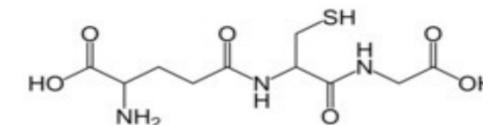


Juana Martínez*, Laura Alti, Sara García, Elisa Baroja

Instituto de Ciencias de la Vid y del Vino (Gobierno de La Rioja, Universidad de La Rioja, CSIC)
Carretera de Burgos Km. 6, 26007, Logroño, Spain.* juana.martinez@licvv.es



INTRODUCTION

Glutathione is a tripeptide that is mainly found in reduced form in grapes. It generates during the maturation of the grape, increasing significantly after veraison [1]. It plays a relevant role in the prevention of oxidative processes due to its high antioxidant activity. Its content in the grape is influenced by many factors (variety, vintage, cultural practices, nitrogen nutrition ...) [2]. In musts and wines, it undergoes modifications due to oxygen exposure, tyrosinase activity, maceration time, pressing, yeast strain...[3].

The aim of this work was to evaluate the content of glutathione in the grape of four white varieties: Tempranillo Blanco, Maturana Blanca, Garnacha Blanca and Viura.

MATERIALS AND METHODS

The study was carried out during three seasons (2017, 2018 and 2019) in a vineyard located in the Finca La Grajera (Logroño, Spain) in four white varieties: Tempranillo Blanco, Maturana Blanca, Garnacha Blanca and Viura. On the other hand, the influence of different vineyard locations in the DOCa Rioja on the content of this compound was also analyzed. The study was carried out in 2018 in two locations (Logroño and Briones) for the four varieties. In the case of Tempranillo Blanco, it lasted for three years (2017-2019) in three different locations (Logroño, Corera and Albelda).

Glutathione determination was carried out by HPLC by automatic derivatization in precolumn with OPA. The previous extraction in the grape was carried out with HCl/EDTA [4].

RESULTS

The results obtained showed important varietal differences in the glutathione content of the grape in the white varieties studied (Table 1). Also, the characteristics of the vintage also influenced its concentration, although the varietal differences were maintained. The highest mean concentration was obtained in the Tempranillo Blanco variety, although without significant differences in comparison to Viura, while the lowest levels corresponded to Maturana Blanca and Garnacha Blanca.

Table 1. Glutathione content (µg/g) in white varieties

Año	Tempranillo B	Maturana B	Garnacha B	Viura	G.S.
2017	17.53 a	7.85 b	10.57 ab	14.66 ab	**
2018	31.94 a	15.05 b	16.75 ab	25.09 ab	***
2019	31.58 a	17.01 b	17.64 b	22.21 ab	*
Media	27.02 a	13.30 b	14.99 b	20.65 ab	***

Significance level: p < 0.05 (*); p < 0.01 (**); p < 0.001 (***). Different letters indicate significant differences according to Tukey test.

The location of the vineyard affected the glutathione concentration in all varieties (Figure 1). In 2018 the lowest values were obtained in Logroño varieties except for Viura. Likewise, in Tempranillo Blanco differences related to the vineyard's locations were observed. These differences were variable depending on the vintage (Figure 2).

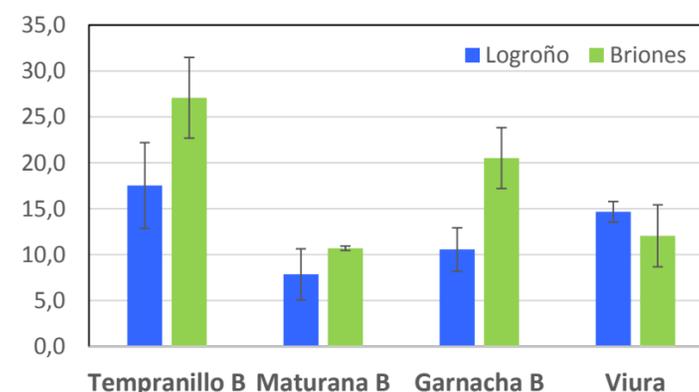


Figure 1. Influence of vineyard location on glutathione content (µg/g) in white varieties

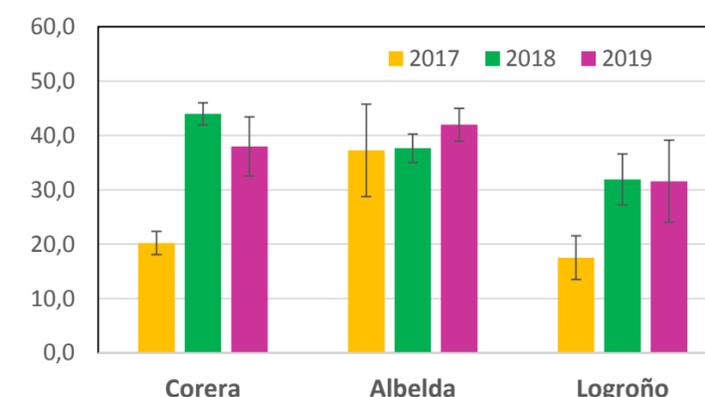


Figure 2. Influence of vineyard location on glutathione content (µg/g) in Tempranillo Blanco

CONCLUSIONS

These results confirm that the variety is one of the most influential factors in the glutathione content in grapes. Tempranillo Blanco has high levels of this compound, which can help preserve the quality of your wines.

REFERENCES

- [1] Adams, D.O.; Livanage, C. Am. J. Enol. Vitic., 1993, 44, 333-338.
- [2] Cheynier, V.; Souquet, J.M.; Moutounet, M. Am. J. Enol. Vitic., 1989, 40 (4), 320-324.
- [3] Kritzinger, E.C.; Bauer, F.; Du Toit, W.J. Agric. Food Chem., 2013, 61, 269.
- [4] Martínez, J.; García, S.; Alti, L. Vitis, 2019, 58: 21-24

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