and prepared for ophthalmic use.

**Infections in the mouth:** Bacteria and viruses can cause oral infections that impact the teeth, gums, palate, tongue, lips and the inside of the cheeks. Oral infections are very common. In fact, infections that cause tooth decay are the second most common infectious condition after the common cold.

Researchers in India have found that manuka honey worked just as well as commercial mouthwash, and better than chewing gum with xylitol, for reducing plaque levels. This they attribute to its outstanding antibacterial qualities. Manuka honey, taken orally, can help reduce gingivitis and keep the mouth healthy and free from harmful bacteria.

A variety of infections and irritations in the mouth can be successfully treated with honey. I typically recommend using undiluted raw honey at a dose of one teaspoon three to four times per day. Swish the honey around your mouth and over the irritated area, then swallow.

### Pulmonary/Respiratory System

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A breath of fresh air... sounds good, right? Well, that life-giving breath is the primary responsibility of your respiratory system. In medicine, we think of the respiratory tract in two parts. The “upper” respiratory tract includes the nose, nasal passages, sinuses and the pharynx and larynx, which are in the throat. The “lower” respiratory tract includes the trachea (or windpipe), the bronchi, and the lungs themselves. All of our cells require oxygen in order to function, and without it we would cease to exist. The pulmonary/respiratory system is responsible for ensuring that our cells get the fresh oxygen they need.

There are many conditions that can compromise the function of the respiratory tract, most commonly upper and lower respiratory infections. Honey can play a valuable role in managing upper and lower respiratory tract problems.

Respiratory infections and cough: Upper respiratory infections, also known as colds, impact the nose, throat, larynx and windpipe. Colds are often caused by a viral infection and can lead to runny nose, cough, sore throat and laryngitis. Lower respiratory infections involve the bronchial airway and the lungs.

For common coughs and colds, honey can act as both an antimicrobial agent and a cough suppressant. Use 1 teaspoon of raw honey every 3-4 hours. It can be given directly off the spoon or diluted in a little warm water or herbal tea. Ginger tea with honey and lemon is a family favorite. One teaspoon of honey straight off the spoon before bed can really help with nighttime cough in kids.

For a lingering cough, consider the results of a fascinating new study, which tells us that a mixture of coffee and honey is equally, if not more, effective as a steroid cough syrup for silencing a persistent post-infectious cough (PPC).

● A post-infectious cough is one that lasts for three to five weeks after a common cold or respiratory infection. This is the cough that keeps you up at night and interferes with your normal daily routine. A cough such as this can make you tired, irritable and is nothing short of very annoying. These cough are commonly treated with antibiotics and/or steroids... neither of which are terribly effective.

The study mentioned above compared the effectiveness of a systemic steroid medication and honey plus coffee to treat this lingering cough. Ninety-seven adults who had PPC for at least three weeks were divided into three groups.

One group received a jam-like paste made from coffee and honey, another group received a steroid medication (prednisolone) and a third group received a non-steroidal cough syrup (guaifenesin). The pastes were made to be similar in texture and flavor so that the participants did not know what they were taking. They were instructed to dissolve their syrup in warm water and consume once every 8 hours for one week. Cough frequency was measured.



Study results clearly demonstrated that the group who took the coffee and honey mixture had the greatest decrease in cough frequency, and researchers noted that this combination was the best treatment choice for PPC.

According to the study authors: "Each year, billions of dollars are spent on controlling and trying to cure cough while the real effect of cough medicines is not quite reliable. Even though PPC is reported to account for only 11–25% of all cases of chronic cough and it is not associated with disability and mortality, it can cause morbidity and is responsible for medical costs..."

● This study adds to a rapidly growing body of biomedical research that indicates the power and potency of natural substances including spices, herbs, vitamins and foods. Not only are they being found to be equally as effective, but also superior in efficacy when compared to synthetic drugs – not to mention the fact that they are almost always less expensive!

The recipe used in the study is easy to prepare at home:

### Honey/Coffee Cough Syrup:



The recipe used in the study involved making a big batch of syrup using 500 grams of honey and 70 grams of instant coffee mixed together. Then, one table-spoon of this pasty syrup was dissolved into one cup of water every 8 hours for one week.

This translates to about 1.5 cups of honey mixed with about  $\frac{3}{4}$  cup of instant coffee.

If you choose to make a big batch like they did in the study, then use 1 tablespoon of this mixture per cup of water. If you want to make individual doses to dissolve into water one cup at a time, use 1 tablespoon of honey to 1.5 teaspoons of instant coffee.

## Gastrointestinal System

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**T**he gastrointestinal (GI) tract is essentially a long tube that is responsible for digestion, absorption and elimination. Foods are broken down into nutrients that can be absorbed to support life, and the leftovers get eliminated.

The GI tract is commonly divided into two sections. The upper GI tract includes the esophagus, stomach, and the upper part of the small intestine called the duodenum. The lower GI tract includes the rest of the small intestine and the entire length of the large intestine. Because of its role as the entry point for food and nutrition, problems within the GI tract can often be at the “root” of many different medical problems that cause symptoms both inside and outside of the GI system itself.

**Acid reflux disease:** Although there is minimal published scientific data to support the use of honey in the treatment of acid reflux, it is a widely used “folk” remedy for heartburn. I have seen many patients who tell me that honey helps them feel better from intermittent heartburn symptoms. I don’t use honey alone to treat this illness because there are many very useful natural medicine strategies to help improve acid reflux, but I do believe that honey is a reasonable part of a natural treatment plan for heartburn.

Small amounts of candida are normal and don't cause any problems. In fact, it may even play a role in digestion and nutrient absorption. Problems arise when candida populations overgrow and overpopulate... this is known as a yeast infection or candida

Many patients who have overgrowth of intestinal yeast (candida) are advised to strictly avoid all sugar, sweets and simple carbohydrates, including honey. These diets can be very helpful, but they are also very restrictive and difficult to follow. Although honey may not be a stand-alone treatment for intestinal yeast, patients are always thrilled to find out that the inclusion of honey into an anti-candida diet



is safe and should not interfere with their efforts to eradicate candida. Honey is the sweetener of choice for people with intestinal yeast overgrowth... up to 2 teaspoons per day are usually fine.

**Inflammatory bowel disorders:** The most common inflammatory bowel disorders (IBD) are ulcerative colitis and Crohn's disease. Both are serious illnesses that require medical attention. Ulcerative colitis is a chronic recurrent disease involving the colon, which causes inflammation and bleeding. Crohn's disease is also a chronic recurrent disease, but may involve any portion of the gastrointestinal tract and usually causes patchy areas of inflammation.

The exact cause of these conditions is not clear, but there appear to be multiple possible triggers. Genetic influences, autoimmune features, infections, lifestyle factors, stress and diet/nutrition may all play a role.

Inflammatory bowel disease is a serious illness, and most of my patients require a comprehensive "integrative" approach that includes the use of both conventional and naturopathic medicine.

There are many factors to consider when developing a treatment strategy for IBD, but honey can play a role. Based on animal research and on my own clinical experience, honey is the sweetener of choice for patients with ulcerative colitis and Crohn's disease. I suggest up to 1 tablespoon two times per day.

**Cancer:** Cancer is one of the most feared conditions in medicine. Thousands of medical visits occur every day from individuals who are worried that they might have cancer. Most of them simply need reassurance from a doctor, but unfortunately, sometimes they're right, and they need more than just reassurance. There are well over 100 different types of cancer, which can affect virtually every cell type. Damaged cells divide uncontrollably to form masses called tumors, which



can grow and spread and impair the function of the system that they invade. It is widely known that eating well, avoiding carcinogenic exposures (like tobacco smoke), and regular physical activity can reduce the risk of cancer substantially. And the old adage is certainly true when it comes to cancer: “an ounce of prevention is worth a pound of cure.”

Honey has been the subject of significant research in the field of oncology. Much of this research is “in-vitro” work... studies on cancer cells in a petri dish or test tube in a laboratory setting. There are also some early animal studies and a fair amount of research using honey to help decrease the adverse effects of a number of different conventional cancer treatments.

**Colon cancer:** There is evidence that honey plus ginger can have an anti-cancer effect on colon cancer cells in-vitro. Although there is no reliable evidence demonstrating that this effect remains true in human clinical trials, it is reasonable to include honey as the sweetener of choice in patients with colon cancer.

**Leukemia:** In-vitro and animal research has demonstrated that honey has anti-proliferative and apoptotic effects. This essentially means that it can inhibit the growth of leukemia cells. Although there is no reliable evidence demonstrating that this effect remains true in human clinical trials, it is reasonable to include honey as the sweetener of choice in patients with hematologic (tumors that affect blood, bone marrow and lymph nodes) malignancies like leukemia.





**Radiation in head and neck cancers:** One of the most unpleasant side effects of radiation therapy in head and neck cancers is a problem called mucositis, or inflammation of the mucous membranes in the mouth, nose or throat. There are conflicting reports of the value of topically-applied raw honey in this painful condition. There are other useful therapies to both treat and prevent this painful condition, but it is reasonable to include a direct topical honey application to the site of the radiation damage 2-3 times daily.

**Breast cancer treatment:** There is some laboratory and animal research that suggests that Tualang honey (from Malaysia) can suppress the growth of breast cancer cells. Although there is no reliable evidence demonstrating that this effect remains true in human clinical trials, it is reasonable to include honey as the sweetener of choice in patients with breast cancer.

**Intravenous chemotherapy lines:** When an intravenous line is inserted for the purpose of administering medication or chemotherapy, one of the concerns is infection at the entry point of the line. Studies have demonstrated that application of sterile medical grade honey (Surgihoney) directly at the site of the line can prevent or eradicate vascular line-site infections.

“ Concerning the generation of animals akin to them, as hornets and wasps, the facts in all cases are similar to a certain extent, but are devoid of the extraordinary features which characterize bees; this we should expect, for they have nothing divine about them as the bees have. ”

~ Aristotle 384 BC - 322 BC



## Part II Honey and Bee Questions and Answers

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### **Question:** Can I give honey to my child?

Despite all of the amazing benefits of honey, it should not be used on children under 1 year of age. This recommendation is based on the possibility of infants developing a rare but very serious condition called infantile botulism. The micro-organism that causes this potentially fatal condition has been found in small amounts in selected honey samples all over the world. A mature immune system is not vulnerable to this low level exposure, but the immature immune and gastrointestinal systems of an infant make babies much more vulnerable. Infantile botulism is a real and serious disease that is associated with the consumption of honey by babies, and the recommendation to avoid honey and honey-flavored products until after age one is wise.

### **Question:** How much honey should I take daily?

Unless you are using honey to treat a specific problem, most people can safely enjoy 2-3 teaspoons of honey per day. I add about 1 teaspoon to my coffee or tea.

### **Question:** Does cheap honey found in the grocery store do the same thing as raw, unpasteurized honey?

Absolutely not! The inexpensive honey that is found on store shelves is a far cry from raw, unfiltered, unpasteurized honey from a local beekeeper. Just like many highly processed food products, the contents of that cheap honey scarcely resembles honey fresh from the hive. Commercial honey products are often heated to high temperatures, filtered, and sometimes even adulterated with added color, flavor and even other sweeteners. This processing is used to remove tiny particles, including pollen grains, helps to keep the honey from crystallizing and maintains the color and clarity that consumers often prefer. I prefer and advise people to buy minimally processed local honey.

### **Question:** If honey does not go bad, why does it have a “best before” date?

When it comes to expiration or “best before” dates, honey really is an exception. Honey that is properly stored in a sealed container is stable for decades (and even centuries). Over time, even properly stored honey may change color and flavor, but it does not “go bad” in a way that is dangerous. Always use a clean utensil to remove honey from the jar. If you're like me, there is never any concern about honey going bad, because I polish it off quick!

### **Question:** Can I use honey if I have diabetes?

Although it may come as a surprise, newer research has suggested that in addition to all of the important nutritional do's and don'ts for diabetes, moderate amounts of honey can be used safely in diabetic patients. There do appear to be some individual differences in the way diabetics respond to the addition of

honey. So, in my diabetic patients who follow an otherwise healthy diet, I recommend that they consider adding up to one tablespoon of honey per day (usually in coffee or tea) and measure and track how their blood sugar responds.

### **Question:** Is it true that the government is using bees to sniff out bombs?

It's true that bees and wasps have been studied for inclusion in the bomb squad. Although they are not widely or routinely used for this purpose, it is quite clear that bees and wasps are indeed capable of being trained to detect explosives.

### **Question:** Do bees poop in their honey?

Honey is not made of bee poop. Although bees do indeed poop (just like everybody else), they generally do this away from the hive where the honey is produced. Bees eat the honey they make... would you poop in your kitchen? Hopefully not! And in case you were worried, honey is not made of bee vomit either.

### **Question:** Can I give honey to my pets?

Yes! Integrative veterinarians use honey in pets for many of the same problems for which it is used for in humans. Allergies, respiratory problems and skin problems can all be good indications for honey in household pets. Honey should be avoided in baby dogs and cats under 6 months old. Beyond that, raw, local honey can be used externally on skin and internally at a dose of about  $\frac{1}{4}$ -  $\frac{1}{2}$  teaspoon per 20 pounds of body weight.

### **Question:** Will eating too much honey rot my teeth?

There is some evidence that manuka honey may actually help prevent dental plaque and decay because of its antibacterial properties. This is an interesting finding indeed, but I would not start brushing your teeth or rinsing your mouth with honey just yet. Eating well and brushing and flossing your teeth are still the most important ways to take care of your teeth.

### **Question:** Can I be allergic to certain types of honey?

Yes. People can indeed be allergic to honey, and ingestion of honey by these individuals can be dangerous. Studies have been performed in these individuals to identify what components of the honey may be inducing the allergic reaction. The results suggest that honey allergy can be caused by:

1. Components related to bee venom that “cross react” in people who are also allergic to bee stings.
2. Pollen grains in the honey that individuals are allergic to.
3. Components in the honey itself, independent of the bees that made it or the flower that it was made from.

### **Question:** If honey bees collect pollen from genetically modified plants and honey is made from it, will it hurt me?

Unfortunately, the only way I can answer this question truthfully is to say... I don't know. It is very difficult (basically impossible) for beekeepers to prevent their bees from collecting pollen from fields growing GM crops. Therefore, the pollen from those crops can and does wind up in the honey. Pollen from GM crops has



indeed been found in honey and this concerns me greatly. The health effects from consuming this GM pollen in honey are unknown. This is yet another reason to buy locally-produced honey rather than the large scale, commercially produced kind.

### **Question:** How do I use honey as a sugar substitute in cooking or baking?

Honey is sweeter than sugar, so the general rule is to use about half as much honey as you would sugar (ie. If a recipe calls for 1 cup of sugar, use ½ cup of honey). Since honey is a liquid, you must also decrease the liquid content in the recipe if you substitute honey for sugar. For each cup of honey that is used in a recipe, reduce the other liquid in the recipe by ¼ cup. Also, when baking with honey, it is generally a good idea to reduce the temperature by about 25 degrees.

### **Question:** My honey turned cloudy and thick...is it ok?

Yes. Your honey has crystallized, but it is perfectly fine. Crystallization is a natural process that results when the sugars in honey separate from the liquid portion. In some ways, crystallized honey is easier to use and less messy than the liquid. However, if you prefer liquid honey, try gently heating the honey in a warm water bath and stirring until the crystals dissolve.

### **Question:** The honey I just bought looks and tastes different than the honey I'm used to.

Honey is a natural product and there are many factors that influence its aroma, flavor, color and clarity. Each honey is unique... enjoy the subtle differences from batch to batch.

## The True Liquid Gold

Honey is truly a gift that has earned its reputation as 'liquid gold.' After reading this book, it should be evident that honey is not just a sweet and delicious treat - it is also a nutritionally dense food with amazing therapeutic value.

It should also be clear that bees work very, very hard all day long to collect enough pollen to make honey - they are, in many respects, working for us. We should have the utmost respect for these insects and the work that they do. This realization may cause you to become sensitive to the things that are threatening the health and vitality of our world's bees.

**Enjoy honey and all it has to offer!**



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