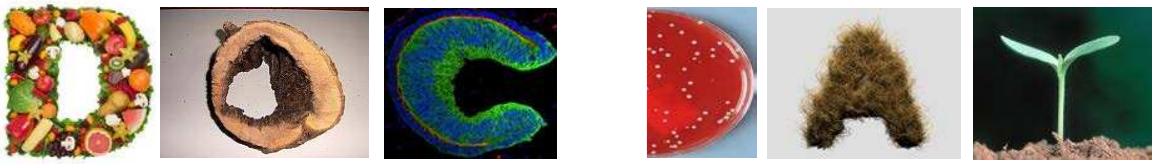
3rd



PhD Conference

UFT Seminar Centre, Tulln, Austria

13th October, 2015

University of Natural Resources and Life Sciences, Vienna

AUSTRIAN INSTITUTE OF TECHNOLOGY

P16: Identification of volatile organic compounds in different grapevine genotypes after inoculation with *Plasmopara viticola*

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The grapevine Vitis vinifera cv Pinot noir is susceptible to several pathogens including Plasmopara viticola that is the causal agent of downy mildew [1]. Hybrids of V. berlandieri and V. riparia (SO4 and Kober 5BB) and hybrids of Muscadinia rotundifolia and V. vinifera (BC4) and others such as Solaris are resistant or tolerant to downy mildew. It has been demonstrated recently [2] that resistant in vitro hybrids SO4 and Kober 5BB emit volatile organic compounds (VOCs) in response to P. viticola infection. In particular, the most interesting class of VOCs constitutes terpenoids (mono- and sesquiterpenes) emitted by the resistant cultivars, whereas for Pinot noir no terpenes have been detected under the tested conditions.

In the present study we have used gas chromatography coupled with mass spectrometry (GC-MS) to study in more detail the chemical identity of the compounds produced by selected plants of the five genotypes Pinot noir, Kober 5BB, SO4, BC4 and Solaris. All the genotypes were cultured in the greenhouse and leaves were harvested immediately (0 dpi) and six (6 dpi) days after the inoculation with P. viticola. All samples were immediately frozen and homogenized under cooled conditions. VOCs were extracted by using solid phase microextraction (SPME) and analyzed by GC-MS. Mass spectral deconvolution and annotation / identification of volatile compounds was based on comparison of mass spectra and retention indices with reference values and performed by Metabolite Detector software [3].

Preliminary results showed increased levels compared to day zero of sesquiterpenes in resistant cultivars six days after inoculation, demonstrating that terpenes could play an important role in plant resistance against downy mildew in resistant genotypes.

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[2] A. Algarra Alarcon, V. Lazazzara, L. Cappellin, P. L. Bianchedi, R. Schuhmacher, G. Wohlfahrt, I. Pertot, F. Biasioli and M. Perazzolli. (2015). Emission of volatile sesquiterpenes and monoterpenes in grapevine genotypes following *Plasmopara viticola* inoculation *in vitro. Journal of Mass Spectrometry,* 50, p. 1013–1022

[3] K. Hiller, J. Hangebrauk, C. Jäger, J. Spura, K. Schreiber, D. Schomburg. (2009) MetaboliteDetector: comprehensive analysis tool for targeted and nontargeted GC/MS based metabolome analysis. *Analytical Chemistry*, 81(9), p. 3429-3439