# Comparison of reflectance and interactance modes of visible and near-infrared spectroscopy for predicting persimmon fruit quality

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## Abstract

The principal aim of this work was to compare the ability of measurement technique among interactance and reflectance in predicting soluble solids content (SSC), ascorbic acid (ASC) and firmness of intact persimmon fruit by using visible/short-wave near-infrared (Vis/SWNIR) spectroscopy. Calibration models were developed by partial least square (PLS) regression that related near-infrared (NIR) spectra to reference values. The root mean square errors of calibration (RMSEC), the root mean square errors of prediction (RMSEP), the correlation coefficients of calibration (Rcal) and prediction (Rval) and the ratio of performance to deviation (RPD) were used to consider the model accuracy. The PLS models from interactance showed satisfactory performance, providing better prediction results than reflectance technique in all parameters. ASC and firmness presented the best calibration models. ASC, Rval = 0.92, RMSEP = 5.56 (mg kg$^{-1}$ FW) and RPD = 2.54 were attained when using orthogonal signal correction (OSC) pretreatment. Firmness, Rval = 0.89, RMSEP = 4.21 N and RPD = 2.14 were also achieved using OSC pretreatment. These findings highlighted the potential of Vis/SWNIR spectroscopy with the multivariate calibration technique to be applied for evaluating ASC and firmness of fresh persimmon fruit.