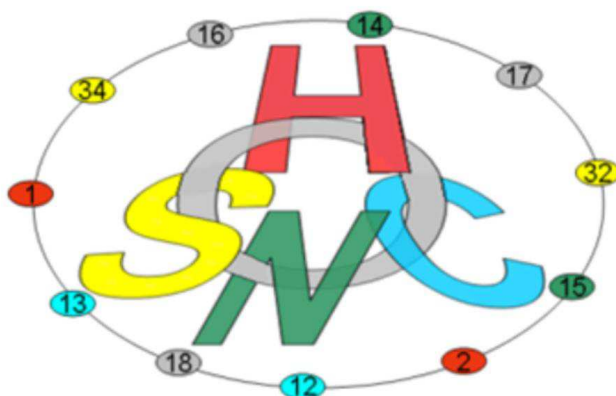


2nd Isotope Ratio MS Day



MESSINA
JUNE 27-29, 2018

Book Of Abstracts

SPONSORED BY



“This workshop has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 692241- MASSTWIN”

OR3

Stable Isotope Techniques for Detecting the Authenticity of High Value Products

Matteo Perini, Federica Camin

Fondazione Edmund Mach, via Mach 1, 38010 San Michele all'Adige, Trento, Italy

Consumers are increasingly interested in health food, dietary supplements and natural compounds, which command a higher price and are therefore subjected to adulteration. Methods for testing authenticity of these products are therefore required.

Focus of the study is on the development of H, C and O stable isotope ratios analysis methods for this purpose. Analysis of the isotopic ratio of C, O and H in the bulk samples was performed using an isotope ratio mass spectrometer interfaced with an elemental analyser and a pyrolyser. Moreover, compound specific analysis of the $^2\text{H}/^1\text{H}$, and $^{13}\text{C}/^{12}\text{C}$ was done using gas chromatography-combustion/pyrolysis-isotope ratio mass spectrometry (GC-C\Py-IRMS). Stable isotope ratio of C can distinguish olive oil squalene from shark squalene, Rosa damascena essential oil from Palmarosa oil, Monacolin K naturally present in Red Yeast Rice from the prescription biosynthetic Lovastatin. Moreover it allows to differentiate natural Vitamin C, Vanillin and Caffeine from the synthetic ones. Stable isotope ratio of H discriminate natural from synthetic Curcumin, and in combination with the stable isotope ratio of O, authentic Serenoa oil from the adulterated one. The stable isotope ratio analysis can be used for verifying the authenticity of health foods, dietary supplement and natural compounds commanding higher price.