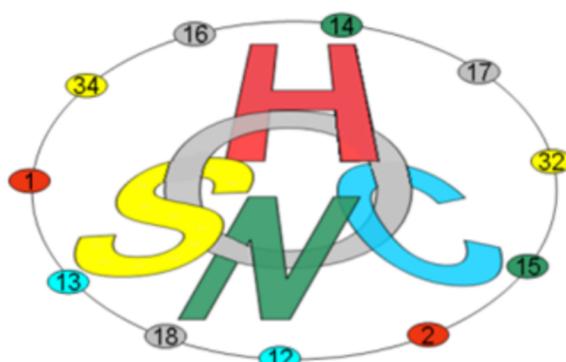


# 2<sup>nd</sup> Isotope Ratio MS Day



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## Book Of Abstracts

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## OR4

### The Use of Stable Isotope Ratio Analysis to Characterize Saw Palmetto (*Serenoa repens*) Extract

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Saw palmetto extract (SPE) is a nutritional supplement obtained from the fruit of the saw palmetto, a shrubby palm that grows in the southeastern United States. It was proved that SPE has multiple pharmacological effects, such as: digestive, diuretic, reproductive and anti-inflammatory. (Bennett & Hicklin, 1998) (Sultan *et al.*, 1984). As consequence, the request of SPE has steadily increased, but this increasing demand has not been matched by the availability of berries on the market (GIR GlobalInfoResearch, 2017). Indeed, saw palmetto grows in a specific area (Florida peninsula and Georgia), often subject to environmental factors which can reduce crop yield or destroy the harvest (Carrington *et al.*, 2001). That explain the substantial increase in raw material cost and consequently the diffusion of counterfeit SPEs. To meet the high request, adulterated SPE products are put on the market. The adulterated products are obtained diluting the authentic ones with a specially formulated blend of lower-cost vegetable oils or lipids, probably of animal origin, in an attempt to emulate the authentic fatty acid profile (Gafner & Baggett, 2017). Therefore, the current analytical methods verifying the fatty acid profile or the content of specific components such as  $\beta$ -amyril,  $\beta$ -sitosterol are not enough to ensure detection of this adulteration.

To our knowledge, stable isotope ratio analysis has not yet been used to characterise and protect authentic SPEs. Analysis of the H, C and O stable isotope ratios of bulk and of the H and C stable isotope ratios of individual fatty acids, sometimes combined with the fatty acid profile, has proven to be a powerful tool for protecting high-quality oil from adulteration, because it allows identification of the origin of the specific component, whether natural or coming from other sources (Osorio *et al.*, 2014; Paolini *et al.*, 2017; Spangenberg & Ogrinc, 2001; Spangenberg, 2016).

In this work, bulk and fatty acid isotope ratio analysis was performed in 20 authentic and 9 commercial SPEs, 12 meat fats and 4 pure fatty acids in order to investigate if the isotopic analysis can be applied in SPE authentication. The study defined the variability range of  $\delta^{13}\text{C}$ ,  $\delta^2\text{H}$  and  $\delta^{18}\text{O}$ .