NMR

Honey-Profiling™ 3.0

Advanced Authenticity Analysis

Innovation with Integrity

Strengthen your brand's image and ensure your product's quality with NMR-based Honey-Profiling.

Today's global consumers demand more transparency than ever before and are more sensitive to the origin and authenticity of the products they buy. Consumers increasingly seek out natural and locally sourced products, as well as products with health benefits. These trends have greatly affected the growing honey market with consumers demanding more information about where their honey comes from.

As a high value product used in food, medicine, and cosmetics, honey is particularly vulnerable to adulteration. While honey adulteration may not pose a notable risk to health, it does have a serious impact on fair market competition and consumer confidence.

Over the last 15 years, honey bee populations have declined significantly due to diseases, exposure to chemicals, loss of biodiversity, leading to increased cost of honey production. Yet, because of honey fraud, global raw honey prices have fallen allowing those engaged in adulteration to reap huge profits while producers of authentic honey face declining financial incentives, ultimately putting beekeepers' livelihoods in jeopardy.

In addition to these economic consequences, honey adulteration has an adverse effect on global food chains. Bees are essential pollinators, helping maintain food security and vital ecosystems. A declining beekeeping industry leads to a decline in global bee populations - a potentially huge threat to global food security.

Methods of honey adulteration are complex and constantly evolving. Honey must be routinely tested at different stages of the supply chain in order to ensure quality and verify that the product is authentic. This requires the use of advanced analytical methods that are not easy to counterfeit.

As a response, more and more beekeepers and honey packers around the world are adopting the NMR-based Honey-Profiling method in order to strengthen their premium brand image by selling honeys tested by nuclear magnetic resonance (NMR). This process protects stakeholders, builds trust between producers and wholesalers, and helps maintain consumer confidence in brands. NMR is also recognized as a powerful method by government agencies, in

the global fight against food fraud and unfair competition.

High Resolution ^{1}H-NMR (Proton Nuclear Magnetic Resonance) spectroscopy is based on the analysis of the so-called chemical fingerprint of honey, which is unique to each batch.

With courtesy of Mr. Hugo Tejerina, Beekeeper in Argentina

Connected to a global database of honey samples, this technology reliably detects purity issues and furthermore, false declarations of country of origin and botanical variety.

Bruker's Honey-Profiling database features roughly 28,500 reference samples from a broad range of honeys, including data from more than 50 countries, 100 monofloral honey types, as well as a multitude of different polyfloral mixtures plus different seasons, production years, blends and production methods. This in turn strengthens the overall power and reliability of the NMR-profiling method.

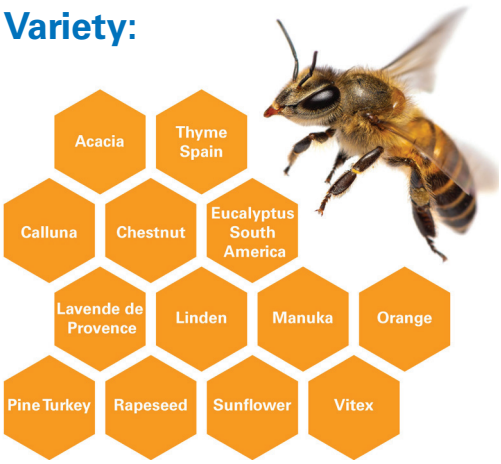
[1]Verification of Country of Origin:

Argentina	India
Brazil	Mexico
Bulgaria	New Zealand
Canada	Romania
Chile	Spain
China	Thailand
Cuba	Turkey
France	Ukraine
Germany	Uruguay
Guatemala	Vietnam

Honey-Profiling 3.0 Includes:

- Detection of exogeneous sugars
- Verification of country of origin[1]
- Verification of botanical variety[2]
- Analysis of composition and freshness[3]
- Detection of atypical samples
- EU regulation and Codex Alimentarius compliance check for HMF, Sucrose and Glucose and Fructose

[2]Verification of Botanical Variety:



[3]Quantified Molecules:

Fructose	Citric Acid	Alanine	2,3-butanediol	3-phenyllactic acid
Glucose	Malic Acid	Aspartic Acid	5-HMF	Dihydroxyacetone (DHA)
Sucrose	Quinic Acid	Glutamine	Acetic Acid	Methylglyoxal (MGO)
Turanose		Leucine	Acetoin	Kynurenic Acid
Maltose		Proline	Ethanol	Shikimic Acid
Melezitose		Valine	Lactic Acid	
Maltotriose		Tyrosine	Formic Acid	
Gentiobiose		Phenylalanine	Fumaric Acid	
Raffinose			Pyruvic Acid	
Mannose			Succinic Acid	

Why choose NMR Honey-Profiling™ Method in your daily routine ?

- Adopted by governmental agencies in many countries
- Recommended by the International Federation of Beekeepers' Associations APIMONDIA*
- Combined targeted and untargeted analyses for the detection of adulteration with sugar syrups
- Added value, with the verification of country of origin and botanical variety
- Reliability, with the largest and most comprehensive database of honey
- Timesaving: authenticity and quality results within 20 minutes
- Convenient and fully automated solution
- Easy to use, no NMR expertise needed
- ISO17025 accreditation (Bruker BAS laboratory)
- Join a global network of honey experts

NMR Solutions

It is also compatible with the versatile NMR FoodScreener™ platform, which also supports Bruker's Wine-Profiling™ and Juice-Profiling™ methods.

For more information about Bruker's Honey-Profiling 3.0 method and solutions, please visit:

https://www.bruker.com/en/products-and-solutions/mr/nmr-food-solutions/honey-profiling.html

*Apimondia Statement on Honey Fraud, January 2020

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Customer Support

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