

P33 – Hormonal changes in tolerant and susceptible grapevine leaves under powdery mildew infection

Amaro, Rute^{1*}; Diniz, Inês²; Santos, Helena¹; Pimentel, Diana¹; Rego, Cecília²; Mithöfer, Axel³; Fortes, Ana Margarida¹

¹BioISI - Biosystems and Integrative Sciences Institute, Faculty of Sciences, University of Lisbon, Campo Grande, Lisboa, Portugal

²CIFC - Centro de Investigação das Ferrugens do Cafeeiro, and LEAF - Linking Landscape, Environment, Agriculture and Food (LEAF), Instituto superior de Agronomia, Universidade de Lisboa, Tapada da Ajuda, Lisboa, Portugal

³Research Group Plant Defense Physiology, Max Planck Institute for Chemical Ecology, Jena, Germany

*ruteamaro@campus.ul.pt

Abstract

The biotrophic fungus *Erysiphe necator* causes Powdery Mildew (PM) in grapevine. Phytohormones are major modulators of defensive responses in plants but the analysis of the hormone associated with grapevine tolerance and susceptibility against this pathogen has not been elucidated. In this study, changes in hormonal profiling were compared between a tolerant (*Vitis rupestris* × *riparia* cv. 101-14 Millardet et de Grasset) and a susceptible (*Vitis vinifera* cv. Aragonêz) species upon *E. necator* infection. Control and PM-infected leaves were collected at 0, 6, 24, 96 hours post-infection (hpi), and analysed through LC-MS/MS. The results showed a distinct constitutive hormone between tolerant and susceptible species. Constitutive high levels of salicylic acid (SA) and indole-3-acetic acid together with additional fast induction of SA within the first 6 hpi as well as constitutive low levels of jasmonates and abscisic acid may enable a faster and more efficient response towards PM. The balance among the different phytohormones seems to be species-specific and fundamental in providing tolerance or susceptibility. These insights may be used to develop strategies for conventional breeding and/or editing of genes involved in hormonal metabolism aiming at providing a durable resistance in grapevine against *E. necator*.

Keywords: *Erysiphe necator*, grapevine, hormones, powdery mildew, tolerance, susceptibility