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Sorting olive oil based on alpha-tocopherol and total tocopherol content using Near-Infra-Red Spectroscopy (NIRS) analysis

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Abstract

Olive oil is an important vitamin E source, which shows a wide variation range. Therefore the interest on distinguish classes. In this study, we assessed models based on partial least squares (PLS) and discriminant analysis (PLS-DA), using near-infrared spectroscopy (NIRS). Estimating the α–tocopherol and total tocopherols contents by using the PLS models were suitable according to the predicting exercises, which gave residual predictive deviations 2.37 and 2.01. Sorting test of olive oil in two classes by α-tocopherol with the PLS model provided 99.9% success. The PLS-DA assessment for the same purpose gave coefficients of predictive specificity and sensitivity for the high α-tocopherol class 0.96 and 0.84, respectively. The data proves the feasibility of estimating the olive oil α-tocopherol or total tocopherols contents by using NIRS. Besides, these techniques can be helpful rapid methods in the industry for sorting olive oils according to their vitamin E content. They are friendly to the environment, which is important.

Key words: α-tocopherol, classification, olive oil, NIRS, tocopherols, vitamin E.