

# INFLUENCE OF WITHERING ON VALPOLICELLA DOCG GRAPES VOLATILE COMPOSITION

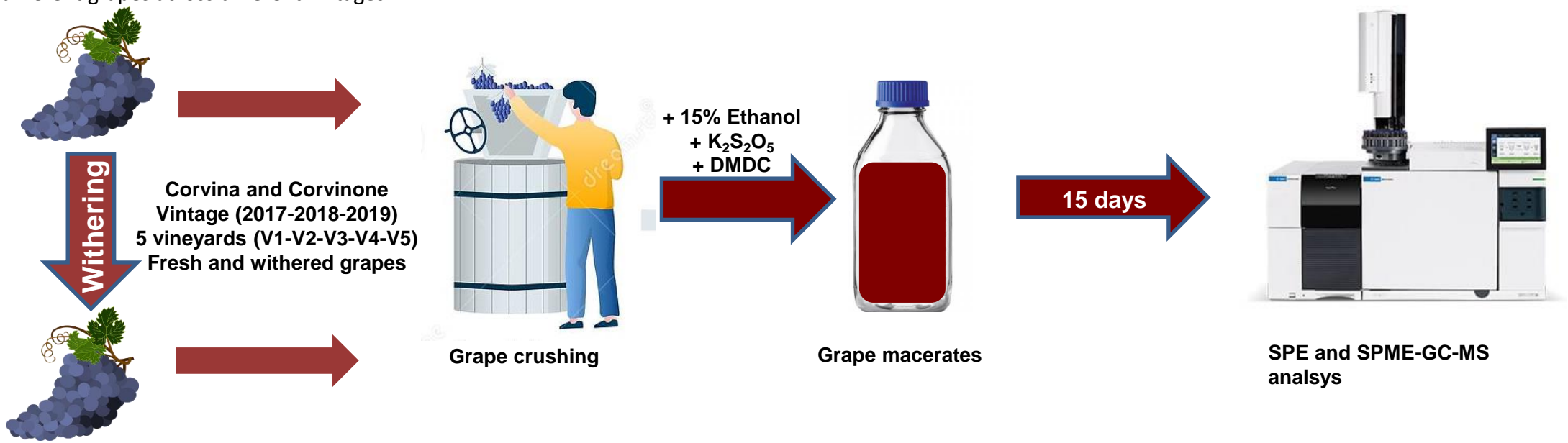
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## INTRODUCTION AND METHODS

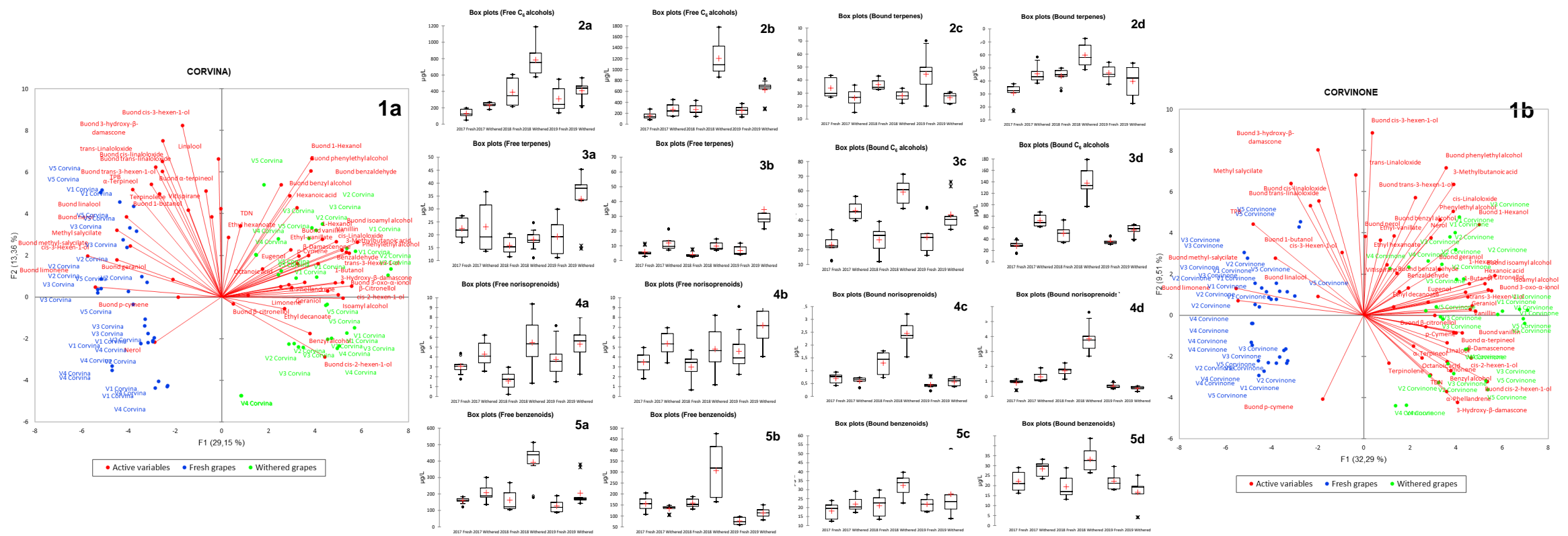
Valpolicella is an famous Italian wine region, well-known for the production of premium red wines. Its unique blend of grape varieties used for the production of its geographical appellations, including two main varieties, namely Corvina, Corvinone, which are, almost 100%, located in Valpolicella and used for its PDOs is a first distinctive feature of this region. Another peculiarity of this region is the wide use of the technology of post-harvest grape withering for the production of two red passito wines, the sweet "Recioto della Valpolicella" and the dry "Amarone della Valpolicella". According to their production regulation, grapes sugar content must reach a potential alcohol content of 14% (v/v) because of the withering process before they can be employed for winemaking purpose. This process can last up to 120 days, and is carried out in special facilities called fruttai, large breezy lofts, where air is continuously exchanged. During withering process physical, physiological, and biochemical changes happens, suggesting an influence on both environmental parameters and grape-related factor. Withering is more than a simple concentration of aroma compounds and precursors due to water loss, as patterns of gene expression are deeply modified in this phase. The aim of this study is to investigate the effect of withering on the composition, of the different grapes across different vintages.



Figure 1. A typical Valpolicella fruttai



## RESULTS



- Figure 1. PCA of volatile compounds of a) Corvina and b) Corvinone wines.
- Figure 2. Free C<sub>6</sub> alcohols in a) Corvina and b) Corvinone and glycosidically bound C<sub>6</sub> alcohols in c) Corvina and d) Corvinone
- Figure 3. Free terpenes in a) Corvina and b) Corvinone and glycosidically bound terpenes in c) Corvina and d) Corvinone
- Figure 4. Free norisoprenoids in a) Corvina and b) Corvinone and glycosidically bound norisoprenoids in c) Corvina and d) Corvinone
- Figure 5. Free benzenoids in a) Corvina and b) Corvinone and glycosidically bound benzenoids in c) Corvina and d) Corvinone

## DISCUSSION AND CONCLUSION

- Most of the free and bound volatile metabolites were increased by concentration during withering. However, these changes cannot be attributed only to water loss. Indeed the observed increase is not proportional for all compounds and, most important, not all metabolites increased. For example, in the case of terpenes, a complex behaviour was observed with glycosidically bound terpenes decreasing in Corvina while increased in Corvinone in two vintages out of three. This was mainly due to nerol and geraniol which in Corvina were higher in fresh grapes while in Corvinone withered grape had higher or similar content.