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Certificate of Analysis

Lab Reference: 21-46121
Date Received: 04/11/2021
Testing Initiated: 4/11/2021
Date Completed: 4/11/2021

Report Comments

Samples were collected by yourselves (or your agent) and analysed as received at Analytica Laboratories. Samples were in acceptable condition unless otherwise noted on this report.
Specific testing dates are available on request.

Results Summary

3in1 in Honey

Laboratory ID	Sample ID	Dihydroxyacetone (DHA)	Methylglyoxal (MG/MGO)	Non-Peroxide Activity* (NPA)	Hydroxymethylfurfural (HMF)
	Units *Reporting Limit*	mg/kg 40	mg/kg 8	%w/v phenol eq. 1.3	mg/kg 1
21-46121-3	213342	622	601	16.5	31.0

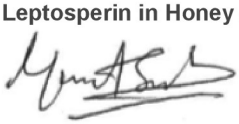
3in1 in Honey Approver:

Gurmeet Singh, Dip. Tech. (Sci)
Laboratory Technician

Leptosperin in Honey

Laboratory ID	Sample ID	Leptosperin
	Units *Reporting Limit*	mg/kg 20
21-46121-3	213342	581

Leptosperin in Honey Approver:



Gurmeet Singh, Dip. Tech. (Sci)
Laboratory Technician

Method Summary

3in1	Determination of Dihydroxyacetone (DHA), Methylglyoxal (MG/MGO) and Hydroxymethylfurfural (HMF) by aqueous extraction, derivatisation, and UPLC analysis in accordance with in-house procedures.
NPA	Non-Peroxide Activity (NPA) values are not directly measured by the laboratory, but are calculated from the measured methylglyoxal concentration in the honey according to the requirements of the client. The calculation is based on published data(†) comparing the NPA and methylglyoxal concentration measured in a range of honey samples. These calculated values are not accredited by IANZ and do not imply that the honey is or is not manuka honey. NPA values less than 5 are an estimate based on extrapolation of the relationship between methylglyoxal and NPA *(†) Isolation by HPLC and characterisation of the bioactive fraction of New Zealand manuka (Leptospermum scoparium) honey. C. J. Adams, et al. Carbohydrate Research 343 (2008) 651-659. And, Corrigendum to "Isolation by HPLC and characterization of the bioactive fraction of New Zealand manuka (Leptospermum scoparium) honey" [Carbohydr. Res. 343 (2008) 651]. Carbohydrate Research 344 (2009) 2609. C. J. Adams, et al.*
Leptosperin	Aqueous extraction, dilution, analysis by UPLC in accordance with in-house procedures.

Hill Laboratories
TRIED, TESTED AND TRUSTED

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Certificate of Analysis

Lab No:	2752873 HMM5ASP-5v1
Date Received:	02-Nov-2021
Date Reported:	04-Nov-2021

Sample Type: Honey

Sample Name:		213342
Lab Number:		2752873.5
MPI Manuka 5 Attributes Analysis		
MPI Manuka Honey Classification		Monofloral Manuka Honey
3-Phenyllactic acid (3-PA)	mg/kg	970
2'-Methoxyacetophenone (2'-MAP)	mg/kg	26
2-Methoxybenzoic acid (2-MBA)	mg/kg	17.6
4-Hydroxyphenyllactic acid (4-HPA)	mg/kg	13.6
Manuka DNA	Cq	21.17

Supplementary Report: This report is a supplement to an earlier report. It may represent a subset of the requested tests.

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 Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

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. General Export Requirements for Bee Products - 29 January 2018.	-	5
Manuka Honey Chemistry Profile			
3-Phenyllactic acid (3-PA)	Aqueous solvent extraction, dilution. LC-MSMS analysis. **RLP Official Test 10.05**.	5 mg/kg	5
2'-Methoxyacetophenone (2'-MAP)	Aqueous solvent extraction, dilution. LC-MSMS analysis. **RLP Official Test 10.05**.	0.5 mg/kg	5
2-Methoxybenzoic acid (2-MBA)	Aqueous solvent extraction, dilution. LC-MSMS analysis. **RLP Official Test 10.05**.	0.5 mg/kg	5
4-Hydroxyphenyllactic acid (4-HPA)	Aqueous solvent extraction, dilution. LC-MSMS analysis. **RLP Official Test 10.05**.	0.5 mg/kg	5
Manuka Honey PCR Profile			
Manuka DNA	Quantification of Manuka (*Leptospermum scoparium*) DNA by real time PCR. MPI Technical - Paper No: 2017/31 (modified). **RLP Official Test 10.04**.	1.00 Cq	5

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

Testing was completed on 03-Nov-2021. 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.

Bruce Morris PhD
Senior Technologist - Food & Bioanalytical