

# A Simplified Overview of the Various Activities in Manuka Honey



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## **Manuka honey**

Manuka honey is derived from the *Leptospermum* tree that is native to New Zealand and Australia. The indigenous people from both lands have been using Manuka in their traditional medicines for centuries. In recent decades laboratory studies in both countries have identified unique properties found only in some *Leptospermum* species in New Zealand and Australia. Today, following extensive clinical testing in Australia, New Zealand and other countries, the unique value of Manuka has been recognised worldwide.

Manuka honey is marketed throughout the world and the activity strength can be tested for and is often shown as a strength number on the labels (i.e. NPA 10+ or UMF® 10+). For commercially competitive reasons there have been a number of symbols introduced into the market over recent years that are aimed to represent the activity strength of Manuka. Following is an explanation of the more commonly used activity indicators.

## **Non Peroxide Activity (NPA)**

In 1981, Dr Peter Molan (MBE), who is a professor at the University of Waikato in New Zealand, was researching the peroxide activity in honeys from around the world when he found that when he deliberately destroyed the Hydrogen Peroxide Activity (HPA) in honey that only one honey was still showing strong antibacterial activity. This activity became known as Non Peroxide Antibacterial Activity (NPA). Dr Molan went on to research this activity over many years and found that it was very stable in Manuka honey and could withstand both heat and light exposure and still remain highly active and effective.

Further research by Dr Molan and his team revealed that Manuka honey with this NPA activity was very effective against many strains of bacteria including *Staphylococcus Aureus* and the MRSA super bug. Dr Molan's team also found that Manuka honey produced different strengths of NPA so a test was developed to measure the strength of this activity in each batch of honey. The rating for NPA is measured as a one-to-one relationship to the phenol standard eg. NPA 5+ Manuka honey has the same non-peroxide antibacterial activity as a 5% phenol solution. It was also discovered that honey from *Leptospermum* species in Australia contained NPA and this became known as Australian Manuka honey. This honey also carries an NPA rating.

*Note – Manuka honey containing Non Peroxide Activity (NPA) is found in both New Zealand and Australia.*

### **Unique Manuka Factor (UMF®)**

In 1995, a small New Zealand bee industry group met to discuss and investigate the best way to Trade Mark and protect the unique antibacterial activity (NPA) that Dr Molan had found in some Manuka honeys. In 1998, Dr Molan announced that a new trade mark for the Unique Manuka Factor “UMF®” had been registered for licence holders to use as a quality mark for describing the strength of the NPA activity in New Zealand Manuka honey. Only Manuka Honey from New Zealand that is tested with a Non Peroxide Activity can carry the UMF® trade mark and it is based on an equivalent value strength i.e. NPA 10 = UMF® 10.

*Note – NPA and UMF® are recorded as an equal and equivalent strength in number.*

### **Methylglyoxal (MGO)**

More recent research has shown that one of the major components that is attributed to the unique activity in Manuka honey is methylglyoxal (MGO) and this chemical marker is now used as an indicator of the strength of activity in Manuka honey.

MGO is measured in parts per million (ppm) and the NPA is measured as a percentage of phenol equivalent. The UMF® Association has established an official MGO and NPA/UMF® grading system (<http://www.umf.org.nz/grading-system>). Typical examples of the correlation between MGO and UMF® areas follows:

NPA/UMF® 5+ = MGO 83

NPA/UMF® 10+ = MGO 263

NPA/UMF® 15+ = MGO 514

NPA/UMF® 20+ = MGO 829

*Note – Care should be taken to check the actual correlation between MGO and NPA/UMF® when selecting the strength of your honey, the larger number on MGO can be very misleading.*

### **IN SUMMARY**

- ‘Manuka’ (*Leptospermum* sp.) honey containing Non Peroxide Activity (NPA also known as UMF®) is found in both New Zealand and Australia.
- UMF® or NPA Activity is highly effective and is very stable.
- NPA or UMF® is recorded as an equal and equivalent strength in number.
- MGO refers to a chemical marker and is now used as an indicator of the strength of NPA or UMF® activity in Manuka honey. Care should be taken to check the actual correlation between MGO and NPA/UMF® when selecting the strength of your honey.

*This article was written by Dr Ben McKee, Managing Director of Capilano Honey Ltd and 5th generation Australian Beekeeper.*