Hes·so

Macrowine 2016

June 27 - 30, 2016 - CHANGINS (NYON), Switzerland

CHANGINS

Conference programme

COMPREHENSIVE TWO-DIMENSIONAL GAS CHROMATOGRAPHY COUPLED WITH TOF-MS, A POWERFUL TOOL FOR ANALYSIS OF THE VOLATOMES OF GRAPES AND WINES.

Comprehensive two-dimensional gas chromatography (GCxGC) has emerged as a powerful analytical technique for unraveling the volatile composition of complex matrices. This work will present three applications of GCxGC Tof-MS to the oenological field, aimed to identify novel biomarkers to be used in the quality control process of the wine industry. Comprehensive mapping of volatile compounds was conducted in a large sample of 70 sparkling wines, produced by 48 different wineries across 6 vintages and representative of the two main production areas for premium Italian sparkling wines (Franciacorta (FC) and Trentodoc (TN)), using HS-SPME followed by GCxGC-Tof-MS and multivariate analysis. Selection and identification of 196 putative biomarkers allowed clear separation of sparkling wines from FC and TN. A spatial investigation of Shiraz wines fermented in triplicates from grapes collected from climatically diverse (warm/hot versus cold/temperate) regions of Australia (New South Wales) was made using HS-SPME followed by GCxGC-Tof-MS. Wine volatile profiles from warm/hot and cool/temperate climate could be distinguished according to the first two principal components. Wines from cool/temperate climate were characterised by higher levels of several terpenes such as alpha terpineol, linalool oxide, citronellol acetate, 1-pmenthen-9-al, cis-rose oxide, ho-trienol) and sesquiterpenes, whereas trend for norispoprenoids was less consistent. Higher TDN levels in wines from warm/hot climate were observed. Volatile composition of wines from four grape cultivars was investigated with GCxGC Tof-MS in association with multivariate analyses. Eighteen samples of Müller Thurgau, 48 samples of Pinot Gris, 36 samples of Chardonnay and 18 samples of Gewürztraminer were analyzed. A clear varietal differentiation according to the wine volatiles was affirmed by PCA and potential cultivar-specific biomarkers were identified.

Author	Email	Institution
*Urska Vrhovsek	urska.vrhovsek@fmach.it	Edmund Mach Foundation
Fulvio Mattivi	fulvio.mattivi@fmach.it	Fondazione Edmund Mach
Katjia Suklje	ksuklje@csu.edu.au	National Wine and Grape Industry
Silvia Carlin	silvia.carlin@fmach.it	Fondazione Edmund Mach