CERTIFICATES AND THEIR INTERPRETATION

Totika Nature Schweiz

You've already read a lot about manuka honey - but now you want to know more about authentication and certification? Here's an easy-to-understand introduction to the most important quality criteria.
Enjoy!

29.05.2025

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Certificate of Analysis

Client:	Happy Beekeeping Ltd	**Lab No:**	2834969 HGPv1
Contact:	Dr Isaac Flitta	**Date Received:**	21-Jan-2022
	414 Kerikeri Road Kerikeri Northland 0230 New Zealand	**Date Reported:**	25-Jan-2022
		Quote No:	97667
		Order No:	
		Client Reference:	
		Submitted By:	Dr Isaac Flitta

Sample Type: Honey

Sample Name:		BTN-MB-00652-3
Lab Number:		2834969.2
MPI Manuka 5 Attributes Analysis		
MPI Manuka Honey Classification		Monofloral Manuka Honey
3-Phenyllactic acid (3-PA)	mg/kg	1,470
2'-Methoxyacetophenone (2'-MAP)	mg/kg	30
2-Methoxybenzoic acid (2-MBA)	mg/kg	10.3
4-Hydroxyphenyllactic acid (4-HPA)	mg/kg	11.8
Manuka DNA	Cq	33.37
Manuka Honey Analysis		
Dihydroxyacetone (DHA)	mg/kg	1,345
5-Hydroxymethylfurfural (HMF)	mg/kg	26.1
Methylglyoxal (MGO)	mg/kg	879
Non Peroxide Activity (NPA)*	% Phenol Equivalent	20.7

MPI Manuka 5 Attributes is a test to determine the authenticity and quality of Manuka honey.

The test assesses **five key attributes** of honey to ensure that it meets the standards set by the New Zealand government. The attributes and their occurrence can be seen to the left of the parenthesis.

The presence of leptosperine, a chemical marker found exclusively in Manuka honey, is checked. The honey has the right consistency and meets all the criteria. It is classified as monofloral.

1. **DNA** - This test determines the presence of manuka DNA and verifies the origin of the honey.

2. **methylglyoxal (MGO)** - This test measures the concentration of MGO, a natural ingredient typical of manuka honey which helps to classify its quality.

3. **leptosperine** - This test measures the presence of leptosperine, a chemical marker found exclusively in Manuka honey.

4. **hydroxymethylfurfural (HMF)** - This is measured to ensure that the honey has not been altered or heated.

5. **Moisture content** - Moisture content is measured to ensure that honey has the right consistency.

The Ministry for Primary Industries

MĀNUKA HONEY SCIENCE DEFINITION

TEST FOR MONOFLORAL MĀNUKA HONEY

The test for monofloral mānuka honey requires all of the five attributes. If the honey fails to meet 1 or more of the attributes, it is not monofloral mānuka honey – see test for multifloral mānuka honey.

TEST #1: CHEMICAL TEST

The following chemicals all need to be present:

- **3-Phenyllactic acid** at a level greater than or equal to **400 mg/kg**
- **2'-Methoxyacetophenone** at a level greater than or equal to 5 mg/kg
- **2-Methoxybenzoic acid** at a level greater than or equal to 1 mg/kg
- **4-Hydroxyphenyllactic acid** at a level greater than or equal to 1 mg/kg

TEST #2: DNA TEST

DNA from mānuka pollen (*DNA level required is less than Cq 36, which is approximately 3 fg/µL)

A combination of five attributes (4 chemicals, 1 DNA marker from mānuka pollen) are required to authenticate monofloral and multifloral mānuka honey.

These attributes can be identified using two laboratory tests.

TEST FOR MULTIFLORAL MĀNUKA HONEY

The test for multifloral mānuka honey requires all of the five attributes. If the honey fails to meet 1 or more of the attributes, it is non-mānuka.

TEST #1: CHEMICAL TEST

The following chemicals all need to be present:

- **3-Phenyllactic acid** at a level greater than or equal to **20 mg/kg** but less than **400 mg/kg**
- **2'-Methoxyacetophenone** at a level greater than or equal to 1 mg/kg
- **2-Methoxybenzoic acid** at a level greater than or equal to 1 mg/kg
- **4-Hydroxyphenyllactic acid** at a level greater than or equal to 1 mg/kg

TEST #2: DNA TEST

DNA from mānuka pollen (*DNA level required is less than Cq 36, which is approximately 3 fg/µL)

Ministry for Primary Industries
Manatū Ahu Matua

July 2018

DHA - An indicator of maturity and development

Dihydroxyacetone (DHA) is a natural component of fresh Manuka honey. Over time, DHA naturally converts to methylglyoxal (MGO). A high DHA value may indicate that the honey's MGO content will continue to develop. To be certified by the UMF system, DHA levels must be at least 70 mg/kg. For example, an MGO content of 850+ requires at least 500 mg/kg.

➡️ Totika Nature's manuka honey meets these criteria.

HMF - an indicator of freshness

Hydroxymethylfurfural (HMF) is formed when honey has been overheated or stored for a long time. A low HMF value indicates that the honey has been carefully processed and is fresh. For Manuka honey with an MGO value of 830+, the HMF value must not exceed 40 mg/kg.

➡️ This criterion is also met by Totika Nature honey.

MGO - a quality criterion

Methylglyoxal (MGO) is a natural ingredient found in manuka honey. MGO content is measured in mg/kg and serves as a benchmark for honey quality.

➡️ The higher the MGO value, the more characterful and intense the honey.