

ANALYSIS REPORT No. \_\_\_\_\_

DATE: \_\_\_\_\_

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Client: \_\_\_\_\_

21611080136  
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**1047 Budapest**  
**Hungary**FAX: +36 614350100  
E-Mail: food@wessling.hu

<b>Our reference no.</b>	:			
Product	:	Honey		
Sample description / Batch	:			
Sample received on / transported by	:		Seal	: none
Sample temp. when received / stored	:	RT	Sampling	: Client
Packaging / Quantity	:	Plastic container / ca. 100g	Start / End of analysis	:

**ANALYSIS REQUESTED: 13C Isotope Analysis by EA/LC (C4/C3-Sugars) (101158)**

Parameter	Result	Unit	Method
Protein *	-25.50	d13C(‰)	PM DE01_026 (a) <sup>1</sup>
Honey	-26.20	d13C(‰)	PM DE01_026 (a) <sup>1</sup>
Fructose (F)	-26.07	d13C(‰)	PM DE01_094 (a) <sup>2</sup>
Glucose (G)	-26.35	d13C(‰)	PM DE01_094 (a) <sup>2</sup>
Disaccharides	-26.32	d13C(‰)	PM DE01_094 (a) <sup>2</sup>
Trisaccharides	-25.24	d13C(‰)	PM DE01_094 (a) <sup>2</sup>
Oligosaccharides	n.a.	d13C(‰)	PM DE01_094 (a) <sup>2</sup>
Delta d13C (F-G)	0.28	d13C(‰)	PM DE01_094 (a) <sup>2</sup>
Delta d13C (max.)	-1.11	d13C(‰)	PM DE01_094 (a) <sup>2</sup>
C4 Sugar Content	0.00	%	PM DE01_026 (a) <sup>1</sup>
F/G Ratio	1.05		PM DE01_094 (a) <sup>2</sup>
Portion of Disaccharides	5.08	%	PM DE01_094 (a) <sup>3</sup>
Portion of Trisaccharides	0.78	%	PM DE01_094 (a) <sup>3</sup>
Portion of Oligosaccharides	n.d.	%	PM DE01_094 (a) <sup>3</sup>

LC-IRMS is not an official method for F/G ratio; n.a.: not analyzed; n.d.: not detected < 0.7 %; d13C value in permil. vs. V-PDB standard

\* not considered for Delta d13C (max.) calculation if affected by high yeast content (Yeast determination from Delta d13C (max.) >= 2.1 ‰ on)

**SPECIFICATIONS OF PURE HONEY:**  
Delta d13C (F - G): not more than +/- 1.0 ‰  
Delta d13C (max.) of individual d13C values: not more than +/- 2.1 ‰  
C4 sugar content: < 7 %; portion of oligosaccharides: n.d.

(a) : accredited under terms of DIN EN ISO/IEC 17025. (na) : not accredited method. (1) AOAC 998.12  
(2) Apidologie 39/5 (2008) 574-587 (3) Apidologie 39/5 (2008) 574-587; % related to total sugars.  
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**Interpretation:**

The sample meets the specifications of pure honey. Foreign sugars were not detected.

Wessling Hungary Kft.  
Fő út 58  
1047 Budapest  
Hungary

*C. Indorf*

Dr. Caroline Indorf  
Responsible Scientist, Certified Food Chemist

Our reference no. P11811020128  
Product Honey  
Sample description / Batch A-21 mezináris - 0002747321  
Sample received on / requested by 28.10.2018 via Postal service  
Sample taken when received / stored RT  
Packaging / Country Plastic container / ca 100g

**ANALYSIS REQUESTED: 13C Isotope Analysis by EA/IC (CACS-Sugars) (101158)**

Parameter	Result	Unit	Method
Protein	25.80	g/100g (w)	PM DE01_020 (a)
Honey	26.20	g/100g (w)	PM DE01_020 (a)
Fructose (F)	26.07	g/100g (w)	PM DE01_004 (a)
Glucose (G)	26.35	g/100g (w)	PM DE01_004 (a)
Disaccharides	26.32	g/100g (w)	PM DE01_004 (a)
Trisaccharides	26.24	g/100g (w)	PM DE01_004 (a)
Oligosaccharides	n.a.	g/100g (w)	PM DE01_004 (a)
Delta d13C (F-G)	0.28	‰	PM DE01_004 (a)
Delta d13C (max)	1.11	‰	PM DE01_004 (a)
C4 Sugar Content	0.09	%	PM DE01_020 (a)
F/G Ratio	1.08		PM DE01_004 (a)
Portion of Disaccharides	0.18	%	PM DE01_004 (a)
Portion of Trisaccharides	0.28	%	PM DE01_004 (a)
Portion of Oligosaccharides	n.d.	%	PM DE01_004 (a)

LC-MS is not an official method for F/G ratio, not analyzed, n.d.: not detected < 0.1 %  
d13C values result vs. V-PDB standard

\* not considered for Delta d13C (min) calculation / affected by high yeast content  
(Transfer/position from Delta d13C (max) = 2.1 ‰ on)

**DEFINITION OF PURE HONEY**

Delta d13C (F - G) not more than +/- 1.0 ‰  
Delta d13C (max) of individual d13C values not more than +/- 2.1 ‰  
C4 sugar content < 1 % portion of oligosaccharides n.d.

(a) - accepted with terms of DIN EN ISO/IEC 17025 (not applicable method (1) / AOAC 895.12  
(2) (Apikörök 2017) 54-57 (3) Apikörök 2018 54-57. Applied to total sugars  
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