

Validation and optimization of ion chromatography based method for citric acid determination in *Robinia pseudoacacia* honey

Mihajlo V. Jakanovski¹, Nikola M. Horvacki¹, Dušanka M. Milojković-Opsenica²

¹Innovation Centre of Faculty of Chemistry Ltd., Belgrade, Serbia

²University of Belgrade - Faculty of Chemistry, Belgrade, Serbia

Honey is very complex natural substance consisted of sugars, water, and other compounds in smaller quantities such as proteins (enzymes), organic acids, vitamins, minerals, phenolics, and a large variety of volatile compounds. Discriminating the honeys according to botanical and/or geographical origin may be possible according to their characteristic constituents including organic acids profile. These acids are related to the colour and flavour of honey and its chemical properties such as acidity, pH and electrical conductivity. Honey is deceptively acidic, as the high sugar content tends to mask the acidity in the taste. Citric acid among other acids, is present in honey in moderate amount but it's presence could be potentially used as marker for authenticity control [1].

Fraudulent addition of compounds in honey sets a necessity to establish the natural level of the specific substances, and subsequently determine when this level is exceeded, indicating adulteration. Citric acid can be added to decrease pH in adulterated honey where normal pH levels have been exceeded. Also increased citrate concentration in honeys could be a result of addition of invert syrup to honey. Therefore there is a need for a method to determine citrate content in honey quickly and efficiently¹. In current work a method for determination of organic acids profile in honey using ion chromatography with conductometric detection (IC-CD) without prior separation of compounds and chemical derivatization was developed. This approach for citric acid determination is characterized by LOD and LOQ values of 0.05 and 0.20 mg/L, respectively. Low RSD $S_{y/x}$ value and r^2 level of 0.9999 indicates a good regression model. Trueness of method was confirmed by good recoveries (108%, 104% and 95% for spiked levels 75%, 100% and 125%, respectively), while precision was confirmed by HorRat value (0.30) less than 2 [2].

References

1. I. Matysiak, M. Balcerzak, R. Michalski, *J. Food Compos. Anal.* **2018**, 73, 55.
2. B. Magnusson, U. Örnemark (eds.) *Eurachem Guide*. **2014**.

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