Dennis Fiorini et al., J Chromatogr Sep Tech 2017, 8:4(Suppl)
DOI: 10.4172/2157-7064-C1-028

Development of a new HPLC-DAD/MS method to quantify olive oil polyphenols

Dennis Fiorini[1], Maria Chiara Boarelli[1], Roberto Ballini[1], Deborah Pacetti[2], Gianni Sagratini[1], Giovanni Caprioli[1] and **Massimo Ricciutelli[1]**
[1]University of Camerino, Italy
[2]Marche Polytechnic University, Italy

Polyphenols play a key role in the definition of the quality of olive oil in which they affect stability, sensorial and healthy properties (1,2). In fact EU regulation n. 432/2012 allows to acknowledge olive oil with the claim "Olive oil polyphenols contribute to the protection of blood lipids from oxidative stress" when 20 g of oil contain more than 5 mg of "hydroxytyrosol and its derivatives (e.g. oleuropein complex and tyrosol)" (3,4). However it is not specified in which way these substances should be quantified and which are exactly the substances to be quantified and since most of them are not available as commercial analytical standards, the results could differ greatly depending on the method applied, the standard used and the instrumentation available. Furthermore, the complexity of the olive oil polyphenols structures makes the chromatographic separation a difficult task, leading to obtain results not always satisfactory (5). Thus, our aim was to improve the chromatographic separation of these species by evaluating several analytical columns and elution conditions and to find a suitable quantitative method making use of instrumentation available in most of the laboratories. In fact, even if the method development was performed with the help of an ion trap mass spectrometer as detector, the quantification has been done by a diode array detector. The chromatographic column giving the best results was the Synergi Polar (250 × 4.6 mm, 4 µm), with water and methanol/isopropanol (9/1) as eluents. The quantification of secoiridoid derivatives has been done by using the oleuropein calibration curve corrected with the average response factor of tyrosol, hydroxytyrosol and oleuropein. The method allowed to quantify tyrosol, hydroxytyrosol and secoiridoid derivatives with limits of quantification of 0.32 mg kg^{-1}, 0.17 mg kg^{-1} and 0.55 mg kg^{-1} respectively.

Biography

Dennis Fiorini is Associate Professor of Food Chemistry at University of Camerino. She has a Master Degree and a PhD in Chemistry and her research area deals mainly with lipid fraction of food, food volatile components and with the development of methods to extract and analyze them by means of solid-phase microextraction coupled to gas chromatography. In the last years she is focusing her research interest on olive oil and on chemical features related to its quality.

dennis.fiorini@unicam.it