

**Health properties of black honeybee honey: impact of harvesting and storage procedures on the product's antioxidant properties**

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**Background**

Honey contains phytochemicals, as polyphenols, that give the product antioxidant properties and, consequently, health benefits. The content of phytochemicals is directly related to the floral origin, species of bee, environmental conditions and nature of the soil.

**Problem description**

We investigated how the length of time honey stays in the hive before harvesting may impact its polyphenol content and how the moisture level in honey affects the stability of these phytochemicals.

**Metodology**

About ten hives of Sicilian black honeybee (*Apis mellifera* ssp. *sicula*) were placed in a field of *Sulla* at the beginning of the flowering period (April). The honey from half super of each hive was collected after one week (rapid harvest), while the honey from the remaining ones was collected at the end of the plant's flowering (traditional harvest). Both the honeys were subjected to a dehumidification process to reduce the water content to 14%, 16%, or 18%. The Folin–Ciocalteu reaction, was used to determine total phenol content (TPC). Quantitation was by reference to gallic acid (5–100 µg/mL), and results expressed as gallic acid equivalents (GAE, milligrams/100 g. Antioxidant capacity of honeys was evaluated by ABTS•+ decoloration assays in comparison with Trolox.

**Results and Discussion**

The TPC content in the honey obtained through rapid harvest was  $35.58 \pm 2.6$  mg GAE/100g (n=5), while that measured in the honey obtained from the same hive through traditional harvest was  $19.8 \pm 0.92$  mg GAE/100g (n=5). This data shows that the honey left in the hive for about two months before harvesting, loses approximately 45% of its polyphenol content. Furthermore, while the TPC content of honey with 14% and 16% moisture did not change after 90 days of storage at room temperature, the polyphenols level decreased by about 15% in honey with 18% moisture.

**Practical iimplication for beekeepers**

Rapid honey extraction preserves the antioxidant capacity of honey compared to the traditional procedure. Moreover, reducing the product's moisture content to 16% limits the loss of polyphenols over time and it increases health value of the honey.