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Proceeding Paper

Characterization of Volatile Fraction of Cretan PDO "Pefkothymaromelo" Honey Using SPME/GC-MS †

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Abstract: A single paragraph of about 100 words to give a brief introduction to your work.

Keywords: keyword 1; keyword 2; keyword 3 (List three to ten pertinent keywords specific to the article yet reasonably common within the subject discipline.)

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1. Introduction

Crete is a Greek island with a long tradition in the art of beekeeping. According to the commission implementing regulation (EU) 2017/1555 of 12 September 2017, Crete entered a new honey name in the register of protected designations of origin (PDO) called "Pefkothymaromelo Kritis". This honey is a natural mixture of thyme honey with pine honey. In terms of physicochemical, microscopic, and organoleptic characteristics, "Pefkothymaromelo" is a combination of the above two types of honeys. Five PDO honey samples were used in this study, with the physicochemical parameters agreed with existing legislation. The volatile fraction was then isolated using the solid-phase micro-extraction (SPME) technique with a view to characterizing and comparing with thyme and pine honeys. For this purpose, a triple-phase divinylbenzene/carboxen/polydimethylsiloxane (DVB/CAR/PDMS) fiber was used and the analysis was performed using a gas chromatograph coupled to a mass spectrometer (GC-MS). All peaks were identified with Wiley 275 mass spectra library, retention index (RI) using n-alkanes, and concentrations of the isolated compounds were calculated using internal standard (benzophenone) as mg kg^{-1} of honey. The identified components were 30, with three dominant volatiles including 3-methylbutanenitrile (3.82 mg kg^{-1}); 2-phenylacetaldehyde (2.57 mg kg^{-1}); and nonanal (1.30 mg kg^{-1}). Characteristic compounds from both botanical sources were found in all the PDO honeys were analyzed. "Pefkothymaromelo Kritis" characterized with volatiles included in thyme honeys like benzaldehyde; 2-phenylacetaldehyde; 2-phenylethan-1-ol; 2-phenylacetonitrile; 5-isopropyl-2-methylphenol (carvacrol); 3-hydroxy-4-phenyl-2-butanone; and (*Z*)-3-hydroxy-4-phenylbut-3-en-2-one. Also, compounds found in pine honeys like undecane; nonanal; decanal; methyl nonanoate, and nonanoic acid were detected. Of particular interest is the fact that a significant concentration of the compound (*E*)-5-methyl-2-phenylhex-2-enal (0.22 mg kg^{-1}) was detected in all PDO honeys. This

compound, which according to previous reports has been detected in Greek thyme honey mainly from Crete, could potentially be an indicator of the botanical origin of "Pefkothymaromelo Kritis". However, extensive research should be performed to reach safe conclusions.

Reference

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