VARIOUS NIR SAMPLE PRESENTATIONS FOR AGRICULTURAL PRODUCTS SUCH AS INTACT FRUITS, SINGLE GRAINS, VEGETABLE JUICE, MILK AND THE OTHERS

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Sample presentation, which means how to set samples to an NIR instrument, is very important in Near Infrared (NIR) Spectroscopy. When sample presentation is not suitable for the samples that you use, very good spectra can not be obtained even if you use a sophisticated NIR instrument.

In my presentation, various NIR sample presentations for agricultural products such as intact fruits, single grains, vegetable juice and the others will be explained.

In case of peaches with thin peel, the fiber optics of Interactance can be used. However, the fiber optics are not suitable for oranges with relatively thick peel. In this case, transmittance method is useful. As for a small sample such as single grains, a specially designed cell is needed. The cell in transmittance mode has been developed and then applied to single kernels of rice and soybean. In this case we also used the fiber optics. As regards liquid type of sample, a cuvette cell made of quartz in transmittance mode is popular. However, it is time-consuming to wash and dry it. In order to compensate this disadvantage the sample presentation using normal test tubes as sample cells have been developed and applied to milk, rumen juice and urine of a milking cow. An individual test tube can be used for each sample if you use the calibration equation with sample cell compensation. The test tube cell has also been applied to spinach juice for determination of undesirable constituents.

It is concluded that sample presentation is most important for NIR Spectroscopy.