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A new analytical procedure to determine the bioactive compounds profile of olive polyphenols

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The aim of this study was the establishment of a new analytical procedure, to correct the effect that moisture reduction after virgin olive oil (VOO) filtration exerts on the apparent increase of secoiridoids, using internal standard during extraction. To achieve this purpose, a mixture of VOOs from Picual and Hojiblanca varieties were filtered at industrial scale. A total of 24 samples of filtered and unfiltered VOOs samples were recovered, and moisture content was determined in each of them. Different internal standards (luteolin 7-glucoside, dihydrocaffeic acid, taxifolin, and oleuropein) were tested during Liquid-Liquid extraction step of phenolic compounds from VOOs samples. Afterwards, the obtained extracts were analyzed using high performance liquid chromatography coupled to electrospray time-of-flight mass spectrometry. The results clearly showed that filtration sharply decreased moisture, phenolic alcohols, and flavons. Among the internal standards tested, oleuropein was chosen and, for the first time, the apparent increase of secoiridoids in filtered VOO was corrected, using a correction coefficient (C_c) calculated from the variation of internal standard area in filtered and unfiltered VOO during extraction. This approach gave the real concentration of secoiridoids in filtered VOO, and clarified the effect of the filtration step on the phenolic fraction. The analytical procedure established in this study can be applied in all studies aiming the quantification of phenolic compounds in VOO.

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Contact probe voltammetry for in situ analysis of fruits: Varietal screening, quality assessment and evaluation of the antioxidant capacity

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The application of an in situ electrochemical contact probe methodology for the analysis of fruits is described. This is based on the record of the voltammetric response of polyphenolic compounds at glassy carbon electrodes. The obtained voltammetric profiles permit to characterize varieties and degree of ripening and can be used for screening varieties and evaluating the maturation degree of the specimens. Upon electrochemical generation of reactive oxygen species (ROS), new voltammetric signals appear which can be used for the estimate of the antioxidant capacity. All involved parameters can be used for quality assessment purposes in field using portable electrochemical equipments.

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