

Test Report No. 210-1158349

QSI GmbH - Flughafendamm 9a - D-28199 Bremen

Medino d.o.o. Krnjevo
Ivan Grujic
Bulevar Oslobođenja 29
11319 Krnjevo
SERBIA

Date: 14-Aug-2023

Customer No.:	11802	Sample No.:	481226
Product:	Honig/Honey		
Label: 130723			
Arrival Date:	20-Jul-2023	Start / End of Analysis:	11-Aug-2023 / 14-Aug-2023
Kind/Origin:	Serbia Linde	Packaging:	Glas / glass
Seal:	ohne/without	Temp.:	RT

984302/984304 Thermo VA177 Enzymatic Test for Determination of Fructose/Glucose in homogenous liquid samples with Random Access Analyzer

Parameter	Unit	Result
Fructose	g/100g	39,1
Glucose	g/100g	33,1
F/G-ratio		1,18
Sum Fructose+Glucose	g/100g	72,2

Accredited method

n.n. = below loq (=0,1g/100g)

The expanded relative measurement uncertainty is 4 % (Fructose); 5 % (Glucose); 9 % (F/G) (coverage factor k=2.58; confidence interval 99 %) without taking the sampling into account.

Quality Services International GmbH

Version 0

J. Kapeluch

 Julia Kapeluch
 Test Manager
 Food Chemist

This examination is the basis for special decision guidance.

The test results are exclusively related to the items tested for this sample in the above mentioned time frame for analysis. Method and measurement uncertainty details are available upon request. This report is allowed to be copied completely and unchanged but not in extracts. Furthermore, as well as for statements regarding conformity our General Terms and Conditions of Business are applicable.

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Test Report No. 210-1146119

QSI GmbH - Flughafendamm 9a - D-28199 Bremen

Medino d.o.o. Krnjevo
 Ivan Grujic
 Bulevar Oslobođenja 29
 11319 Krnjevo
 SERBIA

Date: 25-Jul-2023

Customer No.:	11802	Sample No.:	481226
Product:	Honig/Honey		
Label: 130723			
Arrival Date:	20-Jul-2023	Start / End of Analysis:	20-Jul-2023 / 25-Jul-2023
Kind/Origin:	Serbia Linde	Packaging:	Glas / glass
Seal:	ohne/without	Temp.:	RT

VA40262 (2022-09) Authenticity, Isotope analysis, 13C-EA-IRMS (AOAC 998.12, mod.^) + 13C-LC-IRMS (C4/C3-sugar)***, Honey

Parameter	Method	Unit	Target Value****	Result
Protein (P)	AOAC 998.12	d-13C‰		-25,60
Honey (H)	AOAC 998.12	d-13C‰		-25,15
Fructose (F)	LC-IRMS	d-13C‰		-24,92
Glucose (G)	LC-IRMS	d-13C‰		-25,01
Disaccharides	LC-IRMS	d-13C‰		-25,41
Relative Percentage of Disaccharides*	LC-IRMS	%		9,07
Trisaccharide	LC-IRMS	d-13C‰		-24,92
Relative Percentage of Trisaccharides*	LC-IRMS	%		1,25
Oligosaccharides	LC-IRMS	d-13C‰		n.b.
Relative Percentage of Oligosaccharides*	LC-IRMS	%		n.n.
F/G ratio	LC-IRMS			1,14
Difference d-13C Fructose-Glucose (F-G)	LC-IRMS	d-13C‰	- 1 to + 1	+0,09
Difference d-13C (max.) all sugar fractions	LC-IRMS	d-13C‰	<= 2,50	0,49
Difference Protein-Honey (P-H)	AOAC 998.12	d-13C‰		-0,45
C4-sugar-content**	AOAC 998.12	%	<= 7,00	2,82

Accredited method

n.b.: not determinable n.n.: not detectable ($\leq 1\%$ (relative) related to all sugar fractions LC-IRMS); LC-IRMS is not an official method for F/G ratio

* related to all sugar fractions LC-IRMS; ** related to average d13C value of corn syrup of -9.7‰ vs. V-PDB Standard

*** Apidologie for LC-IRMS (2008, Volume 39, Issue 5, pp 574-587); **** QSI-criterion authentic honey: all target values passed

^ Weighing, sample preparation, determination of carbon isotopes, for honey and protein

The expanded relative measurement uncertainty is 3% (coverage factor $k=2.58$; confidence interval 99%) without taking the sampling into account.

Conclusion:

The values determined in the course of the investigation carried out correspond to the QSI criteria for authentic honey and, in our opinion and according to current scientific knowledge, do not indicate the addition of foreign sugars. With regard to the investigated parameters the honey corresponds to the legal regulations (EU Honey directive 2001/110/EC, Annex 2 Part 1).

Quality Services International GmbH

Version 0

Isabel Tipke



Isabel Tipke
Test Manager
Food Chemist

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Test Report No. 210-1146117

QSI GmbH - Flughafendamm 9a - D-28199 Bremen

Medino d.o.o. Krnjevo
 Ivan Grujic
 Bulevar Oslobođenja 29
 11319 Krnjevo
 SERBIA

Date: 24-Jul-2023

Customer No.:	11802	Sample No.:	481226
Product:	Honig/Honey		
Label: 130723			
Arrival Date:	20-Jul-2023	Start / End of Analysis:	20-Jul-2023 / 24-Jul-2023
Kind/Origin:	Serbia Linde	Packaging:	Glas / glass
Seal:	ohne/without	Temp.:	RT

VA161 (2022-12) Tradeanalysis: Moisture, HMF, Diastase (Schade method), pH, Acidity, Honey-Directive

Parameter	Method	Unit	Result
Moisture	ASU L40.00-2/1, 2019-07	%	15,2
HMF (Hydroxymethylfurfural)	ASU L 40.00-10/1, 2021-11	mg/kg	8,0
Diastase activity	ASU L 40.00-1, 2019-07 mod.^	DN Schade	23,7
pH-value	ASU L 40.00-6, 2011-06		4,5
Acidity*	ASU L 40.00-6, 2011-06	meq/kg	15,0
Accordance with EC Honey Directive			Honig/honey

Accredited method

* if acidity is < 17 (or < 10 in specific honey types), proline content will be determined automatically; n.n. = < LOQ 2,5 mg/kg (HMF)

^Weighing and amount of buffer; adaptation to Random Access Analyzer

The expanded relative measurement uncertainty is 0.8 % (Moisture); 9 % (HMF); 12 % (Diastase); 0.5 % (pH-value); 10 % (acidity) (coverage factor k=2.58; confidence interval 99 %) without taking the sampling into account.

Conclusion:

The determined values are in accordance with the requirements of Council Directive 2001/110/EC Annex II of 20. December 2001 relating to Honig/honey.

J. Kapeluch



Julia Kapeluch
Test Manager
Food Chemist

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 Ivan Grujic
 Bulevar Oslobođenja 29
 11319 Krnjevo
 SERBIA

Date: 21-Jul-2023

Customer No.:	11802	Sample No.:	481226
Product:	Honig/Honey		
Label: 130723			
Arrival Date:	20-Jul-2023	Start / End of Analysis:	20-Jul-2023 / 21-Jul-2023
Kind/Origin:	Serbia Linde	Packaging:	Glas / glass
Seal:	ohne/without	Temp.:	RT

VA40500 (2023-07) NMR - Honey-Profiling™, BRUKER evaluation + QSI interpretation, Authenticity and Quality

Parameter	Result
Detection of foreign sugars	Nein/No
Quality	typisch/typical
Geographical origin*	-
Botanical origin*	Linden confirmed
Deviations/Remark	

Accredited method

The quantitative and chemometric evaluation of the NMR-Honey-Profiling™ Release 3.1.x is performed by Bruker BioSpin GmbH (Accreditation Certificate D-PL-19229-01-00) and the expert interpretation by QSI GmbH.

The quality is evaluated according to EU Honey Directive 2001/110 (esp. HMF, ethanol (> 400 mg/kg untypical/fermentation). If foreign sugars were detected, it is automatically evaluated as untypical.

* Statistical confirmation of origin is only made if we have information in this regard. It is based on the NMR database and does not necessarily agree with the results of a microscopic pollen analysis (reference method).

Conclusion:

Based on the current Honey-Profiling™ database of Bruker BioSpin GmbH and the interpretation of QSI, the quality is typisch/typical for honey as defined by Annex II EU Honey Directive 2001/110. Based on the current Honey-Profiling™ database of Bruker BioSpin GmbH and the interpretation of QSI, the NMR profile gives no indication of the presence of foreign sugars. The sample meets the requirements for authentic honey according to Annex I No. 1 of the EU Honey Directive 2001/110.



Isabel Tipke
Test Manager
Food Chemist

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