

^1H -NMR of the unsaponifiable fraction of olive oils for the determination of geographical origin

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Olive oil is a very important agricultural product for the European Union. Spain, Italy and Greece, account for 79% of the world production and 71% of the world consumption. The high added value of olive oil in terms of commercial and nutritional value makes its control of great interest to EU producers and consumers. Protected Denomination of Origin (PDO) olive oils are sometimes subject to adulteration with olive oils that do not fulfill the PDO requirements. Therefore, validated methods to guarantee the authenticity and traceability of PDO olive oils are necessary to protect both the consumer and the producer from illicit practices in this sector.

The authentication of olive oils with respect to their geographical, botanical and varietal origins has been studied using various analytical approaches, such as NMR (^1H , ^{13}C , ^{31}P), NIR spectroscopy, IRMS, LC-MS, GC-MS [1, 2, 3, 4]. However, most of these considered a limited number of samples and geographical areas.

Different approaches are being studied in our laboratory for the determination of the geographical origin of PDO extra-virgin olive oils. In this work, a new approach based on ^1H -NMR analysis of the unsaponifiable fraction of olive oils is presented. The unsaponifiable fraction is obtained by a standard procedure, dissolved in deuterated chloroform and analyzed by a high throughput ^1H -NMR method. Multivariate data analysis of preliminary results shows that the present approach demonstrates potential for the geographical characterization of olive oils.

References

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