A NOVEL ANALYTICAL METHOD TO DETECT ADULTERATION OF VIRGIN OLIVE OIL BY OTHER OILS

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ABSTRACT

In our previous publication (T. Mavromoustakos et al. J. Magn. Reson 35, S3-7, 1997) it has been shown that ^{13}C-NMR spectroscopy is a valuable technique to quantitatively analyze the most abundant fatty acid moieties of the triacylglycerols of virgin olive oil. The present study focuses on the olefinic region of virgin olive oil ^{13}C-NMR spectrum which shows twelve peaks resonating between 127.5-130 ppm. These peaks are assigned to the most abundant unsaturated fatty acid moieties oleic and linoleic acids of the olive oil, present in α and β positions of the glycerol backbone . With the use of an internal reference pyrazine, these peaks were integrated and their areas were expressed in mmol/g of virgin olive oil. The intensities of the twelve observed peaks are affected when an authentic virgin olive oil is mixed with a seed-oil. This observation is used to develop a method to detect adulteration based on ^{13}C NMR spectroscopy. The novel method is superior to the applied classical ones that involve wet chemistry because it is faster and not destructive.