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Analysis of Active Compounds in Thai Herbs by near Infrared Spectroscopy

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Abstract : This study aims to develop a new method to detect active compounds in Thai herbs (1-deoxynojirimycin (DNJ) in mulberry leave, anthocyanin in Mao and curcumin in turmeric) using near infrared spectroscopy (NIRs). NIRs is non-destructive technique that rapid, non-chemical involved and low-cost determination. By NIRs and chemometrics technique, it was found that the DNJ prediction equation conducted with partial least square regression with cross-validation had low accuracy R2 (0.42) and SEP (31.87 mg/100g). On the other hand, the anthocyanin prediction equation showed moderate good results (R2 and SEP of 0.78 and 0.51 mg/g) with Multiplication scattering correction at wavelength of 2000-2200 nm. The high absorption could be observed at wavelength of 2047 nm and this model could be used as screening level. For curcumin prediction, the good result was obtained when applied original spectra with smoothing technique. The wavelength of 1400-2500 nm was created regression model with R2 (0.68) and SEP (0.17 mg/g). This model had high NIRs absorption at a wavelength of 1476, 1665, 1986 and 2395 nm, respectively. NIRs showed prospective technique for detection of some active compounds in Thai herbs.

Keywords : anthocyanin, curcumin, 1-deoxynojirimycin (DNJ), near infrared spectroscopy (NIRs)
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