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HONEY CHARACTERIZATION BY FTIR-ATR SPECTROSCOPY

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Infrared spectroscopy (IR) measures the wavelength and intensity of the absorption of infrared light (vibrations) of the different compounds available in a sample. A sample may have different functional groups that produce a unique spectrum that may be considered a ''finger print'' and can be used to confirm the identity, origin or adulteration of that specific sample.

The Fourier transform technique in IR (FTIR) is a technique that does not require sample preparation, is quick and allows running multiple tests with a single portion of a sample. Due to those advantages, its use for food analysis is increasing.

The aim of this work was to discuss the performance of FTIR with an ATR (Attenuated Total Reflectance) crystal for the multivariate characterization of honey's chemical composition. In the first approach, some chemical parameters of 150 honey samples were determined according to the regulatory standards of the International Honey Commission. The calibration model was obtained by Partial Least Squares regression (PLS) in comparison to the results obtained using the reference methods. The models presented a R^2 ranging between 96.7% and 81.8%, with a RPD between 5.5 and 2.4 and a low root means square error of cross-validation and prediction.

The precision achieved suggests the potential applicability of the infrared spectroscopy in food products, particularly for quality control of honey samples.

Keywords: FTIR-ATR, PLS-R, honey, physicochemical characterization

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