Abstract

Visible and near infrared spectroscopy (Vis-NIR) has been successfully used for the internal quality determination of many fruits. However, a bumpy surface of fruit has more influence on the spectra than a smooth surface, and few papers have focused on the internal quality determination of fruits with bumpy surface. This study evaluated the possibility of using Vis-NIR spectroscopy for the determination of total soluble solid contents (TSS) and pH in mulberry fruit (*Morus australis Poir.*) which has a bumpy surface. Vis-NIR spectra between 325 and 1075 nm of mulberry fruits were measured. Partial least square (PLS), least-squares support vector machines (LS-SVM) and multiple linear regression (MLR) were used for the model calibration, and successive projections algorithm (SPA) was used for the informative variable selection. Finally two wavelength variables at 431 and 976 nm were chosen for TSS, while another two variables at 627 and 696 nm were chosen for pH. The results of SPA-MLR models were as accurate as those of SPA-LS-SVM and SPA-PLS models. The coefficients of determination for prediction (r_{pre}^2) values were up to 0.70 for TSS and 0.90 for pH, showing that even with a bumpy surface, the internal quality of TSS and pH of mulberry fruits can be well determined rapidly and non-destructively by using Vis-NIR spectroscopy.