MACROWINE 2014

Stellenbosch, South Africa   7 - 10 September

- Programme
- Abstracts
- Other information

HOSTED BY:
Department of Viticulture and Oenology
Institute for Grape and Wine Sciences
Institute for Wine Biotechnology
STELLENBOSCH UNIVERSITY

High throughput LC-MS phenolic composition analysis of fungus-resistant grape varieties cultivated in Italy and Germany

Panagiotis Arapitsas[1], Carolin Ehrhardt[1], Marco Stefanini[1], Gerhard Flick[1] and Fulvio Mattivi[1]

[1]Department of Food Quality and Nutrition, Research and Innovation Centre, Fondazione Edmund Mach, Via E. Mach 1, 38010, San Michele all'Adige, Italy
Email: panagiotis.arapitsas@fmach.it

The phenolic composition of grape berries from Cabernet Cortis, Johanniter, Solaris, Regent and Phoenix cultivars grown in Italy and Regent and Phoenix cultivars grown in Germany was analyzed using two complementary LC-MS/MS methods. These five cultivars belong to fungus-resistant (PIWI) grape varieties and little is known about their phenolic profile, although phenolics such as phytoalexins have been recognized, playing a key role in the resistance mechanism.

To identify and quantify all phenolic classes (except anthocyanins) in a simple and fast way the whole berry was used, without focusing on specific tissues, and analyzed by a UHPLC-MS/MS method. To complete the phenolic profile, a complementary UHPLC-MS/MS method for anthocyanins was performed. To study the method robustness, tools commonly used in untargeted metabolomics methods were chosen and applied, to evaluate their possible utility in targeted analysis. For example, biological, technical and instrumental replications were included in order to study the variability at different levels.

In total, 55 phenolics were quantified, belonging to various classes of the polyphenols biosynthetic pathway. The knowledge of the PIWI polyphenolic profile could be helpful for better understanding their resistance mechanism and future cross-breeding. Moreover, was found the above PIWI varieties to have a rich phenolic profile compared to Vitis vinifera cultivars, especially in the class of stilbenes. Finally, according to the results, biological variability was of great importance and included technical replicates at the same time, while injections of a QC pooled sample throughout sample analysis provided important information about instrumental accuracy and sensitivity.