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PROCESSING OF HONEY

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Honey is a sweet product produced by honeybees from the nectar of plants (Blossom Honey) or from the secretion of living plants or secretion of insects (Honeydew Honey). Bees collect, deposit, dehydrate, store and leave in the honeycomb to ripen and mature. The EU directive defines honey as "The natural sweet substance produced by *Apis mellifera*". It possesses a range of advantageous pharmacological actions, including antibacterial, anti-inflammatory, antimutagenic, antioxidant, and prebiotic characteristics. The antioxidant properties of honey are provided by flavonoids, phenolic acids, organic acids, enzymes, and other small components. The floral sources, seasonal and environmental factors, processing procedures, and storage conditions all affect the composition and antioxidant activity of honey.

HONEY CATEGORIES

- **Blossom Honey** – It is obtained predominantly from the nectar of flowers
- **Drained Honey** – It is obtained by draining decapped broodless combs.

*A single
beehive
can
make
more
than
100
pounds
(45 kg)
of extra
honey
per year*

- Chunk Honey - It is honey containing one or more pieces of comb honey.
- Creamed Honey - It has a fine crystalline structure and may have undergone a physical process to give it that structure and to make it easy to spread.
- Extracted honey: It is obtained by centrifuging decapped broodless combs.
- Pressed Honey: It is honey obtained by pressing brood with fewer combs with or without the application of moderate heat.
- Organic honey: It is produced by apiaries with certified organic beekeeping. The composition of organic honey is the same as normal natural honey. The only difference is that such honey should not contain toxic residues of pesticides used in agriculture and beekeeping.

HONEY PROCESSING

The different unit steps of honey processing are shown in the flow diagram Fig. 1

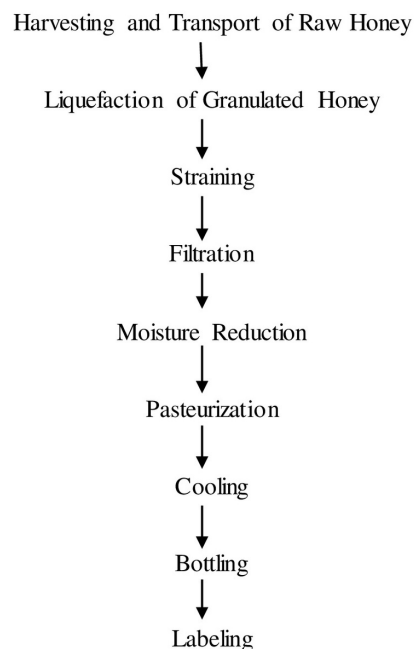


Figure: 1 Flow Diagram of Honey Processing

*Honey
bees
are the
only
insects
that
produce
a food
product
for
humans*

Harvesting and Transport of Raw Honey

Honey should not be harvested on days that are rainy or when the relative humidity is high since the honey would become moister. When harvesting, it is important to take care not to smoke the honeycombs directly; instead, use a bee smoker distance from the honeycomb frames and only use a little amount of smoke. These steps are taken in order to reduce the amount of smoke that gets incorporated into the honey. A long-handled uncapping fork is used to scrape the caps off of both sides of honeycombs that are at least two-thirds capped and place them on a capping tray. The honeycombs are placed within an extractor, a sizable drum that draws the honey out using centrifugal force. To avoid combs breaking, the extractor is started at a low speed. The honey is put into buckets or drums made of food-safe polypropylene before being transported to an industrial processor.

A hygienic procedure must be applied to the vehicle used to transfer the honey to the processing location. The vehicle must not have recently transported any materials that could have left a poisonous residue or another kind of offensive stench. Long distance transportation and leaving honey buckets outside before processing may cause quality to decline because they may cause a rise in hydromethyl furfural and a reduction in diastase activity.

Liquefaction

The majority of pure raw, unheated honey naturally crystallises over time. Some honey crystallises uniformly, while others partially crystallise and separate into two layers with the liquid layer on top and the partially crystallised layer at the bottom of the jar. The size of the crystals that form in honey also varies. Due to granulation, high viscosity at low temperatures, and the presence of yeast, heating is the most used honey processing technique.

*Nectar as
gathered
by the
honey bee
contains
about
70%
water
(Honey is
about
17%
water)*

The Codex Alimentarius and other honey regulations state that heating honey would severely lower its quality. Liquefaction is carried out to lessen honey's exposure to heat. It depends on how much glucose is present in the honey and in crystal form. Uncontrolled heating alters the parameters such as hydroxymethyl furfural (HMF) amount and diastase activity unfavourably.

Straining and filtration

As per the European Directive, filtered honey is obtained by removing foreign inorganic or organic matter in a way that results in the significant removal of pollen. Filtered honey is defined by the Codex Alimentarius as honey that has been filtered in a manner that reduced the pollen greatly. Small-scale straining is accomplished with cotton or nylon bags that are regularly cleaned to get rid of dispersed particles. On large scale, the jacketed tank equipped with a stirrer is used combined with preheating (up to 40°C). Pressure filters are used to continue processing the strained honey. Typically, an 80-micrometre polypropylene microfilter is used as a filter. The beeswax does not melt since the honey is kept at a temperature of 50 to 55 °C. Prior to filling, large-scale processors subject honey to coarse, fine, centrifugal, and blended filtration. Filtration needs to be done properly in order to keep the required amount of pollen in the honey.

Moisture Reduction

One of the most crucial factors determining the quality of honey is moisture. Due to the extraction of unripened honey, the majority of extracted honey has greater moisture levels than the recommended norms. The amount of water in honey affects its resistance to granulation and fermentation. High water content honey readily ferments over time. Therefore, it is required to thermally process the honey in order to stop sugar-tolerant yeasts from fermenting it.

*Honey is
sweeter
than sugar.
A teaspoon
of honey
has 5
grams of
sweet
sugar,
while a
teaspoon of
granulated
sugar only
has 4
grams of
sweet
sugar.*

The equipment used to reduce moisture includes the following:

(I) Dehumidifier - Reduce relative humidity at a temperature usually 45°C.

(II) Honey Dehumidifier - is designed for small beekeepers who do not need to work on large quantities of product.

Pasteurization

Honey can be consumed pasteurised or unpasteurized. Bacteria cannot survive in honey because of its high acidity and low humidity. In the interest of quality, honey is pasteurised. The process of pasteurising honey delays granulation and lowers the likelihood of fermentation. There are several potential temperature and time combinations. The honey should be heated to 63°C for 30 minutes, 65.5°C for 30 minutes, or even temporarily raised to 77° C before being quickly cooled.

Bottling

Honey may be directly bottled into small containers for retail sale or into big barrels for storage or export to other countries, depending on the market need. Honey is packaged in a variety of sizes and styles in an effort to appeal to a wide range of consumers. Glass, plastic, honey tubs, and even squeeze bottles are examples of these. The nucleation and crystallisation of honey can be triggered by the presence of air bubbles in the container. Due to its poor viscosity, honey is typically filled into bottles at a high temperature to prevent air bubbles and air inclusion during packaging.

Labelling

The term "Honey" or perhaps a description of a floral source, such as "Mustard Honey," appears on the label of a honey jar in a retail establishment.

*A single
honeybee
only
produce
approx-
imately
1/12
teaspoon
of honey
in her
lifetime.*

The net weight, the seller's name, and address must be prominently shown on the label. Additionally, it should say if the honey has been pasteurised or is creamed liquid.

VALUE-ADDED PRODUCT OF HONEY

Mead is an alcoholic beverage derived from fermented honey. Toddy and soups both contain honey. It gives the soup that is served at room temperature thickness. The cosmetic industry is well aware of the beneficial synergistic effects of honey and milk on skin care, anti-ageing, and the development of stamina. In the baking, cereal, and confectionery industries, honey has several uses. Several researchers created milk powder, honey bread, and other culinary formulations based on honey.

SUMMARY

For better product quality and shelf life, it is necessary to remove yeast, pollens, beeswax, and other unwanted components from honey that has been harvested from combs and apiaries. So, before being placed in bottles or other containers, it is important to process honey. The size of the operation, however, determines the kind of equipment employed and the processing stages taken. Filtration and heating are two crucial processes in the preparation of honey.

REFERENCES

- Subramanian R, Hebbar UH and Rastogi NK 2007. Processing of honey: A review. International Journal of Food Properties, 10(1):127-143.
- Codex Alimentarius Commission 2001. Adopting the draft revised standard for honey. Alinorm 1(25):22-24.
- Gebrehiwot NT 2015. Honey production and marketing: the pathway for poverty alleviation the case of Tigray regional state, northern Ethiopia. ZENITH International Journal of Business Economics & Management Research, 5 (6):342-365.
- Eshete Y and Eshete T 2019. A review on the effect of processing temperature and time duration on commercial honey quality. Madridge Journal of Food Technology, 4(1):158-162.