

In-house Validation of Two Analytical Protocols for Time-saving Alternative Determination of Fatty Acid Ethyl Esters in Virgin Olive Oils

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The analytical evaluation of the content of fatty acids ethyl esters (FAEEs) is one of the quality parameters that permits to define the quality grade of a virgin olive oil and to detect possible fraudulent mixtures of extra virgin olive oils with lower quality oils (e.g. some kinds of soft-deodorized oils). The official method (reported in the EU Reg. 61/2011) is based on the addition of a suitable internal standard to the oil and fractionation by chromatography on a hydrated silica gel column. After the recovery of the eluted fraction, this is analyzed by capillary gas chromatography. However, it should be pointed out that the official method requires high volume of solvents and a very long preparative procedure. For this reason, one of the objectives of the OLEUM project is to propose, at least, one revised quicker and more sustainable in-house validated method for the FAEEs determination. In this work, two different approaches, by HPLC-UV-Vis or SPE, as rapid alternative to the traditional liquid chromatography applied in the preparative phase, are presented. The collected fraction containing the FAEEs are successively analyzed by capillary GC-FID with PTV or split injector, as possible options to the less widespread on-column system. Performance (e.g. intra-day precision, accuracy, linearity, LOD and LOQ, recovery and robustness) related to the in-house validation for both the revised methods is shown.

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