Original Research Paper

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Mineral Content of Various types of Apis honey from Coorg, Karnataka.

Biotechnology

KEYWORDS: *Apis* honey, mineral content, flavour.

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ABSTRACT

Honey is a rich source of minerals. The mineral content is greatly /highly variable with the species of honeybee, the geographical area and botanical origin. The most medicinal properties of honey along with its flavour depends on its mineral content. Various Apis honey samples namely, *Apis.* cerana, Apis mellifera, *Apis dorsata and Apis florea* showed significant quantitative variations in mineral content. The mineral contents include potassium, iron, manganese, magnesium, calcium, sodium, chromium, copper, phosphorus and zinc.

Introduction

Honey is one of the precious nature's golden wonder and treasured commodity from centuries (Crane, 1992). It has delicate aroma and entice fragrance, which can be attributed to the presence of minor constituents (Crane, 1980). The total ash content of honey was correlated to its mineral constituents. The mineral characteristics like phosphorus, zinc and others were dependents on the type of nectar as well as the seasonal durations (Sharma, 1998). Also the colour of the honey chiefly depends on its mineral content. However, the mineral constituents vary in the nectar or honey, due by the botanical as well as geographical origin. Darker honeys have comparatively higher mineral content than the lighter honeys.

Materials and Methods

Procurement of *Apis* honey samples

Seventy *Apis* honey samples *Apis florea, Apis mellifera, Apis cerana Apis dorsata,* were collected from various geographical areas of Coorg, Karnataka during spring season. The collected samples were stored at 40C in quality air tight plastic containers with authentic labels.

The total ash content of honey was determined by Ivanov and Chevanakova (1984) method.

The cationic mineral content was estimated by atomic absorption spectroscopy method (Rodriguez-otero *et al.*, *1994).*

The results recorded were analysed with standard statistical method.

Results

The cationic mineral composition of *Apis* honeys showed significant variations. The total ash content of honey of Coorg varied between 0.19 and 0.52 percent. The honey samples of *Apis florea* ranged from 0.19 to 0.46 percent, *Apis cerana* between 0.20 and 0.48 percent, *Apis Mellifera* from *0.*20 to 0.49 percent and *Apis dorsata* from 0.22 to 0.52 percent. The F-test and analysis of variance values showed significance at 5% levels.

Table 1. shows cationic mineral content of various *Apis* honeys of Coorg during spring season. Potassium content of *Apis* honeys showed highest ppm values and the least recorded value was of chromium. However, the values were significant at 5 percent levels.

Table. 1 - Cationic Mineral Constituents of Apis honeys of Coorg during spring season.

Mineral Type	Honey Samples			
	Apis florea (in ppm)	*Apis cerana* (ppm)	*Apis mellifera* (ppm)	*Apis dorsata*(ppm)
Potassium	34.80	46.78	49.11	50.68
Iron	0.06	0.08	0.08	0.09
Manganese	0.12	0.17	0.16	0.18
Magnesium	1.54	1.22	1.09	1.35
Calcium	3.6	4.21	4.33	5.87
Sodium	2.15	3.01	3.02	3.09
Chromium	0.011	0.011	0.011	0.012
Copper	0.02	0.04	0.05	0.06
Phosphorus	1.13	1.22	1.24	1.28
Zinc	0.08	0.09	0.08	0.15

Significant at p< 0.05 levels

Discussions

In the present analysis of total ash content in Apis honeys ranged from 0.19 and 0.52 percent. Similar findings were reported by Rodrigues et al, (1994) of 0.48 percent in honey samples from spain. Bonvehi and Coll (1993) reported 0.06 to 0.39 percent of average ash content in French lavender honeys of Spain. Anass et al (2003) analysed average ash content with 0.16 to 0.44 percent in Eucalyptus honeys. Joseph et al (2007) reported 0.66 percent of ash content in Sudano Guinean honeys.

The major minerals of honey recorded were potassium, iron, manganese, magnesium, calcium, sodium, phosphorus, zinc and chromium.

The highest content being potassium with 50.68 ppm in Apis dorsata honeys and least with 34.80 ppm in Apis florea honeys. The mineral chromium content is also highest in Apis dorsata honeys with 0.012 ppm and 0.011 ppm was recorded in rest of Apis honeys. Similar correlated results were reported by Mossel (1998), Karbournioti and Drimjias (1997) and Bogdanov et al (1986) in Australia, Greek and grass land honeys respectively. Mahajan (1984) analyzed honeys from Shimla and reported that dark colored honeys have more minerals than light colored honeys of Apis cerana. Though, the quantity of minerals was less, they play a vital role in determining the color, medicinal and nutritional value of honey.

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