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The Story of

What Is Honey?

What is honey?

Much more than it seems to be I think.

Aristotle called it the nectar of the gods. And 2400 years ago the prophet Isaiah said the Messiah would come eating honey so he might grow up knowing what was good.

Honey is certainly more than a simple jar sitting solidly on a grocery shelf.

It is the soul of a field of flowers.

It is a child with a sticky piece of toast learning that suddenly fingers taste good.

It is an unforgettable bear named Pooh pursuing a sweet obsession in a book a long time ago.

It is a going away gift for a Pharaoh on a journey into the hereafter – as everlasting as the gold ornaments that accompanied it.

Honey is Sunday breakfast with funnies and waffles and plates you'll clean up later.

It's the only justification you can think of for sweet potatoes – and still a good reason to lick your knife (when you're alone).

It's school days and paper sacks and thank goodness it's not egg salad again.

In a world of fastfoods and non-dairy creamer and artificial ingredients, it's the little plastic cup full of gold that somehow got overlooked when "progress" passed through.

Honey is the chapter they forgot to write in the book called "In Pursuit of Excellence." Yet its making is a marvelous work of nature that makes the best factories of man look disorganized, lazy and of very little real value.

Honey is the glow of beauty on the faces of striking women.

The touch of healing in a thousand remedies around the earth.

It is sweetness and life and its golden touch enhances our days from the beginning to the very end. And when at last the years have streaked our hair with gray and phrases like "darling" and "lambie pie" don't fit anymore, it is the one expression of pure affection that never wears out between us, "honey I love you."

Because honey itself is indeed synonymous with love itself. A beautiful blessing created in a mysterious way. An expression of love and a special gift to man.



A dictionary would define honey as the sweet liquid made by honey bees from the nectar of plants. Yet honey is so much more. One of man's earliest foods and valued throughout civilizations, honey has stirred the imagination through the ages.



The Busy Bees

Honey bees are the only insects that produce a food source for humans. Honey is produced in one of the busiest yet most efficient factories in the world — a beehive.

Honey bees are social insects with a marked division of labor among the various bees in the hive. A colony contains one queen, 500 to 1,000 drones and about 30,000 to 60,000 workers.

The matriarch of the colony is the queen. Nurtured on a special diet of royal jelly, the queen is the only sexually developed female in the hive.

A few days after hatching, the queen mates with drones in flight. The drones, which are stout male bees that lack stingers, fulfill their single purpose in the colony by mating with the queen.

During this "mating flight," the queen receives millions of sperm cells that last her entire life — often two years or more. A productive queen will lay up to 3,000 eggs in a single day.

The sexually undeveloped female bees perform the work of the colony. Once hatched, these worker bees do a sequence of jobs — cleaning the nursery, caring for and feeding the larvae, collecting nectar, making wax comb, guarding the hive and fanning their wings to keep the hive cool.



A foraging honey bee visits yellow sweet clover. Clover is the most common floral source for honey in the United States.

To make a pound of honey, worker bees must forage nectar from millions of flowers. To communicate the

Pollination – The Bees' Second Shift

In addition to gathering nectar to produce honey, honey bees perform another vital function — pollination of agricultural crops, home gardens, orchards and wildlife habitat.

As bees travel from blossom to blossom in search of nectar, they transfer pollen from plant to plant, thus fertilizing the plants and enabling them to bear fruit. Almonds, apples, avocados, blueberries, cantaloupes, cherries, cranberries, cucumbers, sunflowers, watermelon and many other crops all rely on honey bees for pollination. The U.S. Department of

Agriculture estimates that about one-third of the human diet is derived from insect-pollinated plants and that the honey bee is responsible for 80 percent of this pollination. A 2000 Cornell University study concluded that the direct value of honey bee pollination to U.S. agriculture is more than \$14.6 billion.



Worker bees fill the six-sided cells of the honeycomb with nectar. The wax cells are also produced by the bees.



Honey

Varieties – It All Depends on Where the Bees Buzzed

The color and flavor of honeys differ depending on what blossoms the bees visit in search of nectar. Honey colors range from almost colorless to dark brown and flavors vary from delectably mild to richly bold. As a general rule, lighter-colored honey is milder in taste and darker-colored honey is stronger. Some honey varieties have a distinctive flavor while others have subtle flavor variations.

In the United States, there are more than 300 unique types of honey produced, each originating from a different floral source. Common honey floral sources include alfalfa, avocado, basswood, buckwheat, clover, eucalyptus, fireweed, orange blossom, safflower, tulip

Beekeepers

Beekeeping, as opposed to foraging honey from wild hives, probably began at different times in different parts of the world. Most agree that the first evidence of beekeeping appears in the paintings of ancient Egypt, dating from around 2500 BC.

The U. S. Department of Agriculture estimates that there are between 139,600 and 212,000 beekeepers in the United States. The vast majority of beekeepers (95 percent) are hobbyist beekeepers who manage less than 25 colonies. About 4 percent are part-time beekeepers who keep from 25 to 299 colonies. An estimated 1,600 commercial beekeepers manage more than 300 bee colonies each.



Beekeepers use a smoker to calm the bees, making inspection easier.

Beekeepers work long hours in the spring and summer. They monitor their hives to ensure the colony has a healthy queen and that the colony is clean and free from



Because of the floral sources from which honey originates, no two

diseases. To keep their bees strong, beekeepers must place the hives in locations that will provide abundant nectar sources as well as water. Beekeepers harvest their honey in late spring to early fall, depending on regional

In the fall, beekeepers prepare their hives for winter, ensuring that each hive has adequate honey "left on" (not extracted) to feed the colony.

Many beekeepers also move their hives to warmer states during the winter. About one-half of all commercial beekeepers are migratory beekeepers. Some rent their bees to farmers, moving their hives to pollinate various crops. Others relocate their hives near blossoms for honey production.



Extracting the Sweet Liquid

Fortunately, honey bees normally make more honey than the colony needs. On average, a colony will produce about 80 pounds of surplus honey each year.

To harvest the honey, beekeepers remove the honeycomb frames from each hive. The wax cappings covering the honeycomb are scraped off to expose the liquid honey. Using a honey extractor (typically a centrifuge-type apparatus), the honey is spun out of the comb. The honey then passes through a filter and drains into a storage tank. The honey is often placed in 55-gallon drums and transported to a honey packer. Or, the beekeeper may bottle the



inc... comes in
ms
inc...
whipped
The most
form in the United
States is liquid honey.
Free of any crystals or
wax, liquid honey is
extracted from the
comb in the hive by
centrifugal force,
gravity, straining
or other means.

Whipped honey is
finely crystallized.
Preferred in many
countries, whipped
honey is creamy
and spreadable.

Comb honey is honey
that comes as it was
produced — in the
honey bees' wax comb.

Honey's Antimicrobial Benefits

A review of scientific literature suggests that honey is an effective antimicrobial agent and thus may be an effective dressing for wounds and burns. Antimicrobial agents inhibit the growth of certain bacteria, yeast and molds. Honey is antimicrobial for many reasons, including its high sugar content (that limits the amount of water available to microorganisms to grow), its relatively high acidity (low pH), the presence of organic acids and the presence, in low concentrations, of hydrogen peroxide. When used to treat minor skin injuries, honey may promote healing, prevent scarring and keep the bandage from adhering to the wound.

Honey Composition

Honey is a source of carbohydrates — mainly fructose (about 38.0 percent) and glucose (about 31.0 percent). The remaining carbohydrates include maltose, sucrose and other complex carbohydrates. On average, honey is 17.1 percent water.

In addition, honey contains a wide array of vitamins, such as vitamin B₆, thiamin, niacin, riboflavin and pantothenic acid. Essential minerals including calcium, copper, iron, magnesium, manganese, phosphorus, potassium, sodium and zinc as well as several different amino acids have been identified in honey. (Some of these compounds exist in quantities less than 10 percent of the recommended daily requirement.)

Honey also contains several compounds which function as antioxidants — compounds that may help delay the oxidative damage to cells or tissues in our bodies. Known antioxidant compounds in honey are chrysin, pinobanksin, vitamin C, catalase and pinocembrin.

Research has shown that unlike most other sweeteners, honey contains small amounts of a wide array of vitamins, minerals, amino acids and antioxidants.



Honey and Its Many Uses

Honey is one of nature's most versatile products.

All over the world, honey is enjoyed for its sweet flavor. Honey is commonly used as a spread for breads — from flaky biscuits to nutty whole-grain muffins. It is spooned into teas and drizzled into smoothies. Honey adds richness and body to spicy barbecue sauces and fruity ham glazes. Many restaurant menus include honey mustard salad dressings or honey butters. Honey also is used as an ingredient in a range of manufactured products, from honey graham crackers to honey beers.

In addition to its diverse culinary applications, honey is also used for energy. Research has shown that honey is a good pre-workout energy source, aids an athlete's endurance and helps the athlete's muscles recuperate following a race or workout.

Throughout history, honey has been valued as a food and as a healing product. Many use honey to soothe a cough or sore throat. Because of its antimicrobial properties, honey has also been used in beauty products and in dressings for wounds and burns.

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Honey in
Manufactured

on even
supermark
breads. Honey
als. Honey mustar
Honey shampoos.
Approximately one-
half of honey sold in
the United States is
used in manufactured
products.



Created in 1957, the honey squeeze bear remains a popular container for honey.



Honey is used as an ingredient in more and more manufactured products—from cereals to pretzels. Note: The photograph shows several examples of products with honey as an ingredient. The National Honey Board does not endorse any specific products or their manufacturers.



The National Honey Board

Founded in 1986, the National Honey Board develops and operates programs for non-branded promotion of honey. These programs range from exploration of honey's healthful and healing properties to newspaper press releases to restaurant promotions. The National Honey Board is funded by the honey industry.

To learn more about honey, contact:



National Honey Board

390 Lashley Street / Longmont, CO 80501-6045 / (800) 553-7162

Or visit the National Honey Board Web sites:

www.honey.com / www.nhb.org / www.honeylocator.com

The National Honey Board creates informational and recipe brochures to help consumers, foodservice operators, manufacturers and the media learn more about honey and its many uses.





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