



## Certificate of Analysis

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Lab Reference: 22-41320  
Submitted by:  
Date Received: 11/11/2022  
Testing Initiated: 14/11/2022  
Date Completed: 30/11/2022  
Order Number: 00015  
Reference: 00015

### 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 Analysis

| Laboratory ID | Sample ID                    | Dihydroxyacetone (DHA) | Methylglyoxal (MG/MGO) | Non-Peroxide activity (NPA) | Hydroxymethylfurfural (HMF) |
|---------------|------------------------------|------------------------|------------------------|-----------------------------|-----------------------------|
|               | <i>Units Reporting Limit</i> | mg/kg<br>40            | mg/kg<br>8             | %w/v phenol eq.             | mg/kg<br>1                  |
| 22-41320-5    | BN: 224421_MGO 1800+         | 1,860                  | 1,910                  | 33.1                        | 48.2                        |

#### 3in1 Analysis Approver:

Tanya Prinsloo  
Customer Care Specialist

### Method Summary

#### 3in1 (Hills)

Subcontracted to Hill Laboratories - Aqueous extraction, derivatisation. Analysis by uHPLC / UV-Vis (dihydroxyacetone, 5-hydroxymethylfurfural, methylglyoxal). Inhouse.

#### 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<sup>(†)</sup> 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.*