

# INFLUENCE OF GRAPE WITHERING ON CORVINA AND CORVINONE WINES AROMA COMPOSITION

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## INTRODUCTION AND METHODS

Withering is a practice used in various regions to produce sweet or dry wines. In Valpolicella, it is widely used in the production of a sweet red passito wine, the Recioto, and a dry passito red wine, the famous Amarone. During ripening stage, grapes are stored in specific warehouses traditionally called a "fruttaio", where they undergo slow dehydration. Beside an increase in sugar content due to water loss, phenolic and aromatic composition of grapes and wines is also affected. Some of these processes are not due to dehydration but are the result of metabolic activities, resulting in peculiar gene expression patterns contributing to changes secondary metabolism. The aim of this study is to understand the influence of the withering process on Corvina and Corvinone wines aroma profiles. Wines were produced with a standard red wine winemaking protocol with Corvina and Corvinone grapes from different Valpolicella vineyards and vintages with either fresh and withered grapes. Wines were analysed by Solid Phase Extraction and Solid Phase Micro Extraction gas chromatography coupled to mass spectrometry.



Table 1. Summary of analyzed wines

Vineyards	Varieties	Vintages	Treatments
V1-V2-V3-V4-V5	Corvina and Corvinone	2017-2018-2019	Fresh and withered

## RESULTS

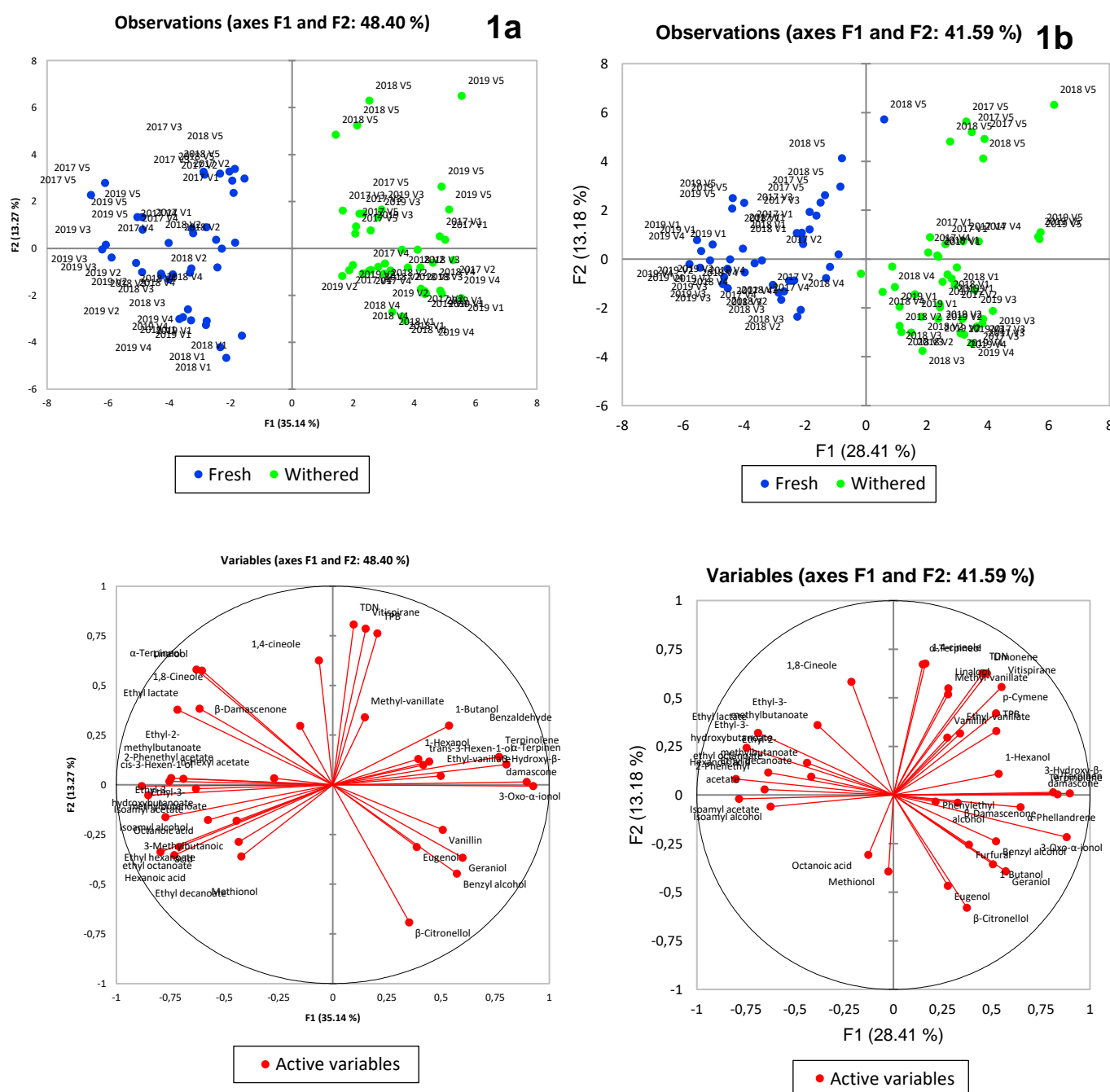


Figure 1. PCA of volatile compounds of Corvina (A) and Corvinone (B) wines

## DISCUSSION AND CONCLUSION

Withered grapes wines exhibited higher content of norisoprenoids, with increases up to 2,8-folds compared to wines produced with fresh grapes. Withering also induced an increase in benzenoids such as vanillin, methyl vanillate, ethyl vanillate and benzyl alcohol. Terpene content of withered wines was lower compared to fresh grape wines except for geraniol and  $\beta$ -citronellol which generally increased. Wine esters content, except ethyl butanoate, generally decreased with grape withering. The withering process deeply changes wines aroma profile. Modifications induced by withering cannot be simply ascribed to the concentration effect of evaporation, but involve more complex phenomena affecting grape and yeast metabolism

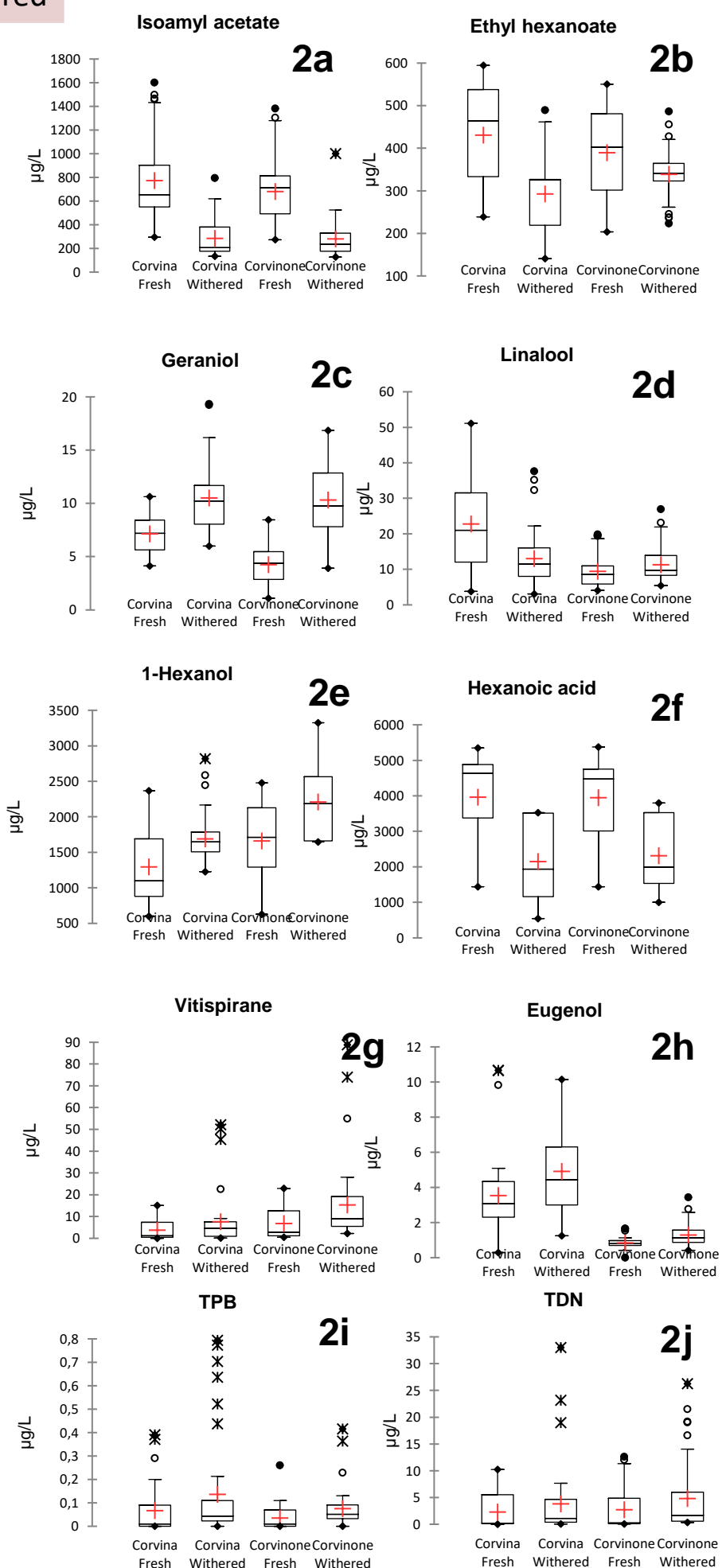


Figure 2. Content in Corvina and Corvinone fresh and withered wines of a) isoamyl acetate b) ethyl hexanoate c) geraniol d) linalool, 1-hexanol f) hexanoic acid g) vitispirane h) eugenol i) TPB j) TDN