



PHYSICOCHEMICAL AND RELATIVE POLLEN CHARACTERISTICS OF STRAWBERRY TREE HONEY FROM ALBANIA

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ABSTRACT

This work investigated the characteristics of **strawberry tree** (*Arbutus unedo* L.) honey produced in **Albania**. In the last years, the typical bitter flavor and the positive medicinal properties attributed to this type of honey, has shaped the consumer behavior and the demand has been increased. The *arbutus* plant is widespread in Albania, with diffusion in coastal lowlands up to 700-800 m above the sea level, dividing Albania diagonally. The production of strawberry tree honey is typical in the central and southern parts of Albania, where large massives are found. Also, in the South-East of Albania, in the region of Përmet, the other species *Arbutus andrachne* is spread, known as Greek strawberry tree. The common names used to identify this plant in Albania are "*Marë*" and "*Koçimare*", depending on the region; and from the red fruits in some local areas is produced an alcoholic beverage called "*Raki*".

To accomplish the aim of the study the physicochemical analyzes were performed. Also, antioxidant capacity was determined by total phenolic content (TPC) and radical scavenging activity (RSA) using DPPH.

MATERIALS AND METHODS

The present study was carried out in the laboratory of Center of Excellence for Molecular Food Sciences, Faculty of Chemistry, University of Belgrade, Serbia. The study was designed to explore the characteristics of strawberry tree honey produced in Albania. Honey samples were analyzed for moisture, electrical conductivity, pH, free acidity, sugar profile, HMF, and diastase activity present in honey according to Harmonised Methods of the International Honey Commission [1] and for **Free Acidity AOAC 962.19** method was used. The sugar profile of honey was determined by high performance anion exchange chromatography (HPAEC) with pulsed amperometric detection (PAD). Pollen analysis was carried out at University "Aleksandër Xhuvani" Elbasan, Faculty of Natural Sciences, Albania, according to Louveaux et.al.,1978 [2].

RESULTS

The results obtained are similar with other data published for this type of honey in the region [3-5], with some minor changes. It is evident that this type of honey possesses high water content 19.99±1.74%, which in some cases exceeds the limit of 20% established in honey standard. Also, this type of honey, compared with other unifloral honeys, exhibits high TPC 1017.38±149.73 mg GAE/kg and RSA 25.59±5.85%; which are linked with its medicinal properties and uses in traditional medicine. *Arbutus unedo* L. pollen is underrepresented in the sediment and a melissopalynological analysis shows specific pollen presence of 25-40%.

Table 1: Characteristics of strawberry tree (*Arbutus unedo* L.) honey

Parameters	Range (min-max)	Mean ± SD	Limit values
Specific Pollen	25 - 40	32.50 ± 7.50	
Moisture (%)	18.25 - 21.73	19.99 ± 1.74	Max. 20
EC (mS/cm)	0.62 - 0.92	0.77 ± 0.15	
pH	4.20 - 4.38	4.29 ± 0.09	
Free acidity (meq/kg)	25.15 - 42.97	34.06 ± 8.91	Max. 50
Diastase (DN)	8.98 - 30.65	19.82 ± 10.84	Min. 8
Fructose (%)	34.88 - 38.33	36.61 ± 1.73	
Glucose (%)	26.91 - 27.55	27.23 ± 0.32	
Sucrose (%)	1.25 - 1.65	1.45 ± 0.20	Max. 5
Sum F + G	61.79 - 65.88	63.84 ± 2.04	Min. 60
Ratio F/G	1.30 - 1.39	1.34 ± 0.05	
Ratio G/W	1.24 - 1.51	1.37 ± 0.14	
TPC (mg GAE/kg)	867.65 - 1167.11	1017.38 ± 149.73	
DPPH scavenging (%)	19.73 - 31.44	25.59 ± 5.85	

CONCLUSIONS

The characteristics of strawberry tree honey produced in Albania, are of great importance for this unifloral honey, especially the antioxidant capacity, and further studies on its characterization will serve to promote and establish a market strategy.

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