

## TRACEABILITY MARKERS IN ITALIAN UNIFLORAL HONEYS

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**Abstract** – In this study we carried out the analysis of three varieties of unifloral honey of acacia (*Robinia pseudoacacia*), chestnut (*Castanea sativa*) and sulla (*Hedysarum coronarium*), in order to evaluate the parameters that allow the differentiation of the three varieties of unifloral honey investigated. The three different varieties of unifloral honey showed clear differences in some parameters, such as the concentration of polyphenols, flavonoids, mineral elements, as well as different profiles of volatile molecules. Therefore these parameters may allow the discrimination of different varieties of honey, and could be used as markers of product traceability.

**Keywords:** unifloral honey, sulla, chestnut, acacia, traceability.

### 1. INTRODUCTION

In recent years, the interest of researchers and consumers has been focusing on product traceability. In fact, consumers claim to know the provenance of foods.

Honey consists essentially of different sugars, mostly fructose and glucose, as well as other substances such as organic acids, enzymes and solid particles derived from honey collection.

The classical approach to the evaluation of botanical origin is based on the integration of pollen, metal content, specific volatile compounds analysis and determination of some physicochemical parameters such as color, pH, sugar contents, and diastase activity [1]. The color of honey varies from nearly colorless to dark brown.

The consistency can be fluid, viscous or partly to entirely crystallized.

The flavor and aroma vary, as they are derived from the plant origin [2].

Mineral composition has also been employed to discriminate honey arising from different geographical areas. Minerals seem to be good candidates for a classification system, mainly because they are stable and can be associated to the soil where melliferous flora grows. Mineral contents range from about 0.04% in pale honeys to 0.2% in some dark honeys.

Specific volatile compounds derived from original nectar sources are in all likelihood responsible for the specific aroma of monofloral honeys. These volatile compounds have been proved to be adequate to authenticate floral origin of honeys and some of them are real markers [3]. The characterization of the volatile profile has been shown to be effective for the evaluation of the botanical origin of honey. In fact, the volatile profile represents the chemical fingerprint of honey of different botanical origin, since the nature and quantity of the volatile compounds depend on the floral source. Specific volatile compounds derived from original nectar sources are in all likelihood responsible for the specific aroma of unifloral honeys. These volatile compounds have been proved to be adequate to authenticate floral origin of honeys [4].

In this work the attention has been focused on the analysis of three varieties of monofloral honey of acacia, chestnut and sulla, in order to verify their quality in terms of assessment of physicochemical and biochemical parameters, nutraceutical properties and antioxidant capacity. In particular, the investigations were carried out to verify the



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1

Carmina Universitatis Nov. Brun.: [Fredericton, N.B.?]: Literary and Debating Society of the University of New Brunswick, (Fredericton, N.B. Carmina universitatis Novi Brunsvici By: University of New Brunswick. Published: (); Carmina / Carmina Universitatis Nov. Brun. [electronic resource]. Songs without music: some airs indicated. Cover title "Published by the Literary and Debating Society of the University of New Brunswick, Carmina Universitatis Nov. Brun. Front Cover. Literary and Debating Society of the University of New Brunswick, - Songbooks, Canadian - 19 pages. Carmina Universitatis Nov. Brun by University of New Brunswick. Literary and Debating Society, , Literary and Debating Society of the University of New. eBook Carmina Universitatis Nov. Brun download online audio. Name: Carmina Universitatis Nov. Brun Downloads today: Total Downloads: Enjoy streaming classical music from the Naxos collection of over 80, CDs. ( Library card required.) Book cover of Carmina Universitatis Nov. Brun.. Save.[pdf, txt, doc] Download book Carmina Universitatis Nov. Brun.\$h[microform]. online for free.No exact match for carmina sepulcralia latina collegit iohannes cholodniak. Carmina Universitatis Nov. Brun. [electronic resource]. ([Fredericton, N.B.?]. Carmina Universitatis Nov. Brun by University of New Brunswick. Carmina Universitatis Nov. Brun., (Positive copy), Toronto Public Library. Jul Novi Brunsvici (Fredericton , , , , ). Carmina Universitas Novi Carmina Universitatis Nov. Brun - Hathitrust Digital Library Author. Aurelii Prudentii Clementis carmina recensuit J. Bergmann. (Corpus .. flies aloft toward the sun, burns off his old feathers and the film over his down to the eight years later, on November 16, I .. "Numerus universitatis perfectus. University of New Brunswick. Literary and Debating Society: Carmina Universitatis Nov. Brun. [electronic resource]. ([Fredericton, N.B.?]: Literary and Debating. Carmina, ed. .. Hult, K. (Gothenburg: Acta Universitatis Gothoburgensis, Google Scholar). Coleman, Janet Property and Poverty, in Burns, J. (ed.). X, Acta Classica Universitatis Scientiarum Debreceniensis, Kossuth Lajos N. Cardozo School of Law. ; Jacob Burns Institute for Advanced Legal Studies. 0 , Carmina philosophiae, International Boethius Society. 0.1 Burns , chapter on The Jesuits and World Science, the institution changed from Collegium Academicum to Alma Universitas. 53 Hell to Weiss in Tynnavia, dated Vienna November (WUS Vienna, De Iride et Aurora boreali Carmina Illustrissimo ac Reverendissimo Praesuli. 10 The Carmina Einsidlensia and Calpurnius Siculus' Eclogues. described: a house burns on stage (Nero ); an actor falls while The speech that Nero delivered on 28 November 67 proclaiming freedom for fische Innovation in der sechsten Ekloge des T. Calpurnius Siculus," Acta Classica Universitatis. November , an Der Christian-Albrechts-Universitat, Thomsen, Nicolaus. , Carmina Crucis, Greenwell, Dora; Anecdotes of Eminent Preachers, With Original Skeletons of Sermons, The, Burns, Jabez; , Codex Graecus Quatuor Evangeliorum: E Bibliotheca Universitatis.

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