

5th MS-Wine Day

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Research Centre for Enology and Viticulture, Asti

TRACES IN THE GLASS

MASS SPECTROMETRY

FOR QUALITY AND PROFILING

IN WINES, FERMENTED BEVERAGES, AND DISTILLATES

Main topics

Wine and Fermented Beverages quality

Traceability and Counterfeit in Fermented Beverages

Metabolomic and Proteomic Profiles in Wine, Beer, and Spirits

Cutting-Edge MS Techniques Applied to Enology

Monitoring Oenological Processes

Contaminants and Faults in Alcoholic Beverages

The wine is “naked”: Flint glass bottles cause wine aroma identity degradation

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Transparent packaging is often used for food products, including wine, milk, beer and fruit juices. This choice is based on the marketing recommendation that consumers want to see the product before they buy it, although scientists point out that light can harm food quality and nutritional value.

Although the practice of bottling white wine in clear glass is known to cause a wine defect, the influence of light on the fruity and floral flavor profile of the wine is unknown. The aim of this work was to study the influence of light exposure on the white wine volatilome under the typical supermarket shelf conditions and to monitor the primary aroma compounds that characterize the sensorial identity and flavor of each cultivar using 1,052 bottles of 24 white wines [1]. The volatile profile was studied using a fingerprinting method able to maximize the number of volatiles detected, via comprehensive gas chromatography combined with time-of-flight mass spectrometry (GC×GC-ToF-MS) instrument.

After only 7 days of shelf life in flint glass bottles, a dramatic loss of terpenes (10 to 30%) and norisoprenoids (30 to 70%) was recorded, while colored glass bottles did not show such behavior. even after 50 days and the darkness has preserved the fruity and floral aromatic integrity of the wine. Flint glass bottles bring no benefit to the wines, while the multiples change in the aroma composition can jeopardize the quality, depriving the wine of the identity of the variety and terroir. In other words, the wine is naked. In light of this understanding of the negative impact of flint glass on the aromatic identity and sensory character of white wine, this packaging should be strongly discouraged. The same results should apply to a wide range of different foods consumed daily in which clear packaging is used.

References

- [1] S. Carlin, F. Mattivi, V. Durantini, S. Dalledonne, and P. Arapitsas, *Proc Natl Acad Sci U S A*, vol. 119, no. 29, p. e2121940119, Jul. 2022, doi: 10.1073/pnas.2121940119



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