

Honey sugars analysis by ion chromatography method with Integrated Pulsed Amperometric Detection (IPAD)

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Glucose and fructose are the most important monosaccharides in honey, these sugars combined in various forms comprise the di- and trisaccharide fractions of floral honey. Fructose/glucose ratio can influence the flavor of honey since fructose is sweeter than glucose. Honeys with higher fructose/glucose ratios remain liquid for longer periods. Several Chromatographic methods have been used to evaluate the sugar content of honey, although the Integrated Pulsed Amperometric Detection (IPAD) only recently became to be used.

In order to characterize the sugar content in honey from different botanical origins a Dionex ICS3000 ion chromatograph was used. Separation was performed in a column “CarboPac™ PA20 3x150mm”, with a precolumn “CarboPac™ PA20 3x30mm”. Electrochemical detector in Integrated Pulsed Amperometric Detection (IPAD) mode was used. The elution was performed with a gradient with two NaOH solutions (10 and 200 mM). Standard solutions of glucose, fructose and sucrose, were used to identify and quantify the individual sugar components in the honey samples.

The method showed a good separation between the compounds (resolution > 3.3 and more than 9000 theoretical plates). The response was linear in the range (0.05 to 1.00 mg/L for fructose and glucose and 0.01 to 0.20 mg/L for sucrose). The detection limits were 0.014 mg/L for glucose, 0.007 mg/L for fructose and 0.003 mg/L for sucrose.

Twenty six monofloral honey samples from *Erica*, *Citrus*, *Lavandula* and *Eucalyptus* were tested. 5,000 g of each honey sample was diluted to 1 mg/L and filtered with a 0.45 µm polypropylene filter prior to HPLC analysis.

The results show that the fructose/glucose ratios are in accordance with the different honeys analyzed and the HPLC-IPAD is a good methodology to determine the sugar content in honey, with low solvent consumption and residues.