

Plant defense elicitors induce contrasting polyphenol responses in grape skins

Klein, D.¹, Hunoff, T.S.¹, Silva, L.F.², Cavalcanti, F.R.¹

¹ *Laboratório II de Fitopatologia, Embrapa Uva e Vinho. CEP: 95700-000, Bento Gonçalves, Brasil;* ² *Laboratório de Cromatografia e Espectrometria de Massas (LACEM), Embrapa Uva e Vinho. CEP: 95700-000, Bento Gonçalves, Brasil. E-mail: fabio.cavalcanti@embrapa.br*

Phytoalexins are defined as low molecular mass plant secondary metabolites with antimicrobial activity, which may be induced after fungal infection, elicitation or other stresses. Polyphenols are related to reduce cancer and have antioxidant, anti-aging and anti-inflammatory effects for those who drink wine moderately. In grapevine species, polyphenols as resveratrol, viniferins and piceids have been reported as antifungal phytoalexins. This study verified if plant defense elicitors could stimulate stilbene and flavonoid pathways to enhance their levels in dry mass of grape skins. For this purpose, bunches of 'Pinot-Noir' grapevines (three per treatment) were sprayed with chemical elicitors: benzothiadiazole (BTH, 0.8 g/L), hydrogen peroxide (2mM H₂O₂) and water (Ctrl). Berries were harvested at 24, 48 and 72 h after spraying (HAS) to freeze-drying and total polyphenol extraction with 70% ETOH. Extracts were passed through a 0.45 µm PVDF filter and experienced according to Silva et al. (2014) HPLC-DAD wine polyphenol method, modified for grape skins. Injections were carried out through a C8 column (150 x 4.6 mm, 5 µm), gradient elution (water and methanol, with formic acid). The flow rate was set to 1.0 mL min⁻¹ to take 30 min elution. DAD was set accordingly to the UV/Vis maximum wavelength for *trans*-resveratrol, ε-viniferin, myricetin, cinnamic acid and quercetin. It could be observed differential or no polyphenol responses at time interval, in treated berries. For instance, whereas the hydrogen peroxide induced significant drops in cinnamic acid levels at 24 and 48 HAS, it was evidenced *trans*-resveratrol (at 24-72 HAS) and quercetin (24-48 HAS) sustained increases. It was remarkable that *trans*-resveratrol has been the only berry skin polyphenol significantly increased by both experienced elicitors, in comparison with non-treated ones.

Theme: Plant Physiology

Area: Viticulture

Support: CNPq/SEG-Embrapa