



AROMA CHARACTERISATION OF MOLD RESISTANT SPARKLING WINES PRODUCED IN A WARM-TEMPERATE AREA

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Abstract:

Context and purpose of the study - In recent years, resistant varieties have returned to the attention of the wine sector as a response to climate change and the reduction of pesticides in grapevine management, which is the main culprit of pesticide use in European agriculture. In this context, the production of sparkling wines could be strongly influenced due to its requirements for a particular balance between sugars and acidity, and the necessity of sound grapes to ensure wine quality. However, these parameters are not the only ones that define the suitability of a grape variety to produce sparkling wine. Among them, the aromatic profile of sparkling wines plays a crucial role in the perception of the quality of the final wines. Some active compounds present in sparkling wines are the consequence of the interaction between variety and environment and evolve during ageing. This work aims to study the volatile composition of traditional method sparkling wines produced from resistant varieties cultivated in an experimental plot in Trentino, comparing the results with those of Chardonnay, the main variety used in this area nowadays for this product.

Material and methods – Ten different varieties (Bronner, Solaris, Johanniter, Sauvignier Gris, Palma, Charvir, Pinot Regina, V2, V10 and V11) were cultivated in an experimental plot located in Trentino (IT). The grapes were harvested for three consecutive years (2018-2020) according to the technological maturity to produce sparkling wine. The whole bunches were pressed with a yield of 50% (w/w) and, after settling, the must fermented at 18-20°C. Five months after the end of alcoholic fermentation, the *tirage* was carried out for the *prise de mousse* at 6 standard atmospheres in 0.7 L bottles, according to the traditional method for sparkling wine production. The wines were aged at 15°C until analysis after disgorgement. All vinification operations were performed under standardised conditions. Over 35 volatile compounds belonging to 6 different oenological families (acetate esters, ethyl esters, alcohols, fatty acids, terpenes and norisoprenoids) were analysed by GC-MS.

Results – Among the varieties, Sauvignier Gris was characterised by methyl salicylate, 1-hexanol and n-hexyl acetate, while Solaris stood out for the concentration of β -damascone, acetate 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, while Charvir and V11 were distinguished by their higher α -terpineol content. Pinot Regina was characterised for certain amino acid-derived compounds such as 3-methylthio-1-propanol, isovaleric acid, 2-methylbutyrate and isobutyl acetate. All results were compared with those of Chardonnay sparkling wines from the same experimental plot and produced with the same protocol.

Keywords: Resistant varieties, aroma, sparkling wine.