

Client:



**Sveriges Biodlares Riksförbund**  
**Trumpetarevägen 5**  
**59019 Mantorp**  
**Sweden**

E-Mail: jonny@ulvtorp.eu

<b>Our reference no.</b>	: <b>PI1404290021</b>		
Product	: Pollen		
Sample description / Batch	: <b>Sample 1 PG</b>		
Sample received on / transported by	: 29.04.2014 via Parcel service	Seal	: none
Sample temp. when received / stored	: RT	Sampling	: Client
Packaging / Quantity	: Plastic bag / ca. 60 g	Start / End of analysis	: 30.04.2014 / 06.05.2014

**ANALYSIS REQUESTED: Pyrrolizidine alkaloids in pollen by LC-MS/MS (11081251)**

Parameter	Result	Unit	Method
Echimidine	25	µg/kg	PM DE01_118 (a) <sup>1</sup>
Echimidine-NOx	16	µg/kg	PM DE01_118 (a) <sup>1</sup>
Heliotrine	n.d.	µg/kg	PM DE01_118 (a) <sup>1</sup>
Heliotrine-NOx	n.d.	µg/kg	PM DE01_118 (a) <sup>1</sup>
Lycopsamine	58	µg/kg	PM DE01_118 (a) <sup>1</sup>
Lycopsamine-NOx	8	µg/kg	PM DE01_118 (a) <sup>1</sup>
Senecionine	31	µg/kg	PM DE01_118 (a) <sup>1</sup>
Senecionine-NOx	2	µg/kg	PM DE01_118 (a) <sup>1</sup>
Seneciphylline	26	µg/kg	PM DE01_118 (a) <sup>1</sup>
Seneciphylline-NOx	4	µg/kg	PM DE01_118 (a) <sup>1</sup>
Senkirkine	n.d.	µg/kg	PM DE01_118 (a) <sup>1</sup>
Crotaline	n.d.	µg/kg	PM DE01_118 (a) <sup>1</sup>
Crotaline-NOx	n.d.	µg/kg	PM DE01_118 (a) <sup>1</sup>
Lasiocarpine	n.d.	µg/kg	PM DE01_118 (a) <sup>1</sup>
Retrorsine	1	µg/kg	PM DE01_118 (a) <sup>1</sup>
Retrorsine-NOx	2	µg/kg	PM DE01_118 (a) <sup>1</sup>
Sum of Pyrrolizidine alkaloids	173	µg/kg	PM DE01_118 (a) <sup>1</sup>

n.d. - not detected < limit of quantification 1 µg/kg  
 Crotaline and Crotaline-N-Oxide < limit of quantification 20 µg/kg

(a) : accredited under terms of DIN EN ISO/IEC 17025. (na) : not accredited method. (1) Inhouse procedure  
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**Interpretation:**

In the investigated sample the above stated amounts of pyrrolizidine alkaloids were determined.



**Dr. Hartmut Wischmann**  
*Responsible Scientist, Certified Food Chemist*

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Packaging / Quantity	: Plastic bag / ca. 60 g	Start / End of analysis	: 02.05.2014 / 05.05.2014

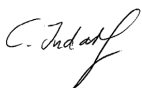
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**ANALYSIS REQUESTED: Determination of water content by Karl Fischer Titration (11082050)**

Parameter	Result	Unit	Method
Water content	2.81	%	KF Titration (na) <sup>1</sup>
n.d. - not detected < 0.01 g/100 g limit of quantification			
(a) : accredited under terms of DIN EN ISO/IEC 17025. (na) : not accredited method. (1) In compliance with Ph. Eur. chapter 2.5.12 (volumetric Karl Fischer titration) This document may only be reproduced in full. The results given herein apply to the submitted sample only.			

**Interpretation:**

The submitted sample shows the above indicated water content, determined by volumetric Karl-Fischer titration. The content is within the expected range for dried pollen according to relevant literature (Bodganov S. und Gallmann P: Authenticity of honey and other bee products state of the art, ALP Science 2008, No. 520 as well as Campos MGR et al.: Pollen composition and standardization of analytical methods, Journal of Apicultural Research and Bee World 47(2): 156-163 (2008)).



Dr. Caroline Indorf  
Responsible Scientist, Certified Food Chemist

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**ANALYSIS REQUESTED: Determination of the ash content in pollen (11082200)**

Parameter	Result	Unit	Method
Ash Content	2.8	g/100 g	Gravimetry (a) <sup>1</sup>
n.d. - not detected < limit of quantification 0.1 g/100 g			
(a) : accredited under terms of DIN EN ISO/IEC 17025. (na) : not accredited method. (1) Inhouse procedure This document may only be reproduced in full. The results given herein apply to the submitted sample only.			

**Interpretation:**

The submitted sample shows the above indicated ash content. The content is within the expected range for pollen according to relevant literature (Bodganov S. und Gallmann P: Authenticity of honey and other bee products state of the art, ALP Science 2008, No. 520 as well as Campos MGR et al.: Pollen composition and standardization of analytical methods, Journal of Apicultural Research and Bee World 47(2): 156-163 (2008)).



Christof Kunert  
Responsible Scientist

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**ANALYSIS REQUESTED: Microbiological analysis (13037031)**

Parameter	Result	Unit	Method
Yeast	200	cfu/g	ISO 21527-1/2 (a) <sup>1</sup>
Mould	2900	cfu/g	ISO 21527-1/2 (a) <sup>1</sup>

n. d. - not detected: cfu - colony forming units

(a) : accredited under terms of DIN EN ISO/IEC 17025. (na) : not accredited method.  
(1) ISO 21527-1: products with aw >0.95; ISO 21527-2: products with aw <=0.95  
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**Interpretation:**

Regarding the examined parameters the above mentioned sample is within the naturally occurring range.



Dr. Uwe Schröder  
Responsible Scientist, Biologist

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**ANALYSIS REQUESTED: Total fat content in Pollen according to Weibull-Stoldt (11086420)**

Parameter	Result	Unit	Method
Fat Content	10.1	g/100 g	Weibull-Stoldt (na)
n.d. - not detected < 0.1 g/100 g limit of quantification			
(a) : accredited under terms of DIN EN ISO/IEC 17025. (na) : not accredited method.			
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**Interpretation:**

The submitted sample shows the above indicated fat content. The content is within the expected range for pollen according to relevant literature (Bodganov S. und Gallmann P: Authenticity of honey and other bee products state of the art, ALP Science 2008, No. 520 as well as Campos MGR et al.: Pollen composition and standardization of analytical methods, Journal of Apicultural Research and Bee World 47(2): 156-163 (2008)).



Martin Linkogel  
Head of Laboratory, Certified Food Chemist

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**ANALYSIS REQUESTED: Protein content in pollen (11082250)**

Parameter	Result	Unit	Method
Protein	25.0	g/100 g	Kjeldahl (a)
n.d. - not detected < 0.1 g/100 g limit of quantification			
(a) : accredited under terms of DIN EN ISO/IEC 17025. (na) : not accredited method.			
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**Interpretation:**

The submitted sample shows the above indicated protein content. The content is within the expected range for pollen according to relevant literature (Bodganov S. und Gallmann P: Authenticity of honey and other bee products state of the art, ALP Science 2008, No. 520 as well as Campos MGR et al.: Pollen composition and standardization of analytical methods, Journal of Apicultural Research and Bee World 47(2): 156-163 (2008)). The protein content was calculated by a nitrogen-to-protein conversion factor of N\*6,25.



Martin Linkogel  
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