

Abstract:

Generally, non-linear predictive models should be superior to linear predictive models. The objective of this study is to compare the performance of soluble solid content (SSC) prediction via Artificial Neural Network with Principal Components (PCs-ANN) and Principal Component Regression (PCR) in Visible and Shortwave Near Infrared (VIS-SWNIR) (400 - 1000 nm) spectrum. The spectra of 116 Fuji Apple samples were separated into calibration set of 84 apple samples and testing set of 32 apple samples randomly. Firstly, multiplicative scattering correction (MSC) was used to pre-process the spectra. Secondly, Principal Component Regression (PCR) was used to obtain the optimal number of principal components (PCs). Thirdly, the optimal PCs were used as the inputs of both multiple linear regression (MLR) and Artificial Neural Network (ANN) models. The results from this study showed that the predictive performance was improved significantly when PCs-ANN with two neurons was used compared to the PCR.