Title Non-destructive discrimination of Chinese bayberry varieties using Vis/NIR spectroscopy

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Abstract

The potential of visible and near infrared reflectance spectroscopy (Vis/NIRS) was investigated for its ability to non-destructively discriminate the varieties of Chinese bayberry. Relationship between the reflectance spectra and Chinese bayberry varieties was established. Spectra tests were performed on Chinese bayberry by using a spectrophotometer (325–1075 nm). The method was based on principal component analysis (PCA) and artificial neural network (ANN). To describe the varieties of the samples and to find a small set of features that represents the Chinese bayberry varieties accuracy, PCA was used to re-express the hyper spectral data. This set of features was used as the input of ANN to build the model of discrimination of variety. When the model was used in the test stage, recognition of unknown samples was 95%. So PCA–ANN model was a useful tool of pattern recognition for mass spectra data. And, Vis/NIR spectroscopy has substantial potential for discriminating varieties of Chinese bayberry.