

Is your honey the real deal?

A quick and user-friendly method for producers and distributors of honey to detect whether the products they are selling are the real thing or not has been developed by food scientists and researchers from Stellenbosch University (SU) and the Sapienza University of Rome.



papiboy via [pixabay](#)

A [recent article](#) in the international journal Food Control explains how near-infrared (NIR) spectroscopy can be used to test South African honey. Laboratory and portable NIR instruments were calibrated specifically with South African honey in mind.

Because portable and mobile NIR instruments are available on the market, it would be possible to perform the tests on site at for instance a honey producer or distribution plant on calibrated equipment.

The specific NIR calibration for South African honey was developed by lead author Dr Anina Guelpa, as part of her postdoctoral research work in the Department of Food Science at SU and the University's Central Analytical Facility (CAF) CT-Scanner Facility. Dr Guelpa was assisted in developing and testing the method for South African conditions by her supervisor, NIR spectroscopy expert Prof Marena Manley of the SU Department of Food Science, SU researchers Dr Anton du Plessis and Dr Ruhan Slabbert, and Dr Federico Marini of the Sapienza University of Rome in Italy.

A target for adulteration and food fraud

According to the records of the South African beekeeping industry, 1,500 tons of honey is produced locally every year. It is, however, not enough to meet consumer demand, and therefore roughly the same volume is imported every year – at a lower price than that of locally produced honey.

Because honey is a high-value foodstuff, it has unfortunately become a target for adulteration and subsequent food fraud in many parts of the world. Whether it occurs in South Africa, and if so, the extent of it, is not known. In some parts of the world, cheap sugar syrups are sometimes added to honey being sold. Another form of misconduct may occur when honey is labeled as being produced locally, but in reality, it has been imported or diluted with imported honey.

“Not only will the consumer be misled in the process, but it means that the local producers cannot compete with the low pricing of these adulterated honeys,” says Prof Manley.

Detecting adulteration in South African honey

“There was, therefore, a need for a fast, non-destructive, easy to use and low-cost classification method to detect potential adulteration in South African honey,” she explains.

Current methods to detect adulterated honey, such as the use of stable carbon isotopic ratio mass spectrometry (SCIRA) or thermal analysis, are expensive, time-consuming and in most cases destroy the sample used.

The researchers decided to proactively develop an NIR spectroscopy method with which to test the authenticity of South African honey. The research team decided on NIR spectroscopy because the technique has been used before in international studies to determine the floral origin of honey or to authenticate its geographic or botanical origin.

By developing calibrations using the spectral information of honey of South African origin, it was possible for Dr Guelpa to verify whether samples are indeed produced by South African bees or not. The test can also pick up whether any sugars (such as glucose or fructose) or non-South African honey are added to a sample. This is possible even in cases where only a little bit of extra sugar has been added.

“Authentic South African samples, despite coming from diverse regions and having been made from pollen from different types of flowers, share specific spectroscopic characteristics that help to differentiate them from imported and adulterated honeys,” explains Prof Manley.

She says the technique could potentially also be used to distinguish between different types of South African honey. Other advantages are that NIR measurements can be done quickly, it is non-invasive and is easy to perform. Because the samples tested are not destroyed in the process, these can be stored as evidence in further investigations.

For more, visit: <https://www.bizcommunity.com>