

**In Vino**  
Analytica

**Scientia**

**DAVIS 2024**

*Analytical Chemistry for Wine,  
Brandy and Spirits*

## **13<sup>th</sup> In Vino Analytica Scientia**

**July 9-12, 2024**

**And Opening Wine Reception July 8, 2024**

**University of California, Davis**

## **Program and Abstracts**

**Conference Website: <https://ivas2024.wixsite.com/ivas2024>**

## S1.13

### **Evolution of volatile compounds after natural vs accelerated aging in classic sparkling wines produced in different climatic areas.**

Silvia Carlin<sup>1</sup>; Panagiotis Arapitsas<sup>1,2</sup>; Francesco Reale<sup>1</sup>; Stefano Sadari<sup>3</sup>; Fulvio Mattivi<sup>1</sup>; Urska Vrhovsek<sup>1</sup>

<sup>1</sup>Metabolomics Unit, Research and Innovation Centre, Edmund Mach Foundation, Via Edmund Mach 1, 38010 San Michele all'Adige, Italy; <sup>2</sup>Department of Wine, Vine and Beverage Sciences, School of Food Science, University of West Attica, 12243 Athens, Greece; <sup>3</sup>Studio Agronomico Sata, Piazza della Loggia 5, 25121, Brescia, Italy

Presenting author email: [silvia.carlin@fmach.it](mailto:silvia.carlin@fmach.it)

The evolution of the aroma over time is what makes a super-premium sparkling wine surprising and unique. Several reactions occur during the refinement of wine in the bottle, in anoxia, and in contact with yeasts. During aging, wine can improve its qualities for tens of years, until the wine is disgorged. The selection of the sparkling wine bases to create the cuvée to be refermented is one of the most difficult processes in the production of the classic method. A lot of experience is needed on the part of the winemaker to understand, usually through tasting, which bases will make up the blend to be brought to the second fermentation.

The aim of this study, on classic method sparkling wines, was to investigate what happens by carrying out accelerated aging at 40 °C for 5 weeks compared to natural aging in a professional cellar at 15°C for two years. Samples of 24 different sparkling wines, each one produced in a single vintage from grapes cultivated in different areas, were subjected to accelerated or natural aging, and volatile compounds were analyzed using a targeted GC-MS/MS method (Carlin et al., 2022). The compounds showed different behaviors, as expected for the chemical classes. The variation in the concentration of acetate esters showed a similar result after accelerated and natural aging, with a higher hydrolysis tendency in natural aging. Monoterpenes such as linalool showed a greater decrease in wines subjected to accelerated aging, while for the most important norisoprenoids, accelerated aging caused the greatest differences, 2 to 3 times greater concerning cellar storage. The work aims to improve the predictive potential of accelerated aging test, carried out on young sparkling wines, in order to select the most suitable wines with the potential to improve over prolonged aging.

Carlin, S.; Lotti, C.; Correggi, L.; Mattivi, F.; Arapitsas, P.; Vrhovsek, U. "Measurement of the effect of accelerated aging on the aromatic compounds of Gewürztraminer and Teroldego wines, using a new SPE-GC-MS /MS protocol" *Metabolites* 2022, 12(2), 180.