

## Certificate of Analysis

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|                 |                                                                                   |                          |                          |           |
|-----------------|-----------------------------------------------------------------------------------|--------------------------|--------------------------|-----------|
| <b>Client:</b>  |  | <b>Lab No:</b>           | 3609705                  | HMASP-1v1 |
| <b>Contact:</b> |                                                                                   | <b>Date Received:</b>    | 19-Jun-2024              |           |
|                 |                                                                                   | <b>Date Reported:</b>    | 17-Jul-2024              |           |
|                 |                                                                                   | <b>Quote No:</b>         | 81622                    |           |
|                 |                                                                                   | <b>Order No:</b>         |                          |           |
|                 |                                                                                   | <b>Client Reference:</b> |                          |           |
|                 |                                                                                   | <b>Submitted By:</b>     | Meuanprae Techapitaktham |           |

### Sample Type: Honey

|                                                  |           |
|--------------------------------------------------|-----------|
| <b>Sample Name:</b>                              | 24F18M20  |
| <b>Lab Number:</b>                               | 3609705.1 |
| <b>Manuka Honey Analysis</b>                     |           |
| Dihydroxyacetone (DHA) mg/kg                     | 1,359     |
| 5-Hydroxymethylfurfural (HMF) mg/kg              | 23.6      |
| Methylglyoxal (MGO) mg/kg                        | 907       |
| Non Peroxide Activity (NPA)* % Phenol Equivalent | 21.1      |

**Manuka Honey Analysis Report:** This report 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 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         |
| 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.<br><sup>1</sup> 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.<br><sup>2</sup> Corrigendum to "Isolation by HPLC and characterization of the bioactive fraction of New Zealand manuka (Leptospermum scoparium) honey" [Carbohydr. Res. 343 (2008) 651]. C. J. Adams, et al. Carbohydrate Research 344 (2009) 2609. | 1.0 % Phenol Equivalent | 1         |

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

Testing was completed between 19-Jun-2024 and 20-Jun-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.



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



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