

VOLATILE COMPOSITION OF BASE WINES TO OBTAIN SPARKLING WINES FROM SEVEN AUTOCHTHONOUS GRAPE VARIETIES FROM CASTILLA Y LEÓN (SPAIN)*

Montserrat SÁNCHEZ-IGLESIAS¹, Silvia PÉREZ-MAGARIÑO¹, Miriam ORTEGA-HERAS¹, Carlos GONZÁLEZ¹, Leticia MARTÍNEZ², Zenaida GUADALUPE², Belén AYESTARÁN²

¹ Consejería de Agricultura y Ganadería. Instituto Tecnológico Agrario de Castilla y León. Estación Enológica. C/ Santísimo Cristo 16, Rueda, E.

² Dpto Agricultura y Alimentación. Facultad de Ciencias, Estudios Agroalimentarios e Informática. Universidad de la Rioja. C/ Madre de Dios 51. 26006 Logroño, E.
E-mail: permagsi@itacyl.es

Key words: sparkling wines, grape varieties, volatile compounds

1. INTRODUCTION

Castilla y León has an important number of autochthonous grape cultivars with good characteristics to obtain quality sparkling wines. However, no scientific works have been carried out to study the enological potential of these grape cultivars for sparkling wine elaboration. The base wine should have different characteristics than those of the still wines such as a relatively high acidity and a moderate alcoholic graduation. The employment of these cultivars will allow to obtain wines with their own personality, and different from the rest of the sparkling wines that exist in the market.

The aim of this work was to characterize the aromatic profile of white and rosé base wines for the elaboration of sparkling wines from different autochthonous grape cultivars of Castilla y León.

2. MATERIALS AND METHODS

2.1 Wine samples and analyses

The base wines were elaborated following the traditional white or *rosé* winemaking process in stainless steel tanks of 150 liters in duplicate. The grape cultivars used in this study are sited in the Autonomous Community of Castilla y León in the North of Spain and they were 'Verdejo' and 'Viura' from the Rueda Designation of Origin (DO), 'Malvasía' from the Toro DO, 'Albarín' and 'Prieto picudo' from the Tierra de León DO, 'Godello' from the Bierzo DO and 'Garnacha' from the Cigales DO.

The volatile compounds were extracted by liquid-liquid extraction (Ortega-Heras *et al.*, 2002) and analysed by gas chromatography-mass detector (Rodríguez-Bencomo *et al.*, 2008). The analyses were also carried out in duplicate.

* QUAD. VITIC. ENOL. UNIV. TORINO, 31, 2009-2010

2.2 Statistical analyses

Analysis of Variance (ANOVA) was carried out and the Least Significant Difference test (LSD) was applied to differences between cultivars. Significant levels of $\alpha=0.05$ were used.

3. RESULTS AND DISCUSSION

The results showed higher levels of ethyl esters (fig. 1) and fusel alcohol acetates (fig. 2), compounds which are responsible for the fruity notes, in the base wines of the ‘Albarín’, ‘Godello’ and ‘Verdejo’ white cultivars. On the other hand, the wines elaborated with ‘Viura’ and ‘Malvasía’ had a smaller fruity character, and in general a lower volatile composition.

Rosé wines also presented important concentrations of these compounds, especially the one elaborated with ‘Prieto picudo’ grapes.

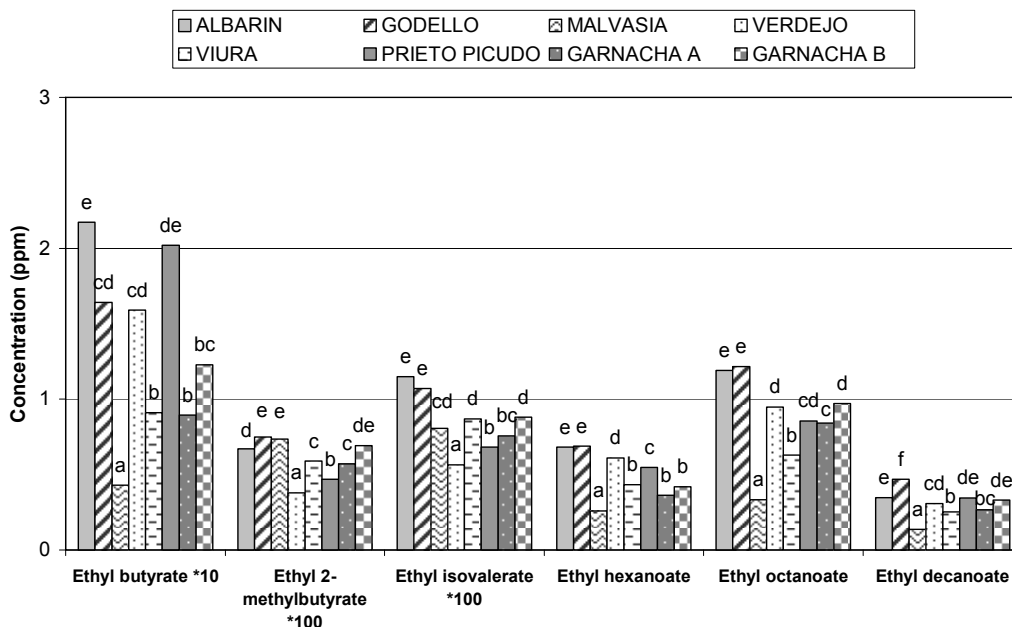


Fig. 1 - Ethyl esters of base wines. Values with the same letter in each compound indicate that no statistically significant differences were detected for $\alpha=0.05$.

In addition, the wines elaborated with ‘Albarín’ grapes had higher concentrations of terpenes such as linalool and terpineol (fig. 3), compounds which contribute to the wine aroma with floral and citrus notes. In coloured grapes, no statistically significant differences were found in terpenes, with the exception of the highest concentration in geraniol of Prieto picudo wines.

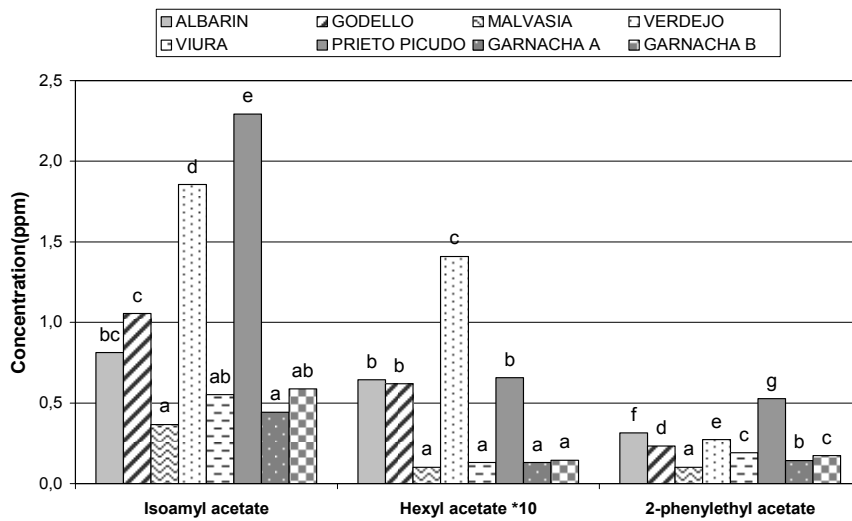


Fig. 2 - Fusel alcohol acetates of base wines. Values with the same letter in each compound indicate that no statistically significant differences were detected for $\alpha=0.05$.

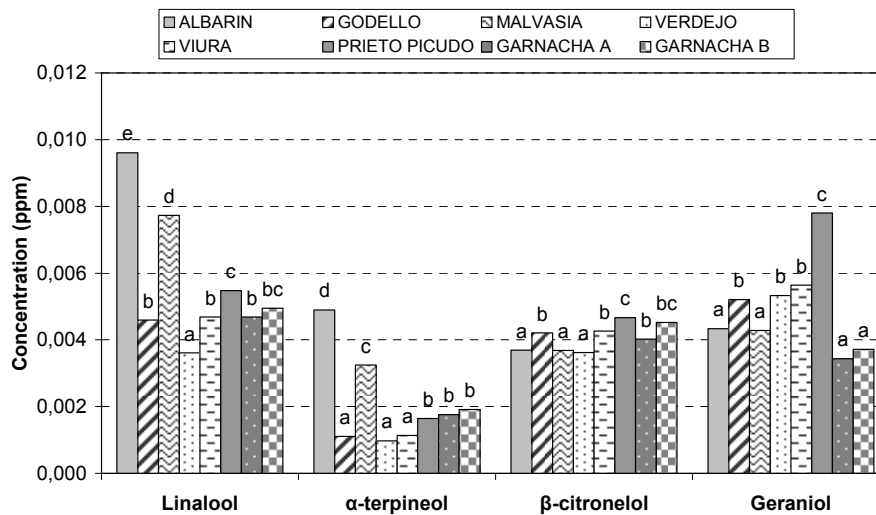


Fig. 3 - Terpenes of base wines. Values with the same letter in each compound indicate that no statistically significant differences were detected for $\alpha=0.05$.

Albarín, Godello and Verdejo wines also had higher contents of fatty acids (fig. 4), although the concentrations were not high enough to produce negative notes in wine aroma.

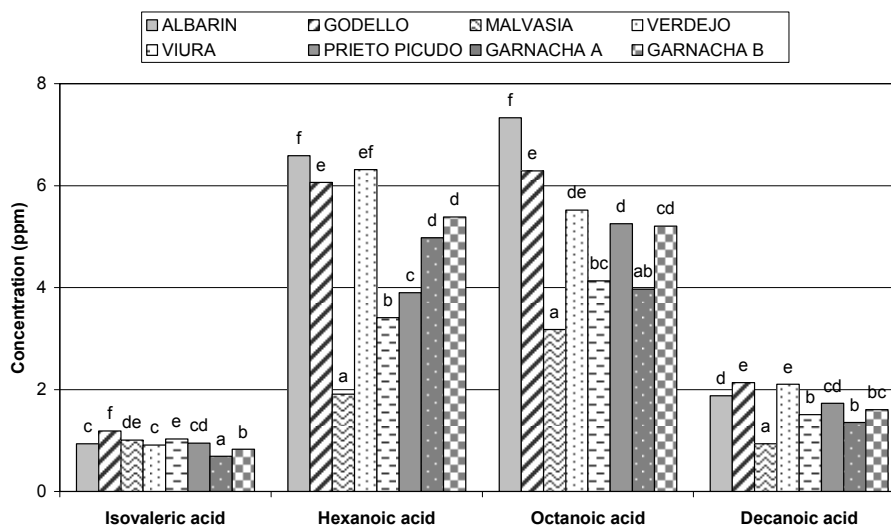


Fig. 4 - Fatty acids of base wines. Values with the same letter in each compound indicate that no statistically significant differences were detected for $\alpha=0.05$.

Acknowledgements

The authors would like to thank the "Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria" (INIA) for the funding provided for this study through the project RTA2009-029-C02. L. Martínez also thanks the La Rioja Government for the financing of her pre-doctoral fellowship.

Abstract

The aim of this work was to characterize the aromatic profile of white and rosé base wines for the elaboration of sparkling wines from seven autochthonous grape varieties of Castilla y León. The 'Albarín', 'Godello' and 'Verdejo' white grape cultivars contribute with more fruity notes than the 'Viura' and 'Malvasía' cultivars; and 'Prieto picudo' coloured grape cultivar has more fruity character than 'Garnacha'.

Literature cited

- Ortega-Heras M., González-Sanjosé M.L., Beltrán S. – 2002 - Aroma composition of wine studied by different extraction methods. *Analytica Chimica Acta*, 458, 85-93.
- Rodríguez-Bencomo J.J., Ortega-Heras M., Pérez-Magariño S., González-Huerta C., González-Sanjosé M.L. – 2008 - Importance of chip selection and elaboration process on the aromatic composition of finished wines. *Journal of Agricultural and Food Chemistry*, 56, 5102-5111.