

## Effects of hormone- and natural-based elicitors at the transcriptomic level in berries of cv. Tempranillo

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### Abstract (250 words)

One of the most important effects of climate change in wine-growing areas is the advance of phenological stages, especially concerning early berry ripening. In the hottest seasons, this results in a lack of synchrony between sugar and phenolic ripeness. In order to cope with this fact, a general effort is being made by researchers and growers aiming at delaying ripening through different strategies. One of the proposed approaches is the application of elicitors. This study aims to assess the effect at the transcriptomic level of the application of three hormone- and natural-based elicitors in Tempranillo. The RNA-seq libraries were sequenced on NovaSeq 6000 Illumina platform (2x150 bp, paired-end). The application of elicitors showed a differential gene expression level with respect to control plants shortly after their application. In terms of the biosynthesis of phenolic compounds, all three elicitors demonstrated an inhibition of tannin-synthesizing genes while promoting anthocyanin synthesis. Changes in sugar accumulation were also observed; all three elicitors caused an underexpression of monosaccharide synthesis related genes. In addition, the application of elicitors overexpressed key enzymes in cell wall reformulation, such as xyloglucan endotransglucosylases/hydrolases. Conversely, some adverse effects on genes related to aroma and stress response, among others, were found. To sum up, the application of elicitors might be beneficial for the advance of anthocyanin synthesis and sugar accumulation delay.

**Keywords:** phenolic compounds, anthocyanins, climate change, transcriptomics, sugars.