Promoting Color Stability in Virginia Merlot (2014)

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Abstract:

Purpose: To ensure adequate anti-oxidant protection, optimal extraction, promote co-pigmentation and color condensation to obtain red wines with deep, stable color by implementing an experimental protocol. Methods: Identically sourced Merlot was harvested, destemmed but not crushed, and separated into two t-bins. Each t-bin was treated with a different protocol attempting to ensure color stability (Figure 1). Beyond color stability each t-bin was treated identically through inoculation, AF, maceration, pressing, and MLF. The Merlot was racked to two identical Saint Martin Blend Finesse M+ 2014 barrels. Results: The triangle test indicated no discernable difference between the control and the trail (n=26). Preference data was split evenly between the two groups (n=8). Discussion: Spectrophotometric color analysis would be beneficial in determining color stability. This tasting provided valuable information about the trial protocol in that the long-term efficacy may remain undetermined, but there was not impact on the sensory analysis of the wine Continuing color stability analysis on these same barrels of wine could provide valuable information in the future. Conclusion: The efficacy of the trial protocol in regards to anti-oxidant protection, color extraction, co-pigmentation, and color condensation is not currently significantly different from the control, but future testing may provide valuable information.

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Promoting Color Stability

Introduction:

The purpose of this experiment was to explore an experimental protocol that provides adequate anti-oxidant protection, optimal extraction, promotes co-pigmentation and color condensation in red wines. Both protocols were based on the principal that tannin and enzyme addition before primary fermentation will lead to greater color extraction and stability. The early addition of tannin may bind proteins in the grape juice, thereby leaving the natural grape tannins available to bond with anthocyans; which in turn is thought to bring color stability to the finished wine (ScottLab FAQs). Pre-fermentation enzyme addition is designed to breakdown the grapes, increasing the concentration of both anthocyanins and grape tannin available for binding. In addition to increased color stability, this is thought to increase the mouth feel and volume of the finished wine. While both protocols utilize these guidelines, they differ in manufacturer and the proprietary mixtures of tannin and enzyme therein.

The control group used a mixture of the enzyme ColorPro (ScottLab), tannin VR Supra (Laffort), and oak chips (French). ColorPro is a macerating enzyme that contains a pectinase and protease mixture. Tannin VR Supra is a combination of ellagic (wood) tannin and proanthocyanidic tannin to bind both the available proteins and anthocyans respectively. Oak chips are widely available from different manufactures in different shapes, sizes and toasts. Similar to ellagic tannin they contribute an oaky flavor to the wine and have inherent anti-oxidant property, protecting the color of the wine.

The trial group used a mixture of the enzyme Zym Color Plus (Enartis), Tan Fermcolor (Enartis), and Tan Color (Enartis). Zym Color Pro is macerating enzyme with pectinase, protease, cellulose, and hemicellulose actions. Tan Fermcolor is a pre-fermentation ellagic tannin made from chestnut, tara, and other exotic species. This is designed to provide the finished wine with a more complex and intense aroma, while still protecting the wine from oxidation. Tan Color is a blend of grape seed tannins, gallic tannin, ellagic tannin, and yeast hulls rich in sulfur containing amino acids designed to promote color stabilization via co- pigmentation and condensation.

Methods:

Identically sourced Merlot was harvested in one day and allowed to sit overnight. The following day the Merlot was de-stemmed, but not crushed, and separated into two t-bins. Both t-bins were treated with a different color stability protocol (Figure 1) with t-bin 1 serving as the control protocol. Both bins were

inoculated with 20g/hL of Cepage yeast. They were given identical additions of nutrients and enzymes throughout alcoholic fermentation. After AF was complete each t-bin was pressed separately but with an identical program. The wine was settled overnight and then racked to two identical Saint Martin Blend Finesse M+ 2014 barrels. Each barrel was inoculated with ML bacteria (1g/hL) and treated with 5g/hL after completion of MLF.

Figure 1.

T-bin 1: enzy. ColorPro (60mL/ton), tannin VR Supra (30g/hL), oak chips (French)

T-bin 2: Enartis Tan Fermcolor (300g/ton), Enartis Zym Color Plus (30g/ton), 250g/ton Enartis Tan Color

T-bin 1&2: yeast Cepage Merlot (20g/hL), rehydrate GoFerm (30g/hL)

Results:

The triangle test indicated no discernable taste difference between the control and the trail (n=26). Among the group that could correctly identify the trial and control, preference data was split evenly between the two groups (n=8). Similarly, laboratory analysis (figure 2) showed great consistency between the wines following fermentation.

Color analysis:

Figure 2.

wine	alc %vol	pH	VA (g/L)
T-bin 1	13.3	3.6	0.33
T-bin 2	13.2	3.55	0.34

Discussion:

Taste testing a color stability protocol is not as valuable as other lab analysis that can be performed. However, it does indicate that the trial color stability protocol presented here has no deleterious effect on the wine as compared to the control. Tasting these same bottles, if possible, several years from now, may provide insight to the longevity of the previous statement.

Spectrophotometric testing would be a valuable tool in assessing the efficacy of these color stability protocols. Additional sample testing in the future will give an

idea of the appropriate protocol to use relative to how long the wine in question is made to age.

This tasting provided valuable information about the trial protocol. While the longevity of the color stability effect will need to be monitored, the protocol has no adverse effect on the wine. Additionally, with a higher population we may see a sensory preference for the trial protocol.

Conclusion:

The efficacy of the trial protocol in regards to anti-oxidant protection, color extraction, co-pigmentation, and color condensation is similar to that of the control. Future color testing and sensory analysis will be a major factor for determining the preferential protocol.

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