

P60 – Variability of phenolic compound content of ‘Tempranillo’ varieties to *Erysiphe necator* infection

Hernández, María M.*; Castillo Río, Carolina; Menéndez, Cristina M.; Muñoz, Gregorio;
Consortium MINORVIN

Instituto de Ciencias de la Vid y el Vino (UR-CSIC-GR), Viticulture department, Logroño, Spain

*mara.hernandez@unirioja.es

Abstract

Powdery mildew is one of the most important disease of grapevine (*Vitis vinifera*) caused by the fungus *Erysiphe necator*. It is an obligate ectoparasite of species belonging to the genus *Vitis*, and particularly *V. vinifera* varieties, most of which are highly susceptible. This pathogen provokes important economic losses. Its control required numerous chemical treatments that cause environmental and health problems and lead to the appearance of resistance to the most commonly products. One of the alternatives to reach a sustainable management is based on the design of strategies that trigger a defence response in plants that allows them to defend against the attack of the fungus. The aim of this work was to analyse the changes in the phenolic biosynthesis pathway in diseased leaves by *E. necator* in ‘Tempranillo’ and ‘Tempranillo Blanco’ varieties. To compare susceptibility to the disease, *in vitro* tests were carried out using whole leaves. Phenolic compounds from hydroalcoholic extracts of infected and control leaves were analysed by UPLC-MS at 1, 5, and 14 days after-inoculation. Differences in susceptibility to powdery mildew between the varieties in the early stages of infection were found, being the fungal growth in ‘Tempranillo’ lower than ‘Tempranillo Blanco’. A higher content of phenolic compounds was observed in the leaves of ‘Tempranillo Blanco’, mainly due to hydroxyphenolic acids. In this variety, no differences were found between the diseased leaves and the control in terms of phenolic content. In Tempranillo, the content of total phenolic compounds, hydroxycinnamic acids and stilbenes were higher in infected leaves. Thus, in Tempranillo the upregulation of this pathway was not directed to the flavonoid pathway, although a rearrangement of these compounds was found. When comparing the treated leaves of both varieties, differences in anthocyanidin content were found. The genetic background of both varieties is similar, as ‘Tempranillo Blanco’ comes from a natural mutation of ‘Tempranillo’ which could lead to the loss of some genetic information related to the *Myb* genes that are involved in the regulation of the anthocyanidin pathway.

Keywords: plant defence, phenylpropanoids, grapevine, powdery mildew, *Vitis vinifera*