

$\delta^{13}\text{C}$ data of the total water-soluble fraction and triacylglycerols as related indexes for differentiating the geographical origin of saffron (*Crocus sativus* L.)

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Parole chiave: EA-IRMS, $\delta^{13}\text{C}$, trigliceridi, crocine, zafferano, origine geografica

A B S T R A C T

Using isotopic ratio mass spectrometry (IRMS) measurements, this study analyzed samples of saffron originating from two distinct geographical regions. We then used the results to distinguish saffron of the two considered origins. $\delta^{13}\text{C}$ data related to the crocins fraction in 48 saffron samples from Western Macedonia (Greece) and 48 samples from Khorasan Province (Iran) were correlated to an index derived from triacylglycerols. Isotopic data could clearly differentiate between samples from the two areas. The isotopic measurements were -28.3 to -26.9 for Greek samples, and -26.1 to -24.5 for Iranian samples. Another index, derived from a gas-chromatographic analysis of the triacylglycerols, successfully determined that the range of isotopic values that characterized Greek samples was 52% larger than the range that characterized Iranian samples. The application of statistical evaluations permitted us to identify the two groups of saffron with confidence and to accurately identify the site of origin of a saffron sample.

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