

Winemaking options for the improvement of the attributes of the wines from grapes with different oenological potential and sanitary status

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Aim

The aim of this work was to study winemaking alternatives that will optimize the quality of the Tannat wines, taking advantage of the grape's oenological potential.

Introduction

Competitiveness of Uruguayan wines may be improved, by adjusting the winemaking conditions, in order to improve the expression of its ecological and varietal conditions. As a contribution to achieve these objectives, we made a study of alternative options of vinification of red wines from Tannat grapes with different oenological potential and sanitary status. In this study, grapes from plants with different vigor will be considered, which represents a factor that has an important impact on their composition and health.

Materials and Methods

Grapes from three vineyards were vinified:

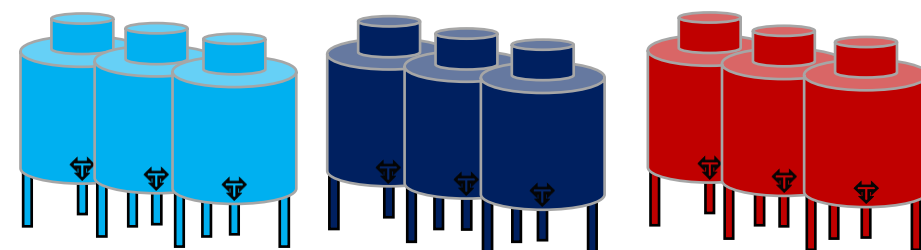
- Vineyard with high yield (HY)
- Vineyard with medium yield (MY)
- Vineyard with low yield (LY)

The grapes were harvested at technological maturity. The sanitary status of the grapes was evaluated using commercial tests, absorbance measurements at different wavelengths and analysis of the gluconic acid and glycerol contents.

The wines were made in triplicate by three options:

- Traditional winemaking (Control)
- Addition of oenological tannins (TAN)
- Hot pre-fermentative maceration (HPM)

The wines were analyzed 3 months after vinification, determining their general composition, color and polyphenolic composition.



Control

7 days of maceration at 26- 28 °C

TAN

30 g/100 kg Protanin R
7 days of maceration at 26- 28 °C

HPM

1 h at 60 - 70 °C
7 days of maceration at 26- 28 °C

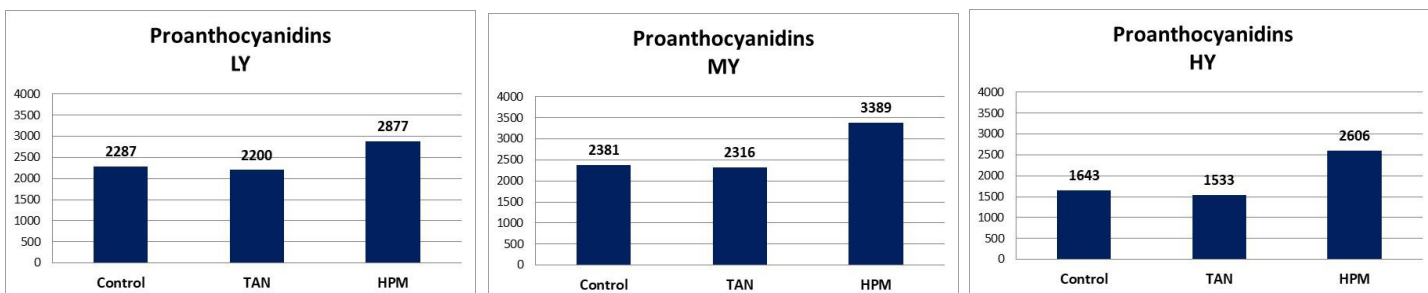
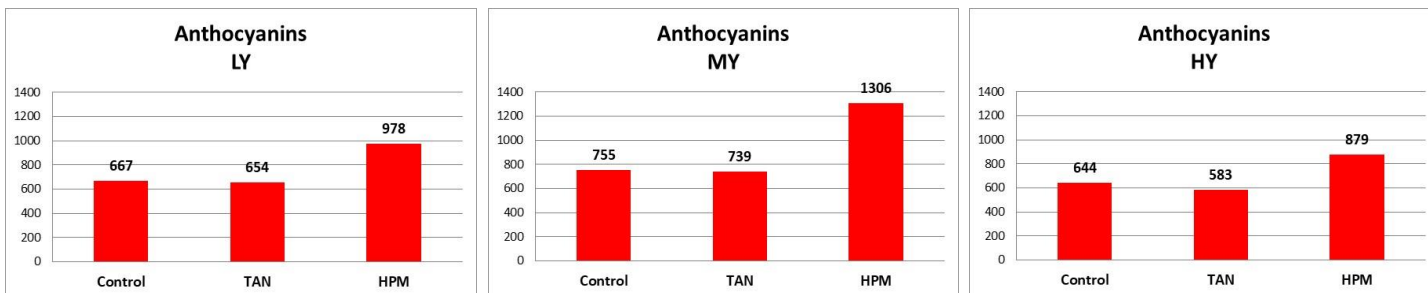
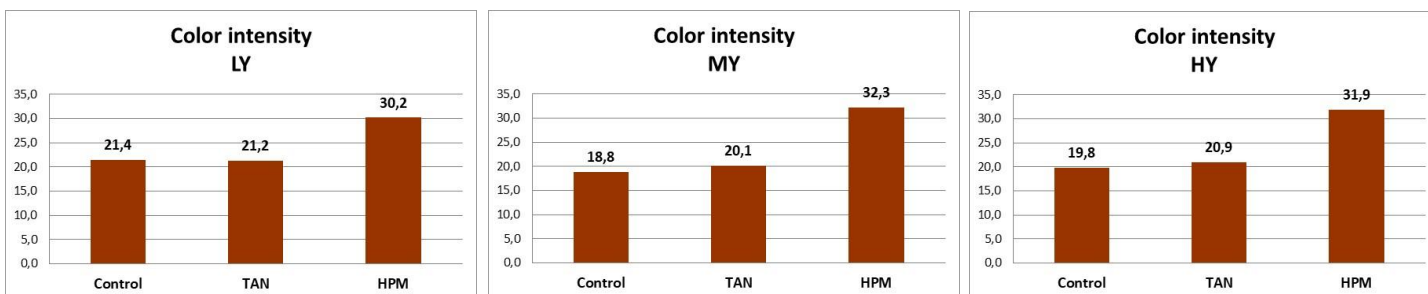
	Sugars	Total acidity	pH	A280	ApH1	ApH3.2
LY	217	7,0	3,19	74,5	2428	1034
MY	225	6,6	3,32	93,4	2646	1189
HY	205	7,2	3,14	77,1	2566	1031

Grape composition at harvest. Average values for each vineyard.

A280 = phenolic richness

ApH1 = total potential in anthocyanins

ApH3.2 = potential in extractable anthocyanins



Color and phenolic composition of wines.
Average values for the wines from each vineyard.
Anthocyanins and proanthocyanidins in mg/L

Discussion

The highest color intensity was obtained in the wines produced with the hot pre-fermentative maceration (HPM). The effect of HPM on anthocyanin and proanthocyanidin content was very significant, showing the higher extraction of these compounds and their lower degradation in oxidation reactions. The values obtained in some cases were exceptionally high, showing the potential of the application of this technique in this grape variety.

In most of the trials, the color intensity of the wines with added tannins was greater than that of the controls. The addition of tannins determined a lower anthocyanin content than the control wines, which could be related to the increase in condensations between these molecules.

Conclusions

The pre-fermentative hot maceration was a totally effective treatment to inactivate the oxidative enzymes, in addition to increasing the extraction of compounds from the skins and seeds. Because of its application, these wines had the highest color intensity and phenolic contents.

The addition of oenological tannins was shown to have a positive effect on the color and phenolic content of some wines, but this effect was not always evident.

The effect of the different techniques evaluated corresponded to the oenological quality and the sanitary status of the grapes, so new research is required to verify the effect of these techniques in other situations and for other grape varieties.