

Title Non-destructive prediction of hardening pericarp disorder in intact mangosteen by near infrared transmittance spectroscopy

Author Sontisuk Teerachaichayut, Anupun Terdwongworakul, Warunee Thanapase and Kazuaki Kiji

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Abstract

A non-destructive technique to predict a hardening pericarp disorder in intact mangosteen is proposed by using near infrared (NIR) transmittance spectroscopy in the wavelength range of 660–960 nm. The study found that the spectral features of normal pericarp mangosteen and hardening pericarp mangosteen were different. The averaged spectra and individual spectra of hardening pericarp mangosteen from a calibration set ($N = 560$) were used to develop classification models, using partial least squares discriminant analysis (PLS-DA). A model based on individual spectra obtained better classification. The overall accuracy of classification for a prediction set ($N = 358$) was 91%. Out of 179 samples of normal pericarp fruits, 167 were identified correctly, while 159 samples out of 179 samples with hard pericarp were predicted correctly. The results showed that NIR transmittance spectroscopy can be used to predict hard pericarp disorder in intact mangosteen fruit accurately.