論文名：Nondestructive Evaluation of Eating Quality of Thai Rice Using Near Infrared Spectroscopy（要約）
（近赤外分光法によるタイ米の食味の非破壊評価）（要約）

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1. Eating quality evaluation of Khao Dawk Mali 105 Using Near Infrared Spectroscopy

In this study, the potential of transmittance measurement best on PLS regression model in evaluate Eating quality evaluation of Khao Dawk Mali 105 rice (KDML105) of single kernels was developed to measure the amylose content of uncooked rice, and texture of cooked rice. The rice samples were scanned using near infrared transmittance spectrometry over the wavelengths of 940-2222 nm before cooking. First derivatives were compared. NIR spectroscopy can be used to develop relatively accurate prediction models of KDML 105 rice eating quality (amylose content and texture). The PLS regression for amylose content (AC) which were expressed as coefficients of determination (R^2) were 0.95 and 0.92 for calibration and prediction, respectively. Root mean square error of prediction (RMSEP) was 9.9 g/kg, dry weight. The texture of cooked rice was expressed in springiness (H1), resilience (A1), deformation (H2) and cohesiveness (A2) from low and high compression tests. The PLS prediction results (R^2_{pre}) for H1, A1, H2 and A2 were 0.61, 0.86, 0.87 and 0.91, respectively. The RMSEP (and bias) were 0.03 (0.004), 0.01 (0.001), 0.02 (0.005) and 0.01 (0.000), correspondingly. The validity of each calibration model was statistically evaluated. The use of NIRS was feasible to predict amylose content of uncooked rice, and eating quality (texture) of cooked rice before cooking.

2. Texture measurement of Khao Dawk Mali 105 rice by near infrared transmittance spectroscopy

Single of Khao Dawk Mali 105kernel transmission measurement of near infrared spectroscopy (NIRS) was conducted on uncooked rice for obtaining texture properties of cooked rice. Partial least square regression (PLSR) was use for develop calibration models of texture parameters were generated by upon spectrometry information of fist derivative (960-2206 nm). High prediction accuracy and low standard error of prediction (R^2_{pre}, SEP) were obtained from most of studied parameters: firmness (0.78, 17.33 g/cm^2), stretchiness (0.85, 0.52 g.cm/cm^2), hardness (0.95, 141.48 g/cm^2), adhesiveness (0.92, 6.23 g.cm/cm^2), and stickiness (0.72, 0.08 mm). Wavelengths of 960 nm to 1370 nm, and 2100 nm were greatly important to most of regression modeling. Firmness, hardness, adhesiveness and stickiness

information clearly informed eating quality upon mouth feel's first bite and second bite comparisons. Therefore, NIRS was confirmed to be a nondestructive technique for predicting cooked rice texture by measuring uncooked rice grains. Near infrared spectroscopy effectively predicts texture properties of cooked rice which could be used to inform eating quality of Khao Dawk Mali 105 rice.