



Importance of Natural Products from Beehives

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ARTICLE HISTORY

Received: 01-Jul-2022, Manuscript No. JAPITHERAPY-22-73226;
Editor assigned: 04-Jul-2022, PreQC No. JAPITHERAPY-22-73226 (PQ);
Reviewed: 19-Jul-2022; QC No. JAPITHERAPY-22-73226; Revised:
25-Jul-2022, Manuscript No. JAPITHERAPY-22-73226 (R); Published:
02-Aug-2022

Description

It is critical to understand the significance of honey bee products. The honey bees themselves synthetically incorporate beeswax, honey bee toxin, and royal jelly, while honey, propolis, honey bee dust, and honey bee bread result from the alteration of plant-derived material by honey bees. Honey comes from the flower nectar or secretions from living parts of plants, which are collected and transformed by honey bees. It is dehydrated, stored and left in the honeycomb to develop. Honey is one of the principle sources of energy for honey bees, containing essentially sugars and minor substances such as natural acids, proteins, minerals and nutrients. Information on honey creation as per the phytogeography where it was produced ensures its authenticity and enhances the food quality. Within the hive, bees store their food and the queen lays hundreds of eggs daily, which become larvae, pupae and adult bees. Thus, the hive needs to be protected from predators and microorganisms. Propolis is involved in the beehive protection. It is composed of substances secreted by plants, exudates and resins, and this material is chewed, mixed with salivary secretions, and wax. Propolis is applied in thin layers on the inner walls of the hive to sterilize the environment, reducing the entry of the hive, covering cracks or openings, and strengthening the thin edges of the combs. Propolis is also used to embalm dead invaders within the hive. Therefore, propolis is a building material and a protective agent in the hive, playing an important role in the social immunity of bees.

In addition to the protection afforded by propolis, bees produce Bee Venom (BV) and sting through their inoculation device (a stinger). The stinger has evolved from the laying apparatus and only females are able to sting. BV is a complex material produced by the poisonous gland located in the abdominal cavity.

Bee pollen is the main source of proteins for bees. This product results from the agglutination of flower pollen by worker bees using nectar and salivary substances, which is deposited inside the hive. In addition to protein, pollen has a nutritional source of lipids, vitamins, minerals and certain carbohydrates. Bees also produce a pollen-based product that, after collection and storage inside the hive, is transformed into "bee bread" by microorganisms through lactic acid fermentation. Worker bees produce Royal Jelly (RJ) through their hypopharyngeal and mandibular glands. It is a whitish to yellow coloured viscous substance with an acidic taste. Its complex composition includes proteins, fatty acids, sugars, and minerals. Royal Jelly is also used for a short period in the diet of larvae and for the entire life of the queen. Bees produce beeswax as a construction material for their combs using the ceriferous glands which are located in the ventral part of the abdomen. Besides storage of honey, pollen honeycombs are also intended to lay eggs and bee development. In the growth phase of colony, wax production is seen at its highest. It contains mainly esters of higher fatty acids, hydrocarbons and alcohols.