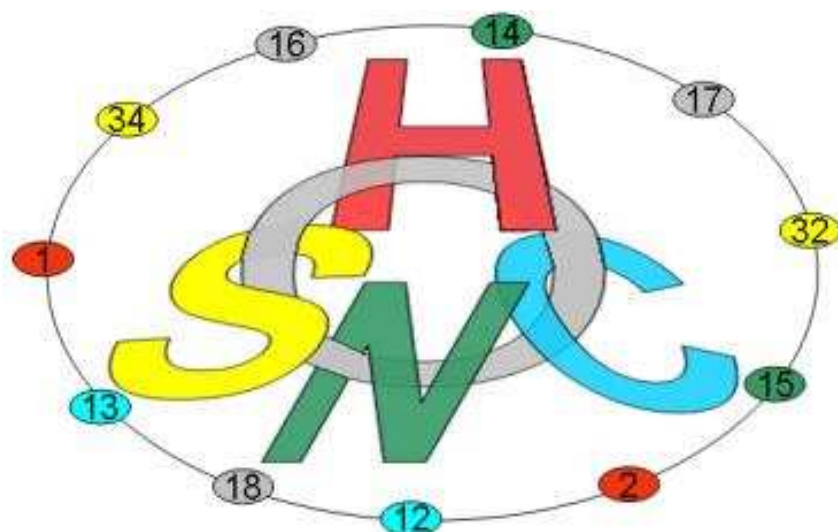


# The 1<sup>st</sup> Isotope Ratio MS DAY



May 9-11, 2016

Fondazione Edmund Mach

S. Michele all'Adige (Trento, Italy)

# **BOOK OF ABSTRACTS**

**PROCEEDINGS OF THE  
1<sup>st</sup> ISOTOPE RATIO MS DAY**

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## **P18 - Stable isotope ratio analysis for authentication of red yeast rice**

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Red Yeast Rice is a non-prescription dietary supplement used in traditional Chinese medicine and obtained from rice fermented with the yeast *Monascus purpureus* (*Aspergillaceae* family). Depending on the fermentation conditions, the products may contain monacolins, pigments and citrinin as secondary metabolites. The pharmacological compound Monacolin K is a naturally occurring hypocholesterolemic statin used to prevent cardiovascular diseases. The homologous prescription biosynthetic statin, lovastatin, cultured with *Aspergillus terreus* under patented and carefully controlled conditions, is not distinguishable from monacolin K. There is therefore a suspicion that RYR products are spiked with lovastatin, without declaration.

As reported by different authors the application of Stable Isotope Ratio Analysis represents a fast and simple tool to control whether or not a sample is of natural origin. We therefore collected around 10 samples of red yeast rice powder, and 10 samples of synthetic lovastatin. Monacolin K was isolated from rice by preparative HPLC and together with lovastatin, was subjected to the analysis of the isotopic ratio of C using an Isotope Ratio Mass Spectrometry interfaced with an Elemental Analyser. We found that the  $^{13}\text{C}/^{12}\text{C}$  is able to clearly distinguish lovastatin (-17.3‰) from monacolin K (-29.8‰). In order to have an overall picture of the market we also investigated the authenticity of 20 samples of commercial products containing Red Yeast Rice.