



Session // Food Authenticity

National Institute of Health
Doutor Ricardo Jorge

Chairs: Dr. Carlos Ramos, EuroFIR
Prof. Sandra Caeiro, Universidade Aberta - Portugal

Key Lecture: Miguel Angel Cortés, Watters - Portugal

Stable Isotope Ratios of H, C, N and O in Italian citrus juices

→ o21 Session 7

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Authenticity has always been a major concern of national regulatory bodies and consumers. The stable isotope ratios (SIR) of C, N, H and O have been intensively used in food quality control and specifically for fruit juices (ENV and AOAC methods), allowing detection of added sugar and the watering down of concentrated juice, practices prohibited by European legislation (EU Directive 2012/12). In this context various studies have been carried out to determine the natural variability of SIRs in fruit juices, but none of these has investigated SIRs in authentic citrus juices from Italy.

In this work we considered about five hundred citrus juice samples officially collected in southern Italy by the Italian Ministry of Agricultural and Forestry Policies since 1996. Pulp and sugar fractions were separated from the samples and ethanol resulting from sugar fermentation was obtained by distillation. $(D/H)_I$ and $(D/H)_{II}$ in ethanol and $\delta^{13}C_{ethanol}$, $\delta^{13}C_{pulp}$, $\delta^{13}C_{sugars}$, $\delta^{18}O_{vegetalwater}$, $\delta^{15}N_{pulp}$, δ^2H_{pulp} and $\delta^{18}O_{pulp}$ were determined using Site-Specific Natural Isotope Fractionation-Nuclear Magnetic Resonance (SNIF-NMR) and Isotope Ratio Mass Spectrometry (IRMS) respectively. Here we present the characteristic ranges of variability for SIRs in genuine Italian citrus juice samples.

We evaluated the relationships among SIRs as well as their compliance with the limits indicated by the official methods and furthermore the possibility of distinguishing the region of origin.

Orthonormal gas chromatography sets of extra virgin olive oil

→ o22 Session 7

maurizio caciotta, fabio leccese, sabino giarnetti, barbara orioni

Gas chromatography has an important role in the dissemination of organoleptic quality metrology of extra virgin olive oils. The latter is legally the preserve, through EU legislation, the panel of tasters test certificate.

They found a large number of parameters gustatory and olfactory and will give a numerical empirical evaluation, on a limited set of samples.

Many papers in the literature dealing with the transfer of the panel test scores on gas chromatograms structures of the samples.

We, however, in this work, starting from a certain set of samples, using the technique of the head space, trying to settle virtual gas chromatograms reference that should be as much as possible orthonormal.

This is done by extraction of the eigenfunctions and eigenvalues ??from the covariance matrix, according to the technique of Principal Component Analysis (PCA).

Using these components, each of which represents the characteristics of a virtual sample of oil, it is possible to derive the gas chromatograms of the original set of samples, as a linear combination of the "orthogonal gas chromatograms".

It will be also explored the possibility of achieving mixtures of the actual samples that have some of the gas chromatograms that we can define "orthonormal".

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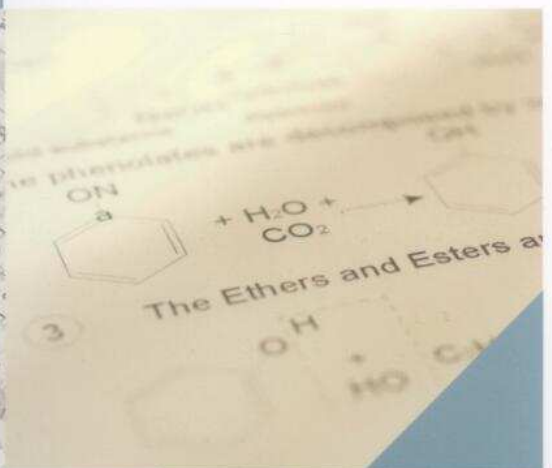
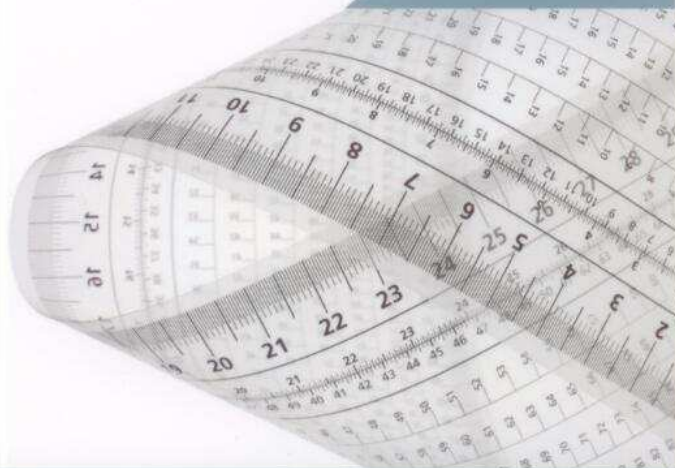
Abstracts Booklet **imeko** TC8, TC23, TC24

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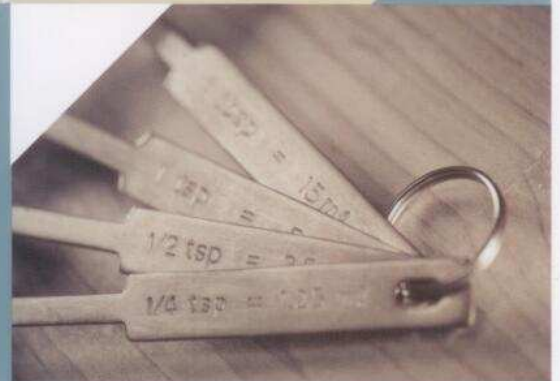
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Symposium on Traceability
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