Title Non-destructive prediction of translucent flesh disorder in intact mangosteen by short wavelength near infrared spectroscopy

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Abstract

A non-destructive measurement and data evaluation technique to predict an internal translucent flesh disorder in intact mangosteen fruit is proposed by using short wavelength near infrared (SW-NIR) transmittance spectroscopy. The optimum conditions of measurement were investigated for spectra acquisition at an integration time of 78 ms with a 200 W light source. The NIR absorption spectra of 193 mangosteen samples were obtained in the wavelength range from 640 to 980 nm on four sides of each sample. The best result from a discriminant analysis for leave-one-out cross-validation was 92.0% classification accuracy. The results showed that the hardening pericarp disorder influenced the accuracy of the classification. This study demonstrates that SW-NIR spectroscopy can be used to accurately predict translucent flesh disorder in intact mangosteens.