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Aroma characterization of mold resistant base wines for sparkling wine produced in a warm-temperate area at two different altitudes

Abstract

In a recent context where consumers pay an increasing attention to sustainability and eco-friendly aspects in the decision-making process, the use of the resistant varieties in the wine sector have returned to the attention. In this context, the use of mould-resistant grape varieties would be an opportunity for sparkling wine producers as it can reduced the pesticide utilization in grape management and hence production costs.

However, the use of the resistant varieties to produce the base wine may be strongly influenced due to its requirements for a particular balance between sugars and acidity to ensure the quality of the final product. In addition, the aromatic profile of base wine plays a crucial role in the perception of the quality of the sparkling wine.

This work aims to study the volatile composition of base wines produced from five resistant varieties (Bronner, Solaris, Johanniter, Sauvignier Gris, Vinera) cultivated in two experimental vineyards located in Trentino (IT): one situated on the valley bottom and one in the hill. The results were comparing with those of Chardonnay, the main variety used in this area nowadays for this product, cultivated in the same plots. The volatiles were extracted from the base wines and the GC-MS/MS analysis allowed to quantify the aromatic compounds belonging to six different chemical classes: acetates, ethyl esters, alcohols, fatty acids, terpenes and norisoprenoids.

Among the varieties, Sauvignier Gris was characterised by methyl salicylate and 1-hexanol, while Solaris stood out for the concentration of β -damascone, acetates and ethyl esters. Bronner showed significant contents of some grape-derived metabolites, such as β -damascone and linalool. This terpene was also present in higher quantities in Solaris and Johanniter. Regarding the location, acetates and ethyl esters were higher in base wines of the valley bottom and fatty acids, higher alcohols and terpenes in the hilly plot wines.

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