

Certificate of Analysis

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Client:	Happy Beekeeping Limited	Lab No:	3512031	HGPV1
Contact:	Dr Isaac Flitta C/- Happy Beekeeping Limited 414 Kerikeri Road Kerikeri 0230	Date Received:	23-Mar-2024	
		Date Reported:	26-Mar-2024	
		Quote No:	97667	
		Order No:		
		Client Reference:		
		Submitted By:	Sara Samavati	

Sample Type: Honey				
Sample Name:			000652-9	006052-6
Lab Number:			3512031.2	3512031.3
MPI Manuka Classification				
MPI Manuka Honey Classification			Monofloral Manuka Honey	Monofloral Manuka Honey
3-Phenyllactic acid (3-PA)	mg/kg		1,120	1,090
2'-Methoxyacetophenone (2'-MAP)	mg/kg		11.2	8.9
2-Methoxybenzoic acid (2-MBA)	mg/kg		14.7	11.1
4-Hydroxyphenyllactic acid (4-HPA)	mg/kg		6.5	5.6
Manuka DNA	Cq		33.40	34.28
Manuka Honey Analysis				
Dihydroxyacetone (DHA)	mg/kg		1,213	818
5-Hydroxymethylfurfural (HMF)	mg/kg		23.9	31.5
Methylglyoxal (MGO)	mg/kg		892	754
Non Peroxide Activity (NPA)*	% Phenol Equivalent		20.9	18.9

Analyst's Comments

Samples 1-3 Comment:
The results presented on the Certificate of Analysis have been rounded to an appropriate number of significant figures, based on the Uncertainty of Measurement of the methods performed. The 'MPI Manuka Honey Classification' has been determined using unrounded values. In cases where one or more values were close to the critical levels (as defined by MPI), there may be a seeming inconsistency between the classification and the rounded values reported.

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 simple 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. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Labs, 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 uHPLC / UV-Vis (dihydroxyacetone, 5-hydroxymethylfurfural, methylglyoxal). In-house.	1.0 - 10 mg/kg	1-3



This Laboratory is accredited by International Accreditation New Zealand (IANZ), which represents New Zealand in the International Laboratory Accreditation Cooperation (ILAC). Through the ILAC Mutual Recognition Arrangement (ILAC-MRA) this accreditation is internationally recognised. The tests reported herein have been performed in accordance with the terms of accreditation, with the exception of tests marked * or any comments and interpretations, which are not accredited.

Sample Type: Honey			
Test	Method Description	Default Detection Limit	Sample No
Non Peroxide Activity (NPA)*	NPA is calculated from methylglyoxal using an industry accepted correlation curve based on published data ^{1,2} for NPA and the primary active ingredient, methylglyoxal. 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	1-3
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. General Export Requirements for Bee Products - 27 October 2021.	-	1-3
Manuka Honey Chemistry Profile			
3-Phenyllactic acid (3-PA)	Aqueous solvent extraction, dilution. LC-MSMS analysis. MPI Technical Paper 2017/30 (modified) RLP Official Test 10.05.	5 mg/kg	1-3
2'-Methoxyacetophenone (2'-MAP)	Aqueous solvent extraction, dilution. LC-MSMS analysis. MPI Technical Paper 2017/30 (modified) RLP Official Test 10.05.	0.5 mg/kg	1-3
2-Methoxybenzoic acid (2-MBA)	Aqueous solvent extraction, dilution. LC-MSMS analysis. MPI Technical Paper 2017/30 (modified) RLP Official Test 10.05.	0.5 mg/kg	1-3
4-Hydroxyphenyllactic acid (4-HPA)	Aqueous solvent extraction, dilution. LC-MSMS analysis. MPI Technical Paper 2017/30 (modified) RLP Official Test 10.05.	0.5 mg/kg	1-3
Manuka Honey PCR Profile			
Manuka DNA	Quantification of Manuka (<i>Leptospermum scoparium</i>) DNA by real time PCR. MPI Technical - Paper No: 2017/31 (modified). RLP Official Test 10.04.	> 36 Cq	1-3

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 23-Mar-2024 and 26-Mar-2024. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.



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Operations Support - Food & Bioanalytical