Preliminary study to predict moisture content of jackfruit skin using shortwave near infrared spectroscopy

ABSTRACT

Moisture content of a jackfruit is one of the main attributes used by farmers to determine the maturity level of the fruit. The objective of this preliminary research was to explore the potential application of low-cost shortwave near infrared (VSWNIR) spectroscopy to non-destructively predict moisture content of jackfruit from their outer skin. A total of 870 skin portions collected from twenty-nine jackfruit samples were used in this study. After the spectral measurement, the skin portions were dried in the oven in order to measure their moisture content (%, wet basis, w.b.). Partial least square (PLS) method was used to develop both calibration and prediction models for calibrating the spectral data with the moisture content. This study found that the value of coefficient of determination (R2) and root means square error of calibration (RMSEC) were 0.65 and 2.17, respectively. For the prediction model, the value of R2and root mean square error of prediction (RMSEP) were 0.64 and 2.81, respectively. These results indicated the VSWNIR spectrometer is a promising technology for non-destructively predicting moisture content of jackfruits.

Keyword: Jackfruit; Moisture content; Skin scanning; Spectroscopy; Non-destructive