

## **ATR-FTIR chemical screening for adulterants and sugar characterisation in honeys**

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### **ABSTRACT**

The search for improvements in honey analysis is an important topic due to the relevance that adulterations and variations of sugar composition have in this food.

Attenuated Total Reflectance Fourier Transform InfraRed spectroscopy (ATR-FTIR) is a reliable and fast analytical instrumentation for analysis of liquids, semi-solids and solids, which is currently used in food chemistry for qualitative and quantitative investigations.

This work is aimed to build a fast analytical method, using ATR-FTIR and Partial Least Square (PLS) chemometric tool, to quantitative determination of glucose, fructose and sucrose present in honeys.

We analyzed 25 honeys from Trentino and Sicily and a significant spectral range from the whole ATR-FTIR spectra were selected. Then a PLS multivariate calibration model was built by using mixtures of glucose, fructose and sucrose at various concentration. Samples for cross-validation were selected, thereby allowing quantitative evaluation of glucose, fructose and sucrose in all samples. Furthermore, a representative number of honeys were mixed with common adulterant syrups to simulate adulteration procedures and to verify the reliability of the ATR-FTIR technique in recognizing them.

Preliminary results revealed not only the quantitative reliability of ATR-FTIR spectroscopy in the evaluation of sugars in honeys, but also its ability in recognizing honey adulteration.