

## **Discrimination and Quantitative Analysis of Watercore in Apple Fruit by Near Infrared Transmittance Spectroscopy**

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The watercore in apple is very important factor in storage and sorting of fruit. Most consumers tend to prefer the apple included watercore in immediately after harvest, however the watercore causes fruit flesh to brown during storage and lose the worth after all. But it is practically impossible to judge to the naked eye whether a apple has watercore or not. Therefore, the rapid, accurate and non-destructive analysis method for discrimination of watercore should be settled without delay. In this study we attempted the discrimination and quantitative analysis of watercore in apple fruit using near-infrared transmittance spectroscopy.

'Fuji' apple fruits produced in Kyungpook of Korea was used in this experiment. The watercore content in apple was evaluated by graphic treatment of cutted slice sections(10 mm). NIR transmittance spectra were collected over the 500 to 1000 nm spectral region with a spectrometer (Sentronic Co., Germany). The calibration models were carried out by partial least squares (PLS) analysis between NIR spectra data of apples and chemical data of watercore content.

The spectra were different in absorbance between apple included watercore and not included one. Apple included watercore had higher absorption band than sample not included one at 732 and 820 nm. The calibration model seems to be accurate to predict the watercore content in apple fruit, the correlation coefficient (R) and root mean square error of prediction (RMSEP) were 0.99 and 0.93%, respectively. This result indicates that the PLSR calibration model by using NIR transmittance spectroscopy could be used for discrimination of watercore in apple fruit.