



All About HONEY

Culinary Medicine Symposium

Dairy Council of California

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What we will cover

- What is HONEY?
- The Honey Bee
- Honey Tasting
 - Adding cheese!
- Labeling distinctions
- Healing attributes
- Busting a myth



WHAT IS HONEY?

Honey is the substance made when the nectar and sweet deposits from plants are gathered, modified and stored in the honeycomb by honey bees.

National Honey Board

ALL honey is considered natural

.



Honey composition

Invertase converts the sucrose of the into the more stable Fructose and Glucose.

The Composition of a Typical Honey

	% by weight		% by weight
Water	17	Other	7
Fructose	38	Higher Sugars	1.5
Glucose	31	Acids	0.6
Sucrose	1.5	Minerals	0.2

"On Food and Cooking"; Harold McGee

Average composition of U.S. Honey and Ranges of Values

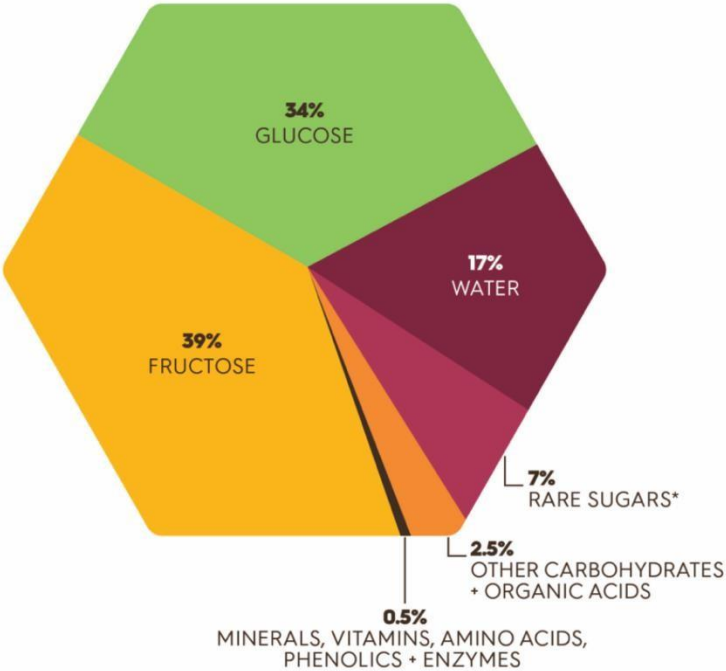
Component	Average	Standard Deviation	Range
Moisture	17.2	1.5	13.4-22.9
Levulose (fructose)	38.2	2.1	27.2-44.3
Dextrose (glucose)	31.3	3	22.0-40.7
Sucrose	1.3	0.9	0.2-7.6
Maltose	7.3	2.1	2.7-16.0
Higher Sugars	1.5	1	0.1-8.5
Total Acid (gluconic)	0.57	0.2	0.17-1.17
Ash	0.17	0.15	0.020-1.028
Nitrogen	0.01	0.026	0.0-0.133
PH	3.9		3.42-6.10

White, Riethof, Subers & Kushnir, 1962

"Honey"; Eva Crane, 1975

HONEY'S COMPOSITION

Percent by Weight



*Includes turanose, isomaltulose, nigerose and kojibiose among others sugars with unique metabolic activities. Most are considered non-cariogenic (do not promote tooth decay)

Individual products vary. Data shown are averages from Zhu, Y, et al. *J Food Bioact* 2024;25:25-41. <http://www.isnff-jfb.com/index.php/JFB/article/view/357>

Nutrition Facts

16 servings per container
Serving size 1 Tbsp. (21g)

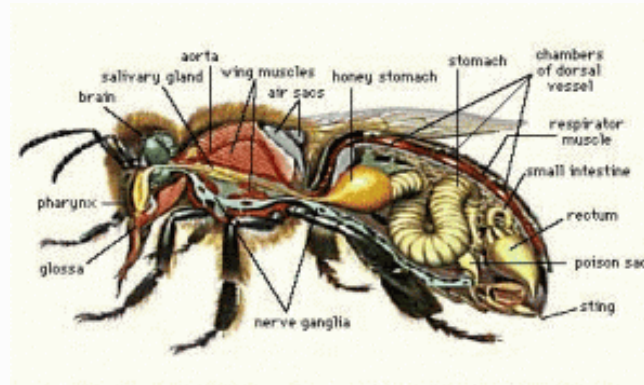
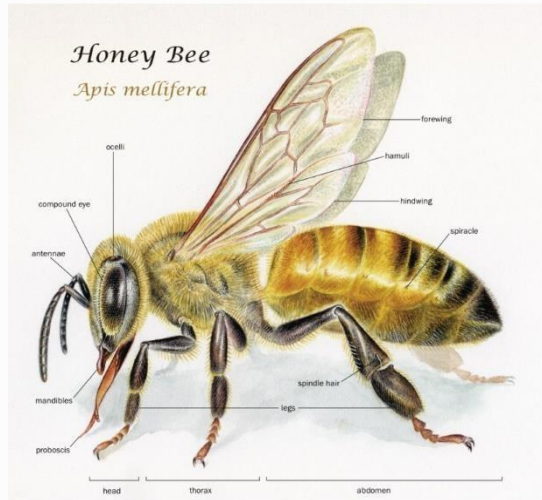
Amount per serving
Calories 60

	% Daily Value*
Total Fat 0g	0%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 0mg	0%
Total Carbohydrate 17g	6%
Dietary Fiber 0g	0%
Total Sugars 17g	34%
Protein 0g	
Vitamin D 0mcg	0%
Calcium 0mg	0%
Iron 0mg	0%
Potassium 0mg	0%

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

National Honey Board

The Honey Bee



Native Bees



Making Honey

- Worker bees are females. They do all the work in a hive – brood rearing, pollen and nectar collection, cleaning and nursing.
- A honey bee gathers nectar from an assortment of flowers. Nectar is very high moisture – About 80% water.
- A worker bee's tiny body is capable of carrying half her weight in nectar.
- While in flight, nectar is mixed with the enzyme invertase.



Back in the hive



- Bees pass the nectar one to another reducing the moisture to about 50%
- Next the worker bee deposits small droplets of nectar into various parts of the cell. Bees fan the nectar dehydrating it to about 17-18% moisture. Now it has become thick, sweet honey.

Honeys of North America



Northern California Wildflower



Wildflower Honey is a natural blending of everything that blooms in the area. In the Springtime in Northern California, it will include almond, orange, vetch, chicory, star thistle and many others...

Mono-Varietal Honey

- Single floral Source – Not blended
- Packing and Labeling issues
 - US guidelines allow single varietal honeys to be blended

Eg: *Orange Blossom Honey* can be

27% orange blossom
25% wildflower
25% cotton
23% alfalfa

Clover Honey can be

27% clover
25% wildflower
25% cotton
23% alfalfa



Orange Blossom



Orange Blossom Honey may include nectar collected from oranges, lemons, limes and grapefruit. The correct name should be Citrus Honey.

Also collected in Florida, Italy, Spain, Southern France, Israel and other Mediterranean climate areas.

Terms Used for Honey

NONE of these terms are regulated

Unheated: We assume this means the honey has not been 'over heated' or pasteurized

- Temperature in a beehive is between 95° - 125°

Unfiltered: All honey must be filtered enough to remove dirt, wax and bee parts.

Some honeys are filtered through paper baffles

Some through mesh screens of varying sizes

Some is minimally filtered and settled

Raw: Assumed that the honey has not been heated or filtered



Organic and Non-GMO Certification

Organic:

No honey produced in the continental United States is certified organic.

Some comes from Big Island of Hawaii

IF a honey carries the USDA LOGO

it is supposed to have the country of origin NEXT to it in the same size type

Honey is Intrinsically NonGMO:

No honey produced in the United States is certified CERTIFIED NonGMO

Honey is not a plant and cannot be genetically modified.

Natural: ALL honey is considered natural



Coriander



Grown as a seed crop in Northern California, coriander honey is also collected in Romania and Italy

Ancient History: Honey for Healing

- Sumerian cuneiform tablets from 3000 bce
 - Use of honey for treating skin ulcers
 - A prescription using river dust, water, honey and oil.
- Egyptian papyrus from about 2000 bce
 - Edwin Smith Papyrus
 - Use of honey for medicinal purposes
- Aristotle in 350 bce
 - wrote about honey being used to treat
 - wounds and sore eyes



Health Benefits of Honey

Honey for Healing Today

- Soothes sore throats*
 - Hot Honey and Lemon
 - Viscous quality of honey coats the throat
- Used to treat burns
- Used in bandages for scrapes
- Used in veterinary medicine for bandages
 - Scraped horses shins can be bandaged in honey to promote healing



³ National Honey Board, "Nutritional Benefits of Honey." Sept 2008.

⁴ Paul IM, et al. [Effect of honey, dextromethorphan, and no treatment on nocturnal cough and sleep quality for coughing children and their parents](#). Archives of Pediatric and Adolescent Medicine, 161(12)

⁵ Cohen HA, et al. [Effect of honey on nocturnal cough and sleep quality: a double-blind, randomized, placebo-controlled study](#). Pediatrics, Vol 130, Number 3

Anti-Oxidants in Honey

One largely unexplored attribute of honey of potential dietary significance is its antioxidant content.

Pro-oxidant chemicals in the diet or in the environment can generate toxic oxygen radicals that cause DNA damage (Holmes et al., 1992; Ames et al., 1993); such damage can lead to a wide variety of age-related pathologies, including arthritis, strokes, and some cancers (Peto et al., 1981; Cross et al., 1987; Schwartz et al., 1988; Temple & Basu, 1988).

Antioxidants, which are compounds that can reduce oxygen radicals and thus counter their toxic effects, are commonly used to treat or lessen the incidence of these conditions. Honey has been successfully used as a treatment for cataracts and other eye ailments, wounds and burns, and ulcers and other gastric ailments, ostensibly because of its antimicrobial and hygroscopic properties (Iyrysh, 1974).

TABLE 1. Water content (%), colour (mm Pfund units), and antioxidant content (microequivalents based on ascorbic acid) of different unifloral honeys.

Honey	Year	% water	Pfund colour (mm)	Antioxidant content ($\times 10^{-3}$ μ eq.)*
CA sage	1994	14.2	6.18	21.3 (2.4)
CA sage	1995	13.4	3.60	23.8 (6.4)
AZ mesquite	1994	15.0	7.10	28.9 (1.1)
WA fireweed	1994	16.0	4.46	31.2 (0.4)
CA eucalyptus	1994	15.5	8.83	31.0 (0.6)
CA yellow star-thistle	1995	14.8	3.93	36.5 (3.2)
CA orange	1995	14.9	4.62	38.0 (8.5)
CA orange	1994	14.3	5.75	41.3 (2.5)
IL soya-bean	1994	17.7	7.10	44.9 (1.4)
IL soya-bean	1995	18.6	8.23	45.2 (0.7)
IL clover	1994	14.2	7.85	50.7 (1.2)
MT sweet clover	1994	14.2	3.50	52.7 (1.2)
HI lehua	1995	15.0	8.53	73.1 (22.5)
FL water tupelo	1994	16.7	10.50	111.6 (29.8)
FL water tupelo	1995	17.8	5.13	121.6 (12.9)
HI christmasberry	1995	17.9	10.83	138.9 (0.5)
HI christmasberry	1994	17.2	10.12	147.0 (5.5)
CA sunflower	1994	16.6	12.40	169.7 (3.8)
IL buckwheat	1995	18.4	15.00	432.0 (6.0)

*values are means, with standard errors in parentheses

S Frankel, G E Robinson & M R Berenbaum (1998) Antioxidant capacity and correlated characteristics of 14 unifloral honeys, Journal of Apicultural Research, 37:1, 27-31,

Honey in Action



UC Davis veterinarian, Jamie Peyton, chief of integrated medicine at the UC Davis Veterinary Medical Teaching Hospital, came up with an innovative solution to what could have been a long convalescence: sterilized tilapia skins that aid in healing and act as protection. The animals also were treated with burn salve Peyton makes from honey, olive oil, coconut oil and beeswax.

Myth: Local Honey will cure my Allergies

- FACT: Honey - any kind of honey - will soothe your throat just like it will for a sore throat.
 - This creates the illusion that it works!
- FACT: Most allergies last about 10 days to 2 weeks
 - When they are gone - people assume it was because of the honey.
- FACT: Most of the things to which we are allergic do not have pollens that bees collect.
 - Think ragweed, timothy, etc.
 - Bees do collect from goldenrod and an assortment of flowering trees
- FACT: The amount of pollen that naturally occurs in honey is minute - not enough to move the needle!

Soooooooo....



Why do people swear by it?

Placebo Response

Approximately 25%-30% in medication trials for allergic rhinitis

1/3 people who tried honey or bee pollen find it helpful or curative

Mind-body connections can affect multiple diseases



Freepik

For More information, refer to the American Academy of Allergy, Asthma and Immunology

aaaai.org

Rajan TV, Tennen H, Lindquist RL, Cohen L, Clive J. Effect of ingestion of honey on symptoms of rhinoconjunctivitis. Ann Allergy Asthma Immunol. 2002 Feb;88(2):198-203. doi: 10.1016/S1081-1206(10)61996-5. PMID:

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