

STUDY ON THE AUTHENTICATION OF RICE USING NEAR INFRARED SPECTROSCOPY AND CHEMOMETRICS

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Summary

Vietnam is one of the biggest exporters of rice in the world. With the growth of frauds in rice supply chain, there is a need for an efficient and quick technique for monitoring of the authenticity and quality of rice. The feasibility of using hand-held near infrared spectroscopy and chemometrics method to discriminate the various rice varieties with different quality was investigated. A total of 288 rice sample of different quality (high quality, mid quality and low quality) from 4 different provinces in Mekong delta Vietnam were used. Among the pre processing method, the multiplicative scatter correction (MSC) was the most efficient. Principal component analysis (PCA) was used to extract information from the spectral data set and the results showed that rice sample of different categories could be clearly clustered under the first 3 PCs using the MSC preprocessing method. The results showed a good evidence that hand-held spectrometry coupled with MSC-PCA could successfully be used to provide rapid and nondestructive classification of rice samples according to different quality grades and geographical origin rice. This technique could enhance the work of quality control inspectors both from industry and regulatory for the rapid detection of rice integrity and fraud issues.

Keywords: *Rice, authenticity, quality, NIR spectroscopy, chemometrics.*