Title Vis/NIR spectroscopy and chemometrics for the prediction of soluble solids content and acidity (pH) of kiwifruit
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Abstract

Visible and near infrared spectroscopic (Vis/NIRS) techniques have shown promise as rapid and nondestructive tools to evaluate the various internal quality attributes of fruits and vegetables. The objective of this study was to develop a calibration model for prediction of soluble solids content and acidity (pH) of kiwifruit by using visible and near infrared spectroscopy and chemometrics. The transmission spectra of kiwifruit were obtained in the wavelength range from 400 to 1000 nm. The effects of different pre-processing methods and spectra treatments, such as standard normal variate transformation (SNV), multiplicative scatter correction (MSC), and median filter and first derivative (D¹) were analysed. The prediction models were developed by principal component analysis (PCA) and partial least square regression (PLS). The correlation coefficient for soluble solids content and pH were 0.93, 0.943 and root mean square error of prediction (RMSEP) was 0.2590Brix and 0.076, respectively. These results were achieved when SNV was utilised in conjunction with median filter and first derivative. This showed the capability of Vis/NIRS and the important role of chemometrics in developing accurate models for the prediction of kiwifruit internal quality characteristics.