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## PS 14-79 - Insights on resistance mechanisms induced by abiotic stress treatments in grapevines affected by *Flavescence dorée*

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ESA Exhibit Hall, Ft Lauderdale Convention Center

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### Background/Question/Methods

Flavescence dorée is an epidemic disease caused by phytoplasma (FDp) infection that still seriously affects European viticulture.

In this work, we analysed gene expression changes following FDp infection in leaves of the highly susceptible *Vitis vinifera* Barbera, with particular focus on transcriptional differences occurring in secondary metabolism. Leaf samples were collected in field from healthy (H), infected (FD) and recovered (REC) plants at three time points over the vegetative season. Samples from the second time point (late July), the moment of maximum infection on the basis of molecular diagnosis, were used for RNA extraction, RNA library preparation and highthroughput sequencing.

In parallel, we studied the evolution of recovery mechanisms in potted grapevines of the same cultivar maintained under controlled conditions and subjected to heat and water stress treatments by monitoring eco-physiological responses and by quantifying phytoplasma concentration through Real Time PCR assay during the whole summer season.

### Results/Conclusions

Elaboration of sequencing data showed that genes encoding major enzymes of the flavonoid biosynthetic pathway were highly over-expressed in field infected samples, whereas a strong induction of stilbene synthase genes was observed in recovered grapevines. The main categories of flavonoids and stilbenes were in parallel identified and quantified by UPLC in the same samples used for RNA-Seq and preliminary results confirm that stilbene accumulation was differently modulated in infected and recovered plants following FDp infection. Further analyses are ongoing to highlight specific variations in the expression profile of stilbene synthase genes, looking for correspondence with analytical data.

Results obtained from the experiments performed in controlled conditions indicated that over the period of trial the imposed treatments differently affected the eco-physiological responses and the phytoplasma abundance of the infected plants, with significant differences in terms of recovery rate.

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