



BEECOME

*“BEES IN EUROPE, AN EXAMPLE OF CHANGES
OVER MAN AND ENVIRONMENT”*

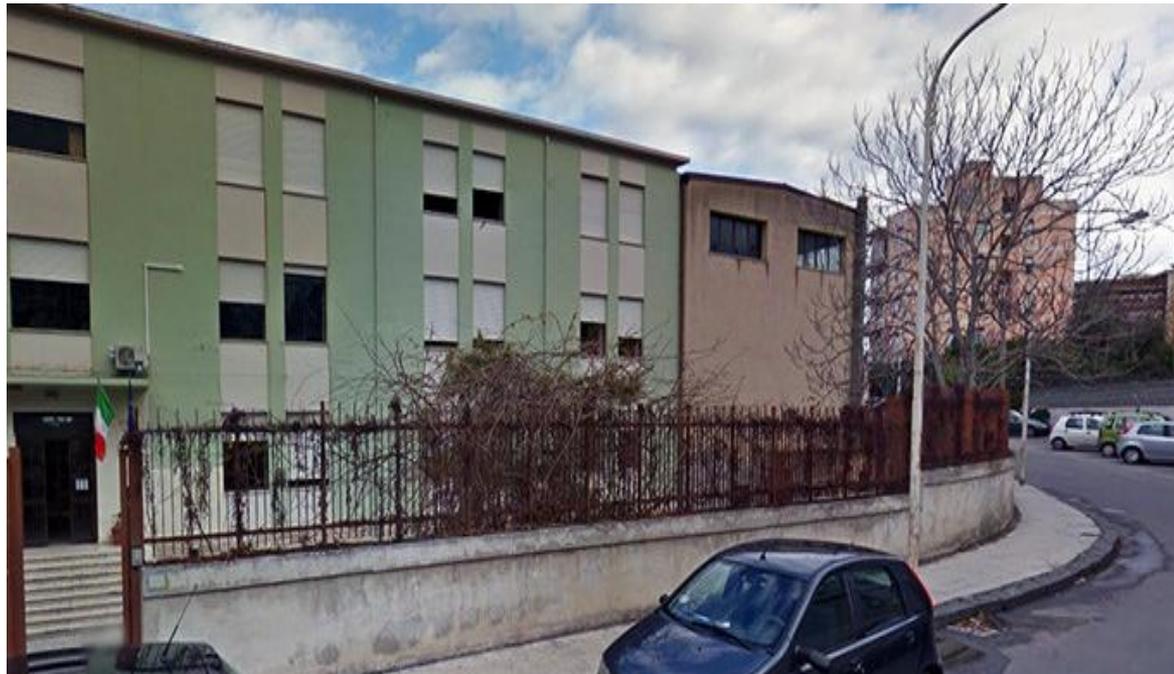


ALL WE ARE SAYING IS GIVE BEES A CHANCE

Programma Erasmus+ Call 2018 - KA2 Partenariati strategici
per gli Scambi tra Scuole -- Codice progetto: 2018-1-FR01-
KA229-048018_2

OUR SCHOOL

Our school is called “V. Bellini” and it’s a place where you can study and develop your talent.



LOGO

Our logo is the winner of the competition



HOW BEES NURTURE THEMSELVES IN NATURE?

Pollen, a powdery dust-like substance, is produced by various flowering plants. Pollen is one of the purest and richest natural foods, containing all of the nutritional requirements of a honey bee: sugar, carbohydrates, protein, enzymes, vitamins and minerals. Nectar is a sweet fluid found in flowers. Honey bees collect nectar and convert it to honey.



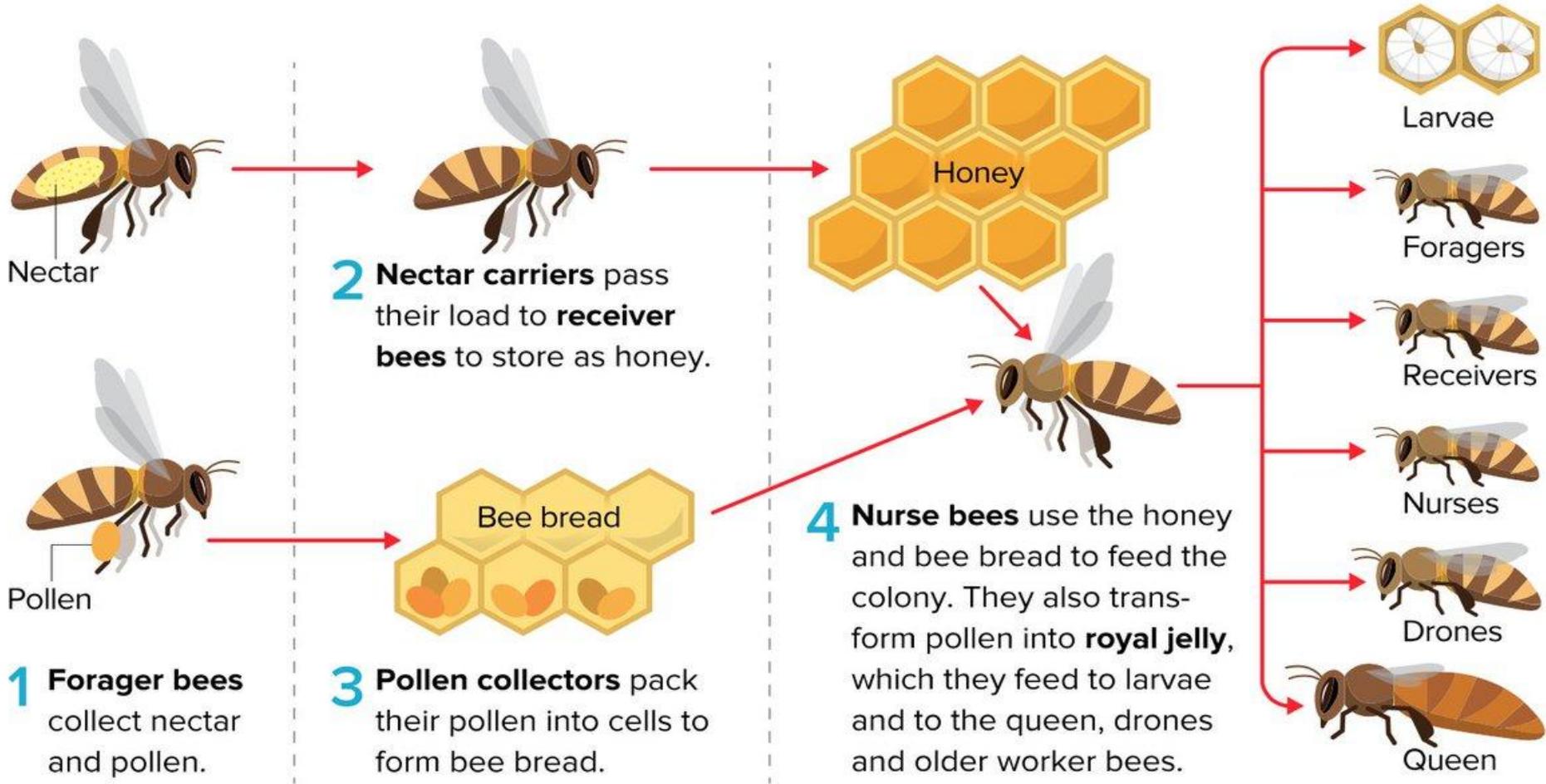
The majority of honey bee larvae eat honey, but larvae that are chosen to become future queens will be fed with royal jelly. Royal jelly is a white secretion produced by young, female worker bees. It is comprised of pollen and chemicals from the glands of worker bees. Royal jelly contains dietary supplements, fertility stimulants and other medicines, as well as B vitamins. Workers and drones are fed royal jelly during the first few days of larval development.

The foraging bees gather pollen from 50 to 1,000 plants a day, depending on how much pollen each plant has, and the bees fly at a speed of 25-50 km/h. 4-5 kilometres far from the hive.



Food for All the Family

When it comes to keeping the colony fed, different bees have different roles. Older worker bees forage from flowers, bringing home nectar and pollen for storage by bees in the hive. Young 'nurse bees' feed all other bees, either directly on honey and bee bread or on royal jelly secreted from special glands.



POLLEN

The pollen is formed by microgametes, which are made from sperm cells. gymnosperm is the product of male gametes, the angiosperm is made by anthers. The principal function of the pollen is insemination. It is present in different forms, spherical, ovoid, vermiform and polyhedral. The color can be yellow, red, brown, white or light blue-green. The pollen is abundant in protein substances, they represent an important food for many insects, like bees, which are very important for pollination and for the survival of the ecosystem.

What is honeydew honey?

It is a type of honey made from sap. The sap is a sugary liquid similar to nectar which serves as a source of food for tiny insect species such as aphids. These insects eat the sap and excrete a sticky substance called honeydew on the leaves, branches or even trunk of a tree. Honey bees collect this honeydew from the insects and use it as food and for honey production. Large amounts of honeydew from tree sap-eating insects need to be collected to produce sufficient honey to feed an entire bee colony and fill the beehive with food. The honeydew is composed of sugar and water.



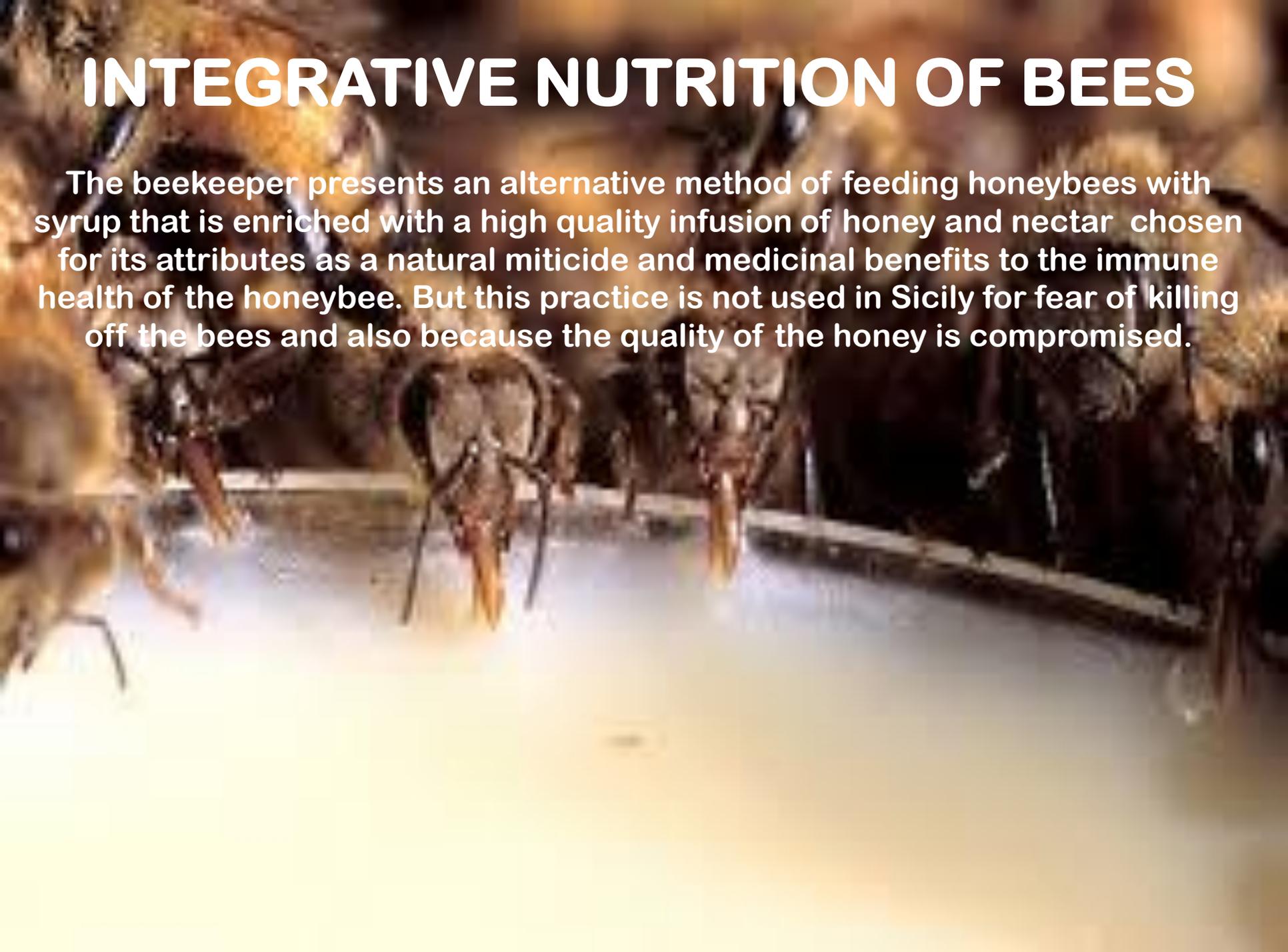
What does honeydew honey look, taste and smell like?

Different varieties will look, taste and smell differently. Generally, honeydew honeys tend to be darker in color: a dark amber with dark brownish-red reflexes. Their taste is also usually stronger with a medium sweetness and they have a varied flavor and aromatic profile (resinous, pine, herbal, caramel, spicy, malty notes).

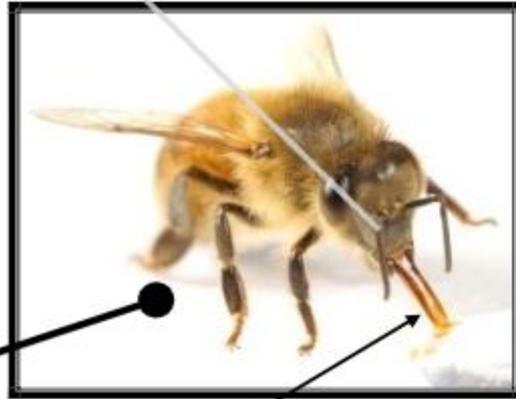


INTEGRATIVE NUTRITION OF BEES

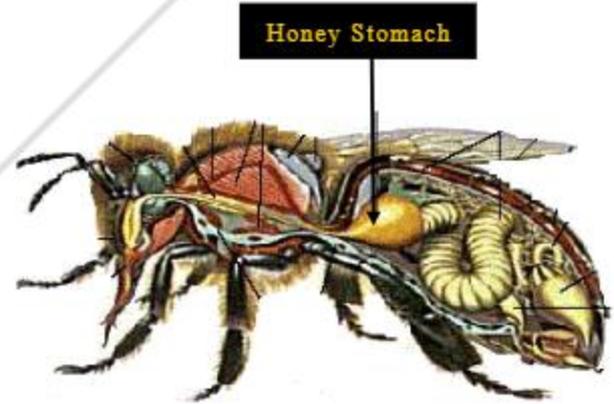
The beekeeper presents an alternative method of feeding honeybees with syrup that is enriched with a high quality infusion of honey and nectar chosen for its attributes as a natural miticide and medicinal benefits to the immune health of the honeybee. But this practice is not used in Sicily for fear of killing off the bees and also because the quality of the honey is compromised.



How Do Bees Make Honey?



Bee's Tongue



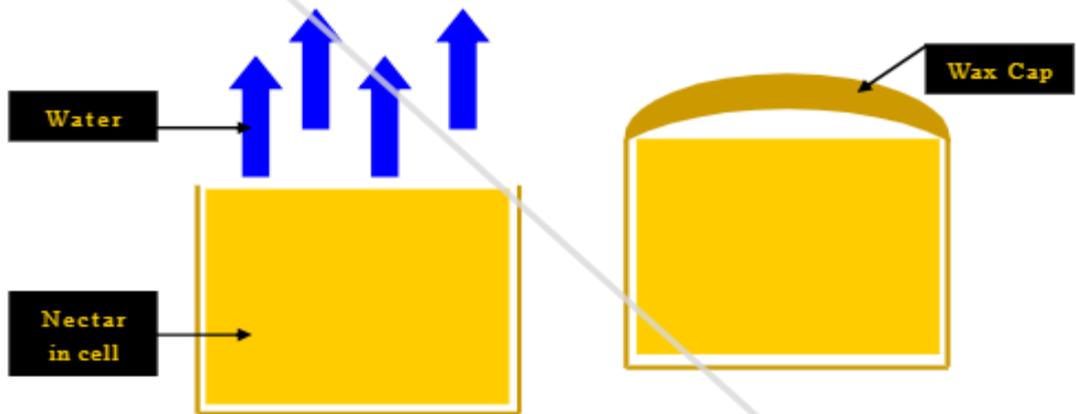
Honey Stomach

Bees drink nectar from flowers using their long tongue. Their tongue is nearly twice as long as their body. This helps them reach the nectar inside the flower.



Bees store the nectar in a special sac called a Honey Stomach. Inside the stomach the nectar is broken down into two sugars.

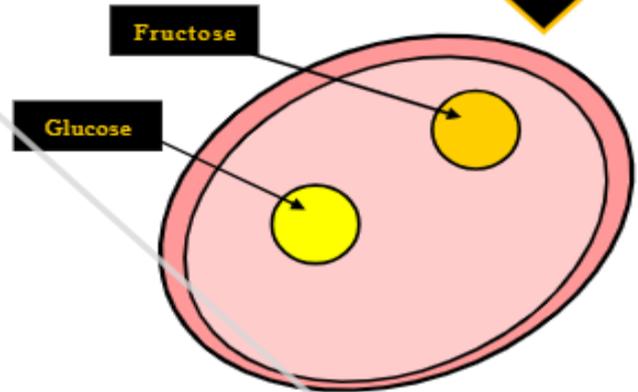
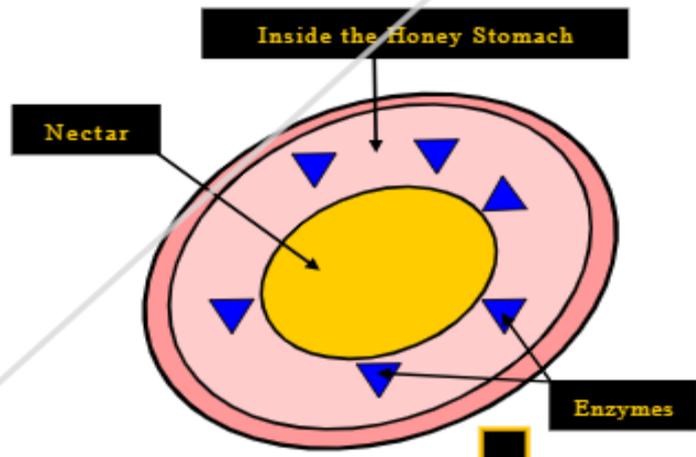




The heat in the hive helps water evaporate from the nectar and it turns into honey. The bees then cover the cell with a wax cap.

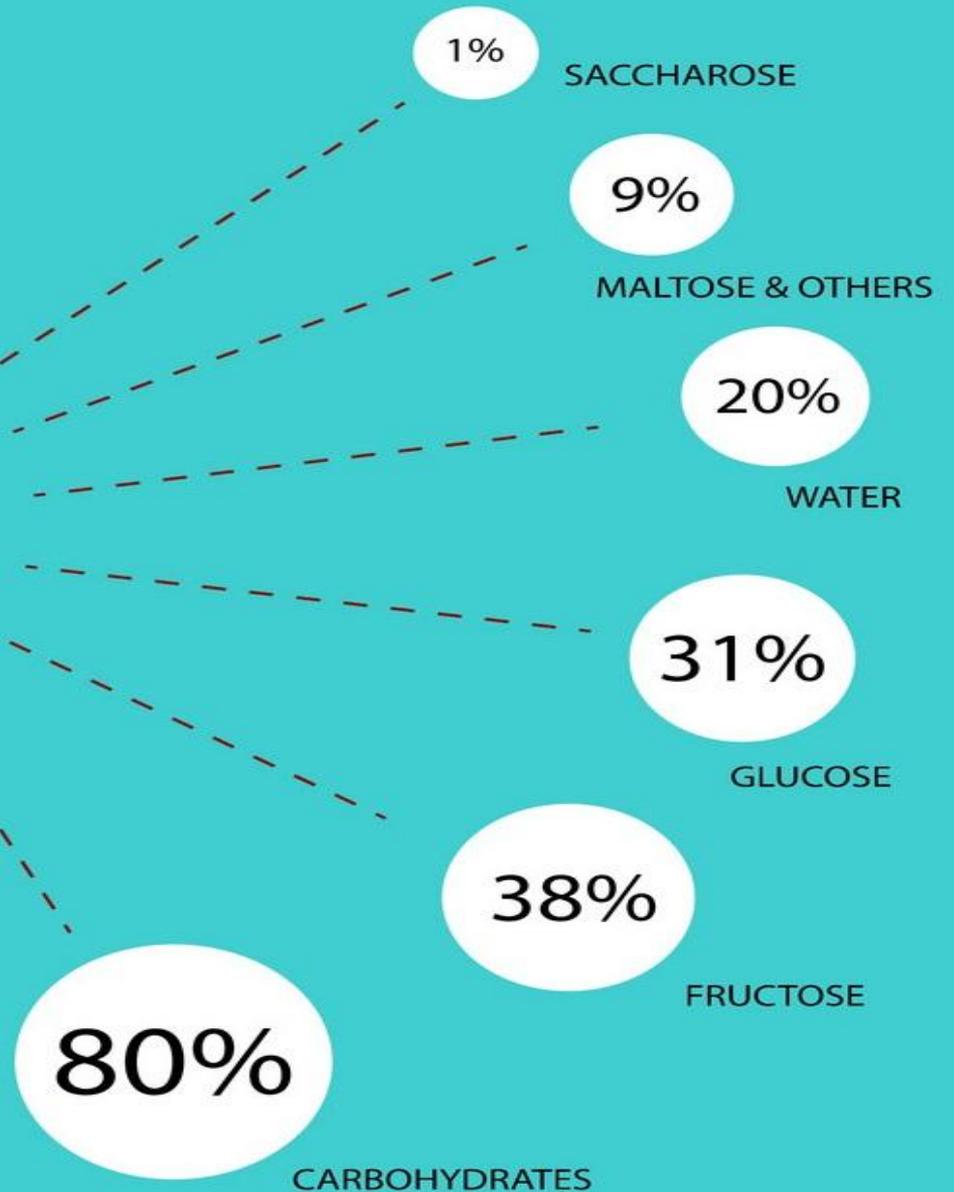


The bee returns to the hive where it spits the nectar from its Honey Stomach into one of the cells.



Inside the Honey Stomach special enzymes help change the nectar into two sugars called FRUCTOSE and GLUCOSE.

Chemical composition of honey



SUGAR

A close-up photograph of a glass filled with golden honey. Several white sugar cubes are being poured into the honey from above, creating a dynamic scene with splashing and ripples in the liquid. The background is a plain, light color.

**Honey is composed above all
of fructose and glucose**

PROTEIN

There are relatively limited protein in honey (0.1–0.5 %), and it is difficult to extract it. The most used protein extraction methods are mechanical (ultrafiltration and ultracentrifugation) and chemical (precipitation) techniques.

CARBOHYDRATES

A carbohydrate is a biomolecule consisting of carbon, hydrogen and oxygen atoms. Carbohydrates perform numerous roles in living organisms. Polysaccharides serve for the storage of energy and as structural components.

ENZYMES

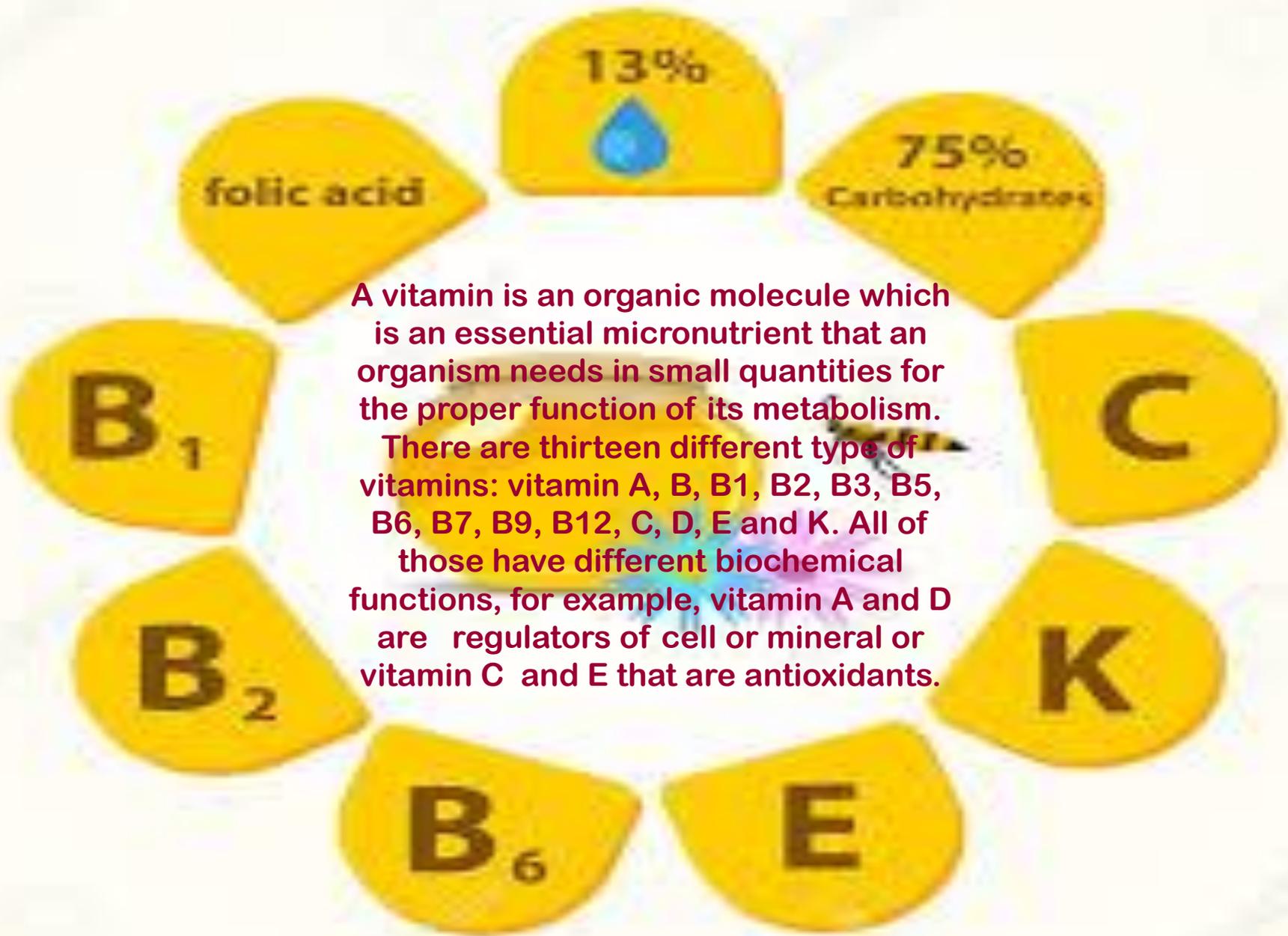
Enzymes are biological macromolecules . Their function is to accelerate chemical reactions. The bee enzyme is crucial in the making of honey by honey bees, and it is the bees' own magical and unique ingredient that is added to the nectar they gather from flowers.



ORGANIC ACID

An organic acid is an organic compound with acidic properties. The most common organic acids are the carboxylic acids, whose acidity is associated with their carboxyl group.

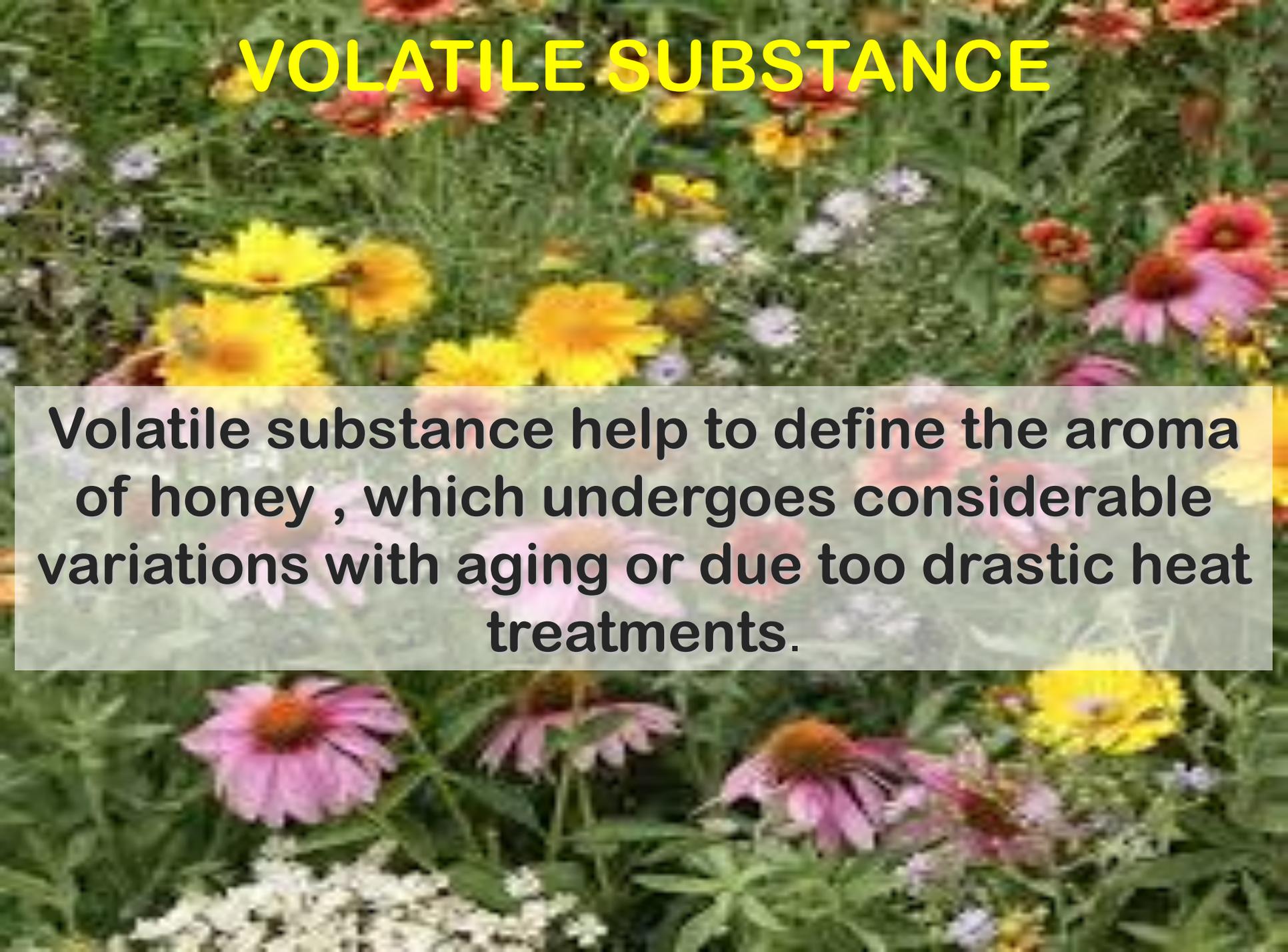
VITAMINS AND MINERALS



A vitamin is an organic molecule which is an essential micronutrient that an organism needs in small quantities for the proper function of its metabolism.

There are thirteen different type of vitamins: vitamin A, B, B₁, B₂, B₃, B₅, B₆, B₇, B₉, B₁₂, C, D, E and K. All of those have different biochemical functions, for example, vitamin A and D are regulators of cell or mineral or vitamin C and E that are antioxidants.

VOLATILE SUBSTANCE



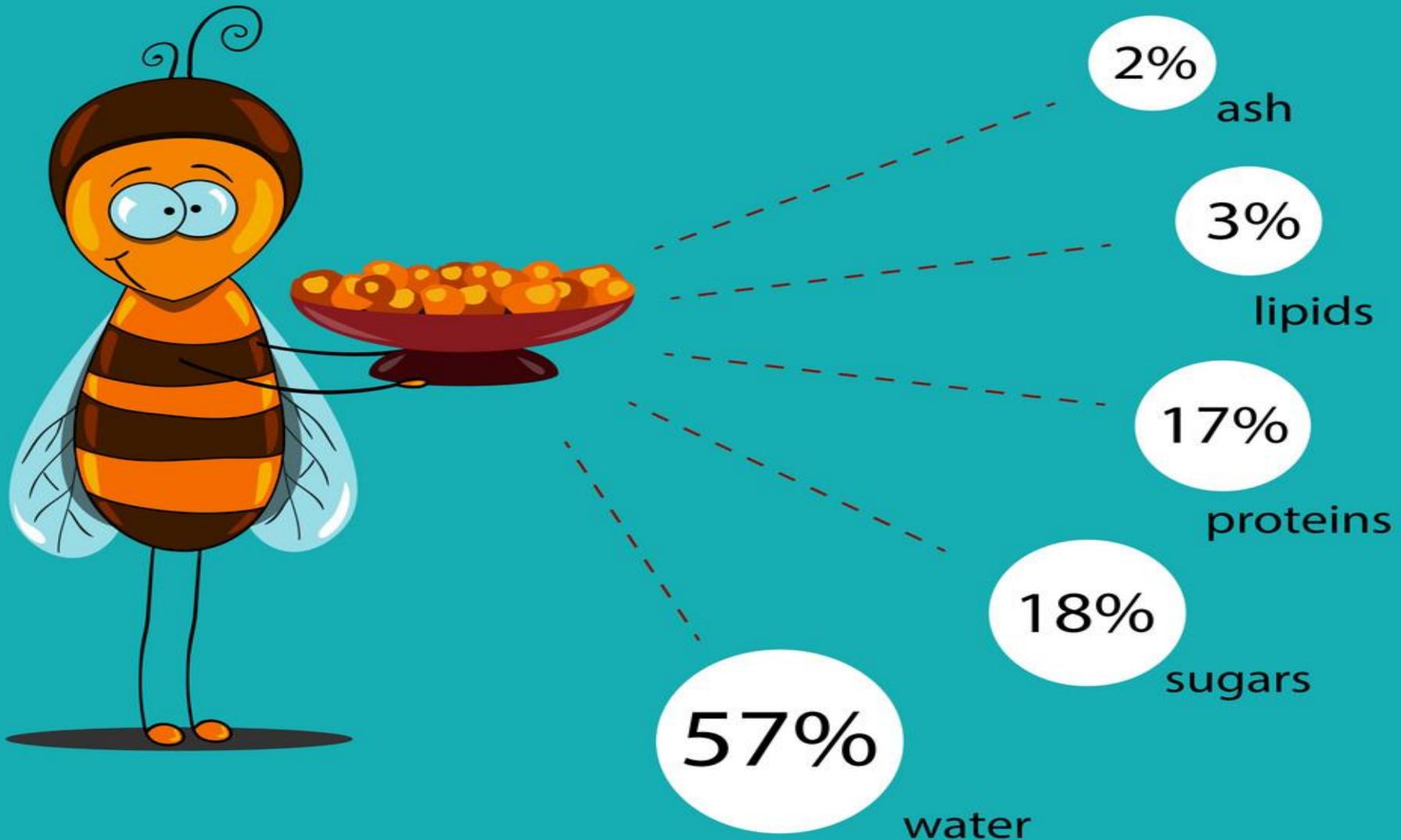
Volatile substance help to define the aroma of honey , which undergoes considerable variations with aging or due too drastic heat treatments.

LIPID

A close-up photograph of a wooden mortar and pestle. The pestle is positioned vertically inside a glass jar, and a small amount of white, powdery substance is being ground between the pestle and the mortar. The background is a blurred, light-colored surface.

A lipid is a biomolecule that is soluble in nonpolar solvents. The functions of lipids include storing energy, signaling, and acting as structural components of cell membranes. Lipids have applications in the cosmetic and food industries as well as in nanotechnology.

Chemical composition of royal jelly



The health benefits of **HONEY**



Did you know..? A hive of bees must fly 55,000 miles to produce a pound of honey.



THE IMPORTANCE OF BEES IN OUR ECOSYSTEM



Bees are the world's primary impollimators , we depend on bees for survival.

Bees are vital for the success of our ecosystem and the disappearance of bees will adversely affect our way of life. Many fruits, vegetables, wildflowers and trees must be pollinated and fertilised to produce seed or fruit.

Pollination is vital for the production of critically important agriculture crops, including corn, wheat, rice, apples, oranges, tomatos and squash. As Einstein said «if the bees disappears from the surface of the earth man would have no more than four years to live»

If we take care
of the bees,
they will take
care of us



The tongue of bees

the tongue itself is the longest thing in the middle

