

Authentication and quality control of honey

The CRC for Honey Bee Products has developed novel honey authentication and quality control methods using high-performance thin-layer chromatography.

Quality control is important for honey. Customers need certainty of honey purity, including information about the source of the honey nectar the bees harvested and assurance that the product has not been adulterated with syrups.

CRC researchers have developed and validated a new way of establishing the principal nectar source of a honey using the non-sugar component separated using high-performance thin layer chromatography (HPTLC).

By assessing hundreds of Australian honey library samples using high-performance thin layer chromatography, a comprehensive database has been built to identify flower nectar signatures.

Providing a nectar signature for our unique Australian honeys not only provides proof of purity, it also provides a new marketing tool for the honey bee industry.

HPTLC analysis has additional applications for the honey industry. The CRC has developed HPTLC-based qualitative and quantitative analysis of sugars to detect potential honey adulteration, leading to a predictive model for honey adulteration.



CRC HBP
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quality product





Based on the sugars and their levels, HPTLC may determine whether a honey comes from native bees, or is 'ant honey', a culturally and nutritionally important Australian Indigenous bushfood produced by honeypot ants (*Camponotus inflatus*).

The technique can also identify a toxic compound called 5-hydroxymethylfurfural, produced when honey is over-heated during processing. Measurement of 5-hydroxymethylfurfural together with a pollen count are important in the characterisation of 'raw' honey.

Many Australian honeys have high phenolic activity, which correlates with high antioxidant activity. This activity accumulates from multiple honey components that can be detected and identified using HPTLC. Identifying these components is important for assessing the antioxidant content of honey and other honey bee products, such as pollen or propolis.

Honey analysis using HPTLC is now internationally accepted and used for quality assurance.

To support Australia's entry into the fine food, rare honey market, the CRC for Honey Bee Products registered the unique HPTLC honey signatures, together with the methodology, with the international HPTLC atlas. The Swiss company CAMAG, a world leader in planar chromatography, has also incorporated the CRC's HPTLC sugar analysis into a comprehensive, fully automated system for worldwide use.



PhD student Md Khairul Islam has developed analytical methods for honey authentication and quality control using high-performance thin layer chromatography.

A/Prof Connie Locher
Division of Pharmacy,
School of Allied Health
University of Western Australia
Email: connie.locher@uwa.edu.au
www.crchoneybeeproducts.com



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