

## Certificate of Analysis

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<b>Client:</b>	Cosana New Zealand Limited	<b>Lab No:</b>	3761097	HGPv2
<b>Contact:</b>	Louie Primeau	<b>Date Received:</b>	23-Jan-2025	
	C/- Cosana New Zealand Limited	<b>Date Reported:</b>	05-Feb-2025	(Amended)
	PO Box 3330	<b>Quote No:</b>	122734	
	Taupo 3351	<b>Order No:</b>	SORD24729	
		<b>Client Reference:</b>	CSNZ14138 - Batch test - Normal	
		<b>Submitted By:</b>	Louie Primeau	

### Sample Type: Honey

<b>Sample Name:</b>	CSNZ14138		
<b>Lab Number:</b>	3761097.1		
<b>MPI Manuka Classification</b>	MPI Manuka Honey Classification		
	Monofloral Manuka Honey		
3-Phenyllactic acid (3-PA)	mg/kg	890	
2'-Methoxyacetophenone (2'-MAP)	mg/kg	19.5	
2-Methoxybenzoic acid (2-MBA)	mg/kg	7.4	
4-Hydroxyphenyllactic acid (4-HPA)	mg/kg	8.4	
Manuka DNA	Cq	29.63	
<b>Manuka Honey Analysis</b>			
Dihydroxyacetone (DHA)	mg/kg	891	
5-Hydroxymethylfurfural (HMF)	mg/kg	28.8	
Methylglyoxal (MGO)	mg/kg	605	
Non Peroxide Activity (NPA)*	% Phenol Equivalent	16.5	
Leptosperin	mg/kg	470	
<b>Tutin Analysis</b>			
Tutin Result Evaluation	Pass/Fail	PASS	
Tutin	mg/kg	< 0.010	
MRL as per Tutin in Honey Food Standard 2016	mg/kg	0.70	
<b>Microbiological Analysis</b>			
Aerobic Count 35°C	cfu / g	10	
Yeasts & Moulds	cfu / g	< 10	
Total Coliforms	cfu / g	< 10	
Staphylococcus aureus	cfu / g	< 10	
<b>American Foulbrood Analysis</b>			
American Foulbrood (AFB)	Not Detected		
American Foulbrood (AFB)	Spores and/or cells per g	< 92	
<b>Glyphosate Analysis</b>			
AMPA	mg/kg	< 0.010	
Glufosinate	mg/kg	< 0.010	



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		
Sample Name:		CSNZ14138
Lab Number:		3761097.1
Glyphosate	mg/kg	< 0.010

### Analyst's Comments

**Sample 1 Comment:**

**AFB Comment:**

Please note: The result of "Not Detected" could include situations where late amplification of the AFB marker was seen, past the limit of detection (LOD) of the assay (i.e. 1-91 cells and/or spores per g).

**Sample 1 Comment:**

**MPI Classification 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.

**Amended Report:** This certificate of analysis replaces report '3761097-HGPv1' issued on 28-Jan-2025 at 1:40 pm.  
Reason for amendment: Further testing added, at the request of the client.

## 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
Leptosperin	Aqueous extraction, dilution, analysis by LC-MS/MS.	15 mg/kg	1
Non Peroxide Activity (NPA)*	NPA is calculated from methylglyoxal using an industry accepted correlation curve based on published data <sup>1,2</sup> for NPA and the primary active ingredient, methylglyoxal. <sup>1</sup> 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. <sup>2</sup> 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
Tutin Analysis in Honey	Solvent extraction, dilution. Analysis by LC-MS/MS. Results are representative of the liquid honey, not the sample as a whole.  <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.  <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. <b>RLP Official Test 8.42.</b>	0.010 mg/kg	1
Aerobic Count 35°C	Automated MPN count on TEMPO AC, Incubated at 35°C for 22-28 hours. bioMérieux, TEMPO.	10 cfu / g	1
Total Coliforms	Automated MPN count on TEMPO TC, incubated at 35°C for 24-27 hours. bioMérieux, TEMPO.	10 cfu / g	1
Staphylococcus aureus	Automated MPN count on TEMPO STA, Incubated at 35°C for 24-27 hours. bioMérieux, TEMPO.	10 cfu / g	1
Yeasts & Moulds	Automated MPN count on TEMPO YM, Incubated at 25°C for 72-76 hours. bioMérieux, TEMPO.	10 cfu / g	1
Glyphosate LC-MS/MS Analysis	Aqueous extraction, Analysis by LC-MS/MS. In-house. <b>RLP Official Test 8.47.1.</b>	0.010 mg/kg	1
MPI 5 Attributes Tests			

Sample Type: Honey			
Test	Method Description	Default Detection Limit	Sample No
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
Manuka Honey Chemistry Profile			
3-Phenyllactic acid (3-PA)	Aqueous solvent extraction, dilution. LC-MS/MS analysis. MPI Technical Paper 2017/30 (modified) <b>RLP Official Test 10.05.</b>	5 mg/kg	1
2'-Methoxyacetophenone (2'-MAP)	Aqueous solvent extraction, dilution. LC-MS/MS analysis. MPI Technical Paper 2017/30 (modified) <b>RLP Official Test 10.05.</b>	0.50 mg/kg	1
2-Methoxybenzoic acid (2-MBA)	Aqueous solvent extraction, dilution. LC-MS/MS analysis. MPI Technical Paper 2017/30 (modified) <b>RLP Official Test 10.05.</b>	0.50 mg/kg	1
4-Hydroxyphenyllactic acid (4-HPA)	Aqueous solvent extraction, dilution. LC-MS/MS analysis. MPI Technical Paper 2017/30 (modified) <b>RLP Official Test 10.05.</b>	0.50 mg/kg	1
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). <b>RLP Official Test 10.04.</b>	> 36 Cq	1
American Foulbrood Profile			
American Foulbrood (AFB)	Quantification of <i>Paenibacillus</i> larvae, causative agent of American foulbrood (AFB), using real time PCR analysis. <b>RLP Official Test 2.14.</b>	92 Spores and/or cells per g	1

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

Testing was completed between 23-Jan-2025 and 05-Feb-2025. 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.

Helen McGowan BSc (Tech)  
Operations Support - Food & Bioanalytical