BOOK OF ABSTRACTS

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Stable isotope ratios of herbs and spices commonly used as herbal infusions on the Italian market

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AIM

Spices and herbs are one of the top adulterated food commodities due to their complex supply chain and high price. Traceability and authenticity of spices and herbs have been investigated only in a limited number of plant species. Stable isotope ratio analysis has widely been used to verify the authenticity of various food commodities. However, stable isotope profiles of spices and herbs have been not extensively explored and have been limited to few plant species. The aim of this study is to start exploring and determining the characteristic ranges of values for stable isotope ratios of spices and herbs, focusing in particular on those commonly available on the Italian market.

MATERIAL AND METHODS

One-hundred-sixteen plant species belonging to sixty plant families were purchased from different physical shops and online stores in Italy (Nardin et al., 2018). Plant samples were dried, ground and homogenized for stable isotope ratio analysis. Stable isotope ratios of carbon, nitrogen, sulphur, oxygen and hydrogen ($\delta^{13}C$, $\delta^{15}N$, $\delta^{34}S$, $\delta^{18}O$ and $\delta^{2}H$) of the plant samples were analysed by Isotope Ratio Mass Spectrometry (IRMS) coupled with and Elementar Analyser (EA) or with a High Temperature Pyrolyser (TC/EA).

RESULTS AND CONCLUSIONS

For the first time the characteristic ranges of values of the stable isotope ratios of the bio-elements as a whole ($\delta^{13}C$, $\delta^{15}N$, $\delta^{18}O$ and $\delta^{34}S$) were determined in spices and herbs collected on the Italian market and here presented. These first results are encouraging, and further investigations are recommended involving a more extensive sampling and focusing on specific plant species.

Keywords: stable isotopes, herbs and spices, origin and authenticity

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