



Certificate of Analysis

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Client: Egmont Honey Limited	Lab No: 2246584	HSDMASP-1v1
Contact: Nick Walker	Date Received: 24-Sep-2019	
C/- Egmont Honey Limited	Date Reported: 24-Sep-2019	
21 Connett Road	Quote No: 98933	
Bell Block	Order No:	
New Plymouth 4312	Client Reference:	
	Submitted By: Celine Ye	

Manuka Honey Analysis

Sample Name:	Lab Number	Dihydroxyacetone (DHA) mg/kg	Methylglyoxal (MGO) mg/kg	Non Peroxide Activity (NPA)* % Phenol Equivalent	5-Hydroxymethylfurfural (HMF) mg/kg
19EG-330-3	2246584.1	530	192	8.3	13.7

Analyst's Comments

#1 The Key Technical Personnel for this analysis is Eilidh Mowat.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Honey

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
3-in-1 Honey Method	Aqueous extraction, derivatisation. Analysis by UPLC-UV (dihydroxyacetone, 5-hydroxymethylfurfural, methylglyoxal).	-	1
Non Peroxide Activity (NPA)*	NPA is calculated from methylglyoxal using a correlation curve based on published data for NPA and the primary active ingredient, methylglyoxal. (1,2). (1) Isolation by HPLC and characterisation of the bioactive fraction of New Zealand manuka (<i>Leptospermum scoparium</i>) honey. C. J. Adams, et al. Carbohydrate Research 343 (2008) 651-659. (2) Corrigendum to "Isolation by HPLC and characterization of the bioactive fraction of New Zealand manuka (<i>Leptospermum scoparium</i>) honey" [Carbohydr. Res. 343 (2008) 651]. C. J. Adams, et al. Carbohydrate Research 344 (2009) 2609.	1.0 % Phenol Equivalent	1

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B. D. Morris

Bruce Morris PhD
Senior Technologist - Food & Bioanalytical



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Certificate of Analysis

Client:	Egmont Honey Limited	Lab No:	2246584	HSDMM5ASP-1v2
Contact:	Nick Walker C/- Egmont Honey Limited 21 Connett Road Bell Block New Plymouth 4312	Date Received:	24-Sep-2019	
		Date Reported:	26-Sep-2019	(Amended)
		Quote No:	98933	
		Order No:		
		Client Reference:		
		Submitted By:	Celine Ye	

MPI Manuka Classification

Sample Name:	Lab Number	MPI Manuka Honey Classification
19EG-330-3	2246584.1	Monofloral Manuka Honey

MPI Manuka DNA

Sample Name:	Lab Number	Manuka Cq
19EG-330-3	2246584.1	Cq 27.09 #1

MPI Manuka Markers

Sample Name:	Lab Number	4-Hydroxyphenyllactic acid (4-HPA)	2-Methoxybenzoic acid (2-MBA)	2'-Methoxyacetophenone (2'-MAP)	3-Phenyllactic acid (3-PA)
		mg/kg	mg/kg	mg/kg	mg/kg
19EG-330-3	2246584.1	4.7	4.6	5.5	460

Analyst's Comments

#1 The Key Technical Personnel for this analysis is Eilidh Mowat.

Amended Report: This certificate of analysis replaces an earlier report issued on 24 Sep 2019 at 4:23 pm
Reason for amendment: Additional test included.

Summary of Methods

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Sample Type: Honey			
Test	Method Description	Default Detection Limit	Sample No
MPI 5 Attributes Tests			
MPI Manuka Honey Classification	Evaluation of results against Ministry of Primary Industries (MPI) criteria for classification of monofloral and multifloral Manuka honey, as per 'General Export Requirements for Bee Products - 29 January 2018.	-	1
Manuka Honey Chemistry Profile			
3-Phenyllactic acid (3-PA)	Aqueous solvent extraction, dilution. LC-MSMS analysis. RLP Official Test 10.05.	10 mg/kg	1
2'-Methoxyacetophenone (2'-MAP)	Aqueous solvent extraction, dilution. LC-MSMS analysis. RLP Official Test 10.05.	1.0 mg/kg	1
2-Methoxybenzoic acid (2-MBA)	Aqueous solvent extraction, dilution. LC-MSMS analysis. RLP Official Test 10.05.	1.0 mg/kg	1
4-Hydroxyphenyllactic acid (4-HPA)	Aqueous solvent extraction, dilution. LC-MSMS analysis. RLP Official Test 10.05.	1.0 mg/kg	1
Manuka Honey PCR Profile			
Manuka Cq	Quantification of Manuka DNA by real time PCR (Method version 1.05). RLP Official Test 10.04.	1.00 Cq	1



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Certificate of Analysis

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Client:	Egmont Honey Limited	Lab No:	2246584	HSDTASP-1V1
Contact:	Nick Walker C/- Egmont Honey Limited 21 Connett Road Bell Block New Plymouth 4312	Date Received:	24-Sep-2019	
		Date Reported:	24-Sep-2019	
		Quote No:	98933	
		Order No:		
		Client Reference:		
		Submitted By:	Celine Ye	

Tutin Analysis

Sample Name:	Lab Number	Tutin mg/kg	MRL as per Tutin in Honey Food Standard 2016 mg/kg	Tutin Result Evaluation Pass/Fail
19EG-330-3	2246584.1	0.021	0.70	PASS

Analyst's Comments

#1 The Key Technical Personnel for this analysis is Eilidh Mowat.

Summary of Methods

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Sample Type: Honey

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Tutin Analysis in Honey	<p>Solvent extraction, SPE cleanup. Analysis by LCMSMS. Results are representative of the liquid honey, not the sample as a whole.</p> <p>RLP Official Test 8.42</p> <p><i>Please note the Pass/Fail criteria is for extracted honey only. For comb honey tutin criteria please refer to the MPI Food Standard: Tutin in Honey.</i></p> <p><u>Tutin Result Evaluation (PASS/FAIL)</u> The PASS/FAIL result is based on comparison of the tutin result with the "Food Standard: Tutin in Honey (2016)". A result that falls at or BELOW the maximum permitted tutin level will give a PASS result. A result that falls ABOVE the maximum permitted tutin level will give a FAIL result.</p> <p><u>Individual Sample Testing Recommended?</u> Where a tutin result for a composited sample is above the maximum permitted level, it is recommended that the individual samples are retested. Please contact the laboratory to arrange for individual sample retesting.</p>	-	1

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Client: Egmont Honey Limited	Lab No: 2278202	HSDGPV1
Contact: Nick Walker	Date Received: 20-Nov-2019	
C/- Egmont Honey Limited	Date Reported: 22-Nov-2019	
21 Connett Road	Quote No: 98933	
Bell Block	Order No:	
New Plymouth 4312	Client Reference:	
	Submitted By: Celine Ye	

C4 Sugar Analysis

Sample Name:	Lab Number	$\delta^{13}\text{C}$ Honey (Whole) ‰	$\delta^{13}\text{C}$ Honey (Protein) ‰	Difference (Whole - Protein) ‰	C-4 Sugar Content %
19EG-330-3	2278202.1	-25.7	-26.8	1.2	6.8

Analyst's Comments

Sample 1 Comment:

C-4 Sugar Content:

As reported in AOAC method 998.12, pure honey (free of corn or cane sugars) with an exception of a few unusual varieties, yields a C-4 Sugar Content value of less than or equal to 7%. Some unusual varieties may slightly exceed this value, but will have a $\delta^{13}\text{C}$ for honey which is in the normal range (more negative than -24.0‰).

Sample 1 Comment:

C-4 Sugar Screen Results: Between 5.6% and 7.1%

Some risk of failing AOAC method.

Summary of Methods

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Sample Type: Honey			
Test	Method Description	Default Detection Limit	Sample No
C-4 Sugars Analysis (Screen Method)	This method is for screening purposes and should not be used for export certification. Methodology was performed in using a modified version of the AOAC method 998.12. All isotope ratios are reported as 'per mil' i.e. parts per thousand (‰), relative to the international standard for Carbon, VPDB.	-	1

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