Application of near-infrared reflectance spectroscopy for determination of gambir (*Uncaria gambir* Roxb.) moisture and catechin content

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Abstract

Moisture and catechin content of gambir are indicators of its quality. Near Infrared Reflectance (NIR) spectroscopy is one of the technologies which can determine the content of moisture and catechin in gambir quickly and precisely. The objective of this study was to analyze the relationship between NIR characteristics with moisture, and catechin content of gambir through calibration process which could be used for their accurate prediction. Calibration model was established using Principal Component Regression (PCR) and Partial Least Square (PLS) algorithm with pretreatment of normalization between 0 to 1 (n01). Performance of calibration model was determined by the coefficient of correlation for the calibration set (Rc) and validation set (Rv), coefficient of determination (R^2), the average difference (bias) between predicted and reference values, coefficient of variation (CV), relative predictive determinant (RPD), the standard error of calibration (SEC) and validation set (SEP), and the consistency between SEC and SEP. The results showed that NIR spectroscopy could predict both moisture and catechin content of gambir. The calibration model for moisture content was more accurate and precise than the model for catechin content.