Title Determination of carbohydrate content in bananas during ripening and storage by near infrared spectroscopy

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Abstract

Near infrared (NIR) spectroscopy was used to establish calibration equations to determine individual sugar content in Cavendish bananas that corresponds to the stage of ripeness. Using high performance liquid chromatography as the reference method, a NIR Systems monochromator and ISI software for scanning and data analysis, calibration models for prediction of individual sugar content were developed. A modified partial least squares (MPLS) algorithm was used to perform the calibration. A wavelength range of 1100-2500nm was selected for evaluation. The standard error of performance (*SEP*) and coefficient of determination (R^2) for individual sugars were as follow: sucrose 0.78% and 0.97, respectively; glucose 0.21% and 0.96, respectively; fructose 0.16% and 0.95, respectively. *SEP* and R^2 for total sugar content were 0.80% and 0.98, respectively.