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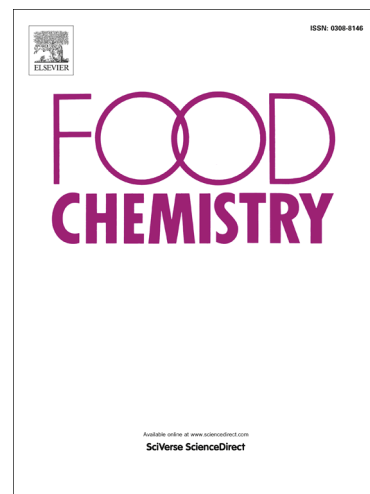
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IDENTIFICATION OF OLIVE OIL SENSORY DEFECTS BY MULTIVARIATE ANALYSIS OF MID INFRARED SPECTRA

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Abstract

Mid-infrared (MIR) spectra (4000 to 600 cm^{-1}) of olive oils were analyzed using chemometric methods to identify the four main sensorial defects, musty, winey, fusty and rancid, previously evaluated by an expert sensory panel. Classification models were developed using partial least squares discriminant analysis (PLS-DA) to distinguish between extra-virgin olive oils (defect absent) and lower quality olive oils (defect present). The most important spectral ranges responsible for the discrimination were identified. PLS-DA models were able to discriminate between defective and high quality oils with predictive abilities around 87% for the musty defect and around 77% for winey, fusty and rancid defects. This methodology advances instrumental determination of results previously only achievable with a human test panel.

Keywords

Virgin olive oil; Mid-infrared spectroscopy; Multivariate analysis; Partial least squares discriminant analysis (PLS-DA); classification; sensory analysis

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