

## HONEY – A Sweet Topic

### OVERVIEW of HONEY and HONEYBEES

Honey is "manufactured" in one of the world's most efficient factories, the beehive. Bees may travel as far as 55,000 miles and visit more than two million flowers to gather enough nectar to make just a pound of honey.

The color and flavor of honey differ depending on the bees' nectar source - the blossoms. In fact, there are more than 300 unique kinds of honey in the United States, originating from such diverse floral sources as Clover, Eucalyptus and Orange Blossom. In general, lighter colored honeys are mild in flavor; while darker honeys are usually more robust in flavor.

Honey is primarily composed of fructose, glucose and water. It also contains other sugars as well trace enzymes, minerals, vitamins and amino acids.

In addition to gathering nectar to produce honey, honey bees perform a vital second function--pollination. About one-third of the human diet is derived from insect-pollinated plants, and honey bees are responsible for 80 percent of this pollination.

Pollination is the fertilization of a flowering plant. It occurs when pollen is transferred from the anthers of a flower to the ovules of that or another flower. Honey bees are responsible for pollinating a variety of fruits, vegetables, legumes and more.

**HONEY can be found in a variety of forms. The form that is carried at The Olive and The Grape is:**

***Liquid Honey*** - Free of visible crystals, liquid honey is extracted from the honey comb by centrifugal force, gravity or straining. Because liquid honey mixes easily into a variety of foods, it's especially convenient for cooking and baking. Most of the honey produced in the United States is sold in the liquid form.

### WHY RAW HONEY?

Our source of Raw Honey, **OHIO HONEY**, is proud to be extracting raw honey the old fashioned way. It is never pasteurized or artificially heated. That is why raw honey has so many health advantages, it retains its vitamins, amino acids, anti-oxidants and minerals.

## BASIC HONEY GLOSSARY

**ANTHER** - The area where pollen is developed and contained in a plant.

**APIARIST** - A beekeeper.

**APIARY** - Where several bee colonies are kept in one place.

**BEEHIVE** - A place where a bee colony dwells.

**BEESWAX** - Secreted wax from the underside glands of the bee abdomen; bees mold the wax to form honeycomb.

**COLONY** - A community of tens of thousands of worker bees, usually containing one queen, with or without drones.

**COMB HONEY** - Honey presented in its original wax comb.

**CRYSTALLIZATION** - Honey is a supersaturated solution. Crystals will develop in honey when glucose crystallizes out of solution. Crystallization of honey is most rapid at 57°F.

**DRONE** - A male bee.

**EXTRACTOR** - A machine that rotates honeycomb with great speed to remove honey.

**HIVE** - A man-made structure for bees.

**HONEY** - The nectar and sweet deposits from plants as gathered, modified and stored in honeycomb by honey bees.

**HONEY BEE** - An insect with three pairs of legs, four wings, a stinger and a special stomach which holds nectar. The honey bee is the only insect that produces food eaten by man.

**HONEYCOMB** - Hexagonal beeswax cells built by honey bees.

**NECTAR** - The sweet secretion from flowers of various plants.

**PISTIL** - A flower's central organ that contains the stigma, style and ovary.

**POLLEN** - The male reproductive cells of flowers. Bees collect pollen to use as food for their young. It is the protein part of a bee's diet.

**POLLINATION** - The fertilization of a flowering plant. The transfer of pollen from the anthers of one flower to the stigma of that or another flower.

**QUEEN** - A sexually developed female bee.

**STAMEN** - The male part of a flower where pollen-producing anther are borne.

**SWARM** - The natural division of a bee colony

**WORKER BEE** - A sexually undeveloped female bee.

## HONEY HISTORY


**BIBLICAL** - The area now comprising Israel and the Palestine autonomous region is often referred to as "the land of milk and honey." (Exodus 3:8)

**ANCIENT EGYPT: 40<sup>TH</sup> CENTURY B.C.** - Honey was used in most households as a sweetening agent. The people of this time valued honey highly, thus, it was commonly used as a tribute or payment. Honey was also used to feed sacred animals.

**GREECE** - An ancient custom was the offering of honey to the gods and to spirits of the dead. Mead, an alcohol drink made with honey, was considered the drink of the gods.

**GERMANY: 11<sup>TH</sup> CENTURY A.D.** - German beer was sweetened with honey. German peasants were required to give their feudal lords a payment of honey and beeswax.

**AMERICAS** - Conquering Spaniards found that the natives of 16th century A D. Mexico and Central America had already developed beekeeping. A distinct family of honey bees were native to the Americas.

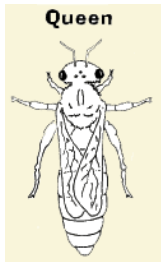
**AMERICAN COLONIES: 17<sup>TH</sup> CENTURY A.D.**  - European settlers introduced European honey bees to New England in about 1638. North American natives called these honey bees the "white man's flies."

Honey was used to prepare food and beverages, to make cement, to preserve fruits, to concoct furniture paste-polish and varnish and for medicinal purposes

## HONEY FACTS

Honey bees' wings stroke 11,400 times per minute, thus making their distinctive buzz.

Honey bees are social insects, with a marked division of labor between the various types of bees in the colony. A colony of honey bees includes a queen, drones and workers.



**The queen** is the only sexually developed female in the hive. She is the largest bee in the colony. A two-day-old larva is selected by the workers to be reared as the queen. She will emerge from her cell 11 days later to mate in flight with approximately 18 drone (male) bees. During this mating, she receives several million sperm cells, which last her entire life span of nearly two years. The queen starts to lay eggs about 10 days after mating. A productive queen can lay 3,000 eggs in a single day.

**Drones** are stout male bees that have no stingers. Drones do not collect food or pollen from flowers. Their sole purpose is to mate with the queen. If the colony is short on food, drones are often kicked out of the hive.



**Workers**, the smallest bees in the colony, are sexually undeveloped females. A colony can have 50,000 to 60,000 workers. The life span of a worker bee varies according to the time of year. Her life expectancy is approximately 28 to 35 days. Workers that are reared in September and October, however, can live through the winter. Workers feed the queen and larvae, guard the hive entrance and help to keep the hive cool by fanning their wings. Worker bees also collect nectar to make honey. In addition, honey bees produce wax comb. The comb is composed of hexagonal cells which have walls that are only 2/1000 inch thick, but support 25 times their own weight.

A honey bee taps about 2 million flowers to make one pound of honey.

The average worker honeybee produces 1/12 teaspoon of honey in her lifetime!

A honeybee visits 50-100 flowers in one collection trip.

A honeybee flies at about 15 mph.

It is estimated that bees have been producing honey from flowering plants for 10 – 20 million years.

There are over 211,000 beekeepers in the U.S.

Honeybees have 4 wings.

According to ancient folklore, Greeks and Romans used honey to increase strength and stamina in their athletes. Although honey's benefits in sports were widely embraced by early civilizations, the need to scientifically show the benefits of honey for athletic performance and endurance is very modern.

## HONEY and HEALTH

1. Excerpts from an article posted by The National Honey Board:

### **NEW STUDY FINDS THAT HONEY MAY AID IN ABSORPTION OF CALCIUM**

**Longmont, CO** - A new study conducted at Purdue University showed that consuming honey along with supplemental calcium enhanced calcium absorption in rats. In addition, the absorption of calcium was increased as the amount of honey was increased. The study, led by Dr. Berdine Martin of Purdue University, was presented at the Federation of American Societies for Experimental Biology meeting, April 2-5, 2005 in San Diego. ....

According to the recently released Surgeon General's Report on Bone Health and Osteoporosis (Oct 14, 2004), "By 2020, half of all American citizens older than 50 will be at risk for fractures from osteoporosis and low bone mass if no immediate action is taken by individuals at risk, health care professionals, health systems, and policymakers."

Osteoporosis is often referred to as a "silent" disease because many of those afflicted are completely unaware that they suffer from it. In fact, four times as many men and three times as many women have osteoporosis than report it.

One of the key strategies for reducing the likelihood of developing low bone mass (and subsequent osteoporosis) is to consume the recommended amounts of calcium. It is also important that the calcium consumed be absorbed by the body. Dietary factors that have been shown to enhance the absorption of calcium include vitamin D and the sugars found in honey.

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2. Another excerpt of an article from The national Honey Board:

### **NATIONAL HONEY BOARD TEAMS WITH UNIVERSITY OF ILLINOIS RESEARCHERS, SHOWS THE POTENTIAL OF HONEY AS AN ANTIOXIDANT**

LONGMONT, CO (June 16th, 2002) - The National Honey Board (NHB) today announced that it in partnership with the University of Illinois - Urbana, Food Science and Human Nutrition Department, three significant studies have been completed on the antioxidant activity of honey.

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"These studies further demonstrate the antioxidant activity of honey," said Marcia Cardetti, NHB's director of scientific affairs. "The new research now shows us how honey serves as a natural source of antioxidants in the prevention of oxidative deterioration in foods, as well as proving its potential role in the health of humans."

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3. Yet another from The National Honey Board:

NATIONAL HONEY BOARD PUBLISHES SCIENTIFIC COMPENDIUM  
Research Verifies Honey's Natural Healing Properties

LONGMONT, CO (September 25, 2002) - Humans have used honey for more than 8,000 years according to documented sources. This natural sweetener has been used for everything from healing wounds to soothing coughs.

The National Honey Board has summarized the numerous research studies conducted on honey in a published compendium titled "Honey - Health and Therapeutic Qualities."

The new 28-page document sets the foundation with a narrative of honey's history including references dating as far back as 460 BC with Hippocrates applying honey as a wound healer. Other research includes honey's antimicrobial characteristics and the positive effects on disorders such as ulcers. The antimicrobial properties as they apply to food safety and food-borne pathogens are also outlined.

An emerging area of research for the National Honey Board concerns honey as a source of energy. Conclusions in the compendium note that honey "potentially offers many of the performance advantages of the sports beverages and gels that are commonly used by athletes."

Additional research topics that are presented in the compendium include antioxidant activity including its use for food preservation and human health, prebiotic properties and other areas currently under investigation, including dental health.

## **HONEY STORAGE and TIPS for USING HONEY as a SUBSTITUTE SWEETENER**

### **Substitution and Usage Tips**

To substitute honey for sugar in recipes, start by substituting up to half of the sugar called for. With a little experimentation, honey can replace all the sugar in some recipes.

When baking with honey, remember the following:

- Reduce any liquid called for by 1/4 cup for each cup of honey used.
- Add 1/2 teaspoon baking soda for each cup of honey used.
- Reduce oven temperature by 25°F to prevent over-browning.

Because of its high fructose content, honey has a higher sweetening power than sugar. This means you can use less honey than sugar to achieve the desired sweetness.

When measuring honey, keep in mind that one 12-ounce jar of honey equals a standard measuring cup.

When measuring honey, coat the measuring cup with non-stick cooking spray or vegetable oil before adding the honey. The honey will slide right out.

## Honey Storage Tips

To retain honey's wonderfully luxuriant texture, always store it at room temperature; never in the refrigerator. If your honey becomes cloudy, don't worry. It's just crystallization, a natural process. Place your honey jar in warm water until the crystals disappear. If you're in a hurry, place it in a microwave-safe container and heat it in the microwave on HIGH for 2-3 minutes, stirring every 30 seconds. Remember, never boil or scorch honey

Thanks to The National Honey Board for the above health related articles and glossary.

The Olive and The Grape is proud to carry Raw Honey and Bee Pollen from **Ohio Honey**. (Note: This bee pollen is guaranteed to be locally collected and packaged without any chemicals or additives!) Ohio Honey is also our source for the convenient Honey Stix (or Honey Straws as many call them. Honey Stix are a quick, natural energy source, as well as a convenient and neat way to add honey to your favorite beverage – portable, too! Ohio Honey is our exclusive source for Raw Honey, Bee Pollen and Honey Stix.

The Olive and The Grape is also proud to carry exclusive designs of beeswax wall and Christmas ornaments. (Natural and Pigmented varieties available.)