EFFECT OF THE FOLIAR APPLICATION OF YEAST DERIVATIVES ON GRAPE COMPOSITION AND RESULTING WINES

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ABSTRACT

2015 has been confirmed as the warmest year globally since records. These changing climatic conditions represent a challenge in many grape growing regions compromising a balanced technological, phenolic and aromatic maturity, resulting in unbalanced wines. This study tested the foliar application of yeast derivatives at the beginning of the ripening phase on *Vitis vinifera L.* cvs. Sauvignon Blanc and Cabernet Sauvignon, in a warm grape growing region (Albacete, Spain). Parameters related to vine physiology and productivity, and grape composition were followed during the ripening. Experimental wines were elaborated to assess the possible sensorial differences due to the foliar treatments. Sauvignon Blanc grapes from treated vines showed an increase in the percentage of skin thickness and a higher concentration of glycosylated aroma precursors compared to non-treated. In cv. Cabernet Sauvignon, grapes from treated vines presented a higher concentration of tannins. In both varieties no differences were found regarding vine physiology or yield components. Wines from treated grapes were described as more mature and with less green character in both cvs. Cabernet Sauvignon and Sauvignon Blanc.

AIMS

Our research team have experimented during 2015 the application of two yeast derivatives products in the vineyard: LalVigne™ Mature which aims to stimulate phenolic ripeness in red grapes varieties; LalVigne™ Aroma aims to stimulate aromatic precursors in white grapes and in both cases verify its influence on the agronomic responses in the vineyard

Figure 2: Harvest and winemaking following the method described by Sampaio et al. 2007

Sauvignon Blanc

	Yield (kg/m²)	Cluster wt. (g)	Berry wt. (g)	Shoots /m²	Shoot wt. (kg/m²)	pH	ºBrix
LAlVigne Aroma	0,85	120,1	1,28	3,7	0,13	3,66	24,2
Control	0,84	116,0	1,18	3,8	0,15	3,70	25,3
Sig	n.s	n.s	n.s	n.s	n.s	n.s	n.s

Cabernet Sauvignon

	Yield (kg/m²)	Cluster wt. (g)	Berry wt. (g)	Shoots /m²	Shoot wt. (kg/m²)	pH	°Brix
LalVigne Mature	0,58	122,3	0,95	2,5	0,17	3,50	26,90
Control	0,57	124,0	0,96	2,5	0,16	3,54	27,58
Sig	n.s	n.s	n.s	n.s	n.s	n.s	n.s

Figure 4: Yield components and must parametres at harvest for both cvs.

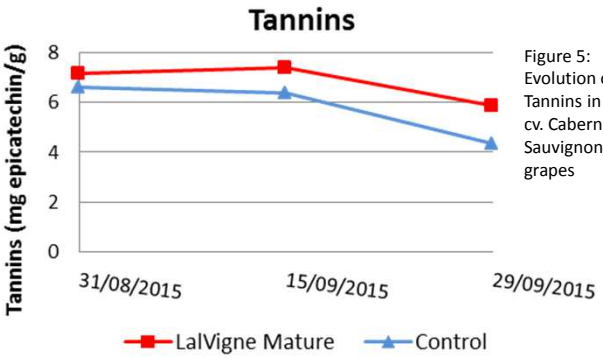

Figure 5: Evolution of Tannins in cv. Cabernet Sauvignon grapes

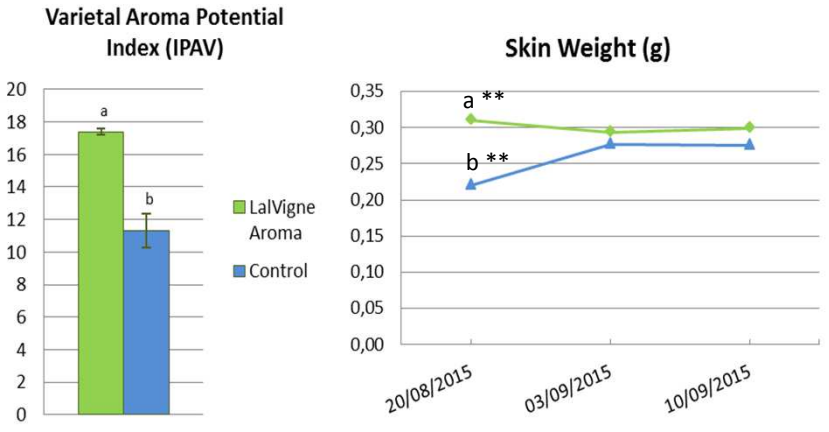

Figure 1: Varietal Aroma Potential Index and evolution of Skin Weight on Sauvignon Blanc grapes. Different letters represent a significant difference (p<0,05). Multiple range test was used

THE VINEYARD:

Albacete (Spain) Dehesa de Luna 850 masl

- Sandy Clay Loan, 297 mm, GDD 1957 (2015)
- **Cabernet Sauvignon** (ENTAV 15) / 41B and **Sauvignon blanc** (ENTAV 316) / 41B
- Planted in 2005, 3 x 1.4 Sauvignon Blanc and 3 x 1.5 Cabernet Sauvignon Vine spacing
- N-S Orientated rows. VSP, Bilateral Cordon, 7 spurs pruned

THE EXPERIMENTAL DESIGN

- EXPERIMENT 1: CABERNET SAUVIGNON
  - ➢ Control and treatment LalVigne™ Mature (beginning of veraison)
- EXPERIMENT 2: SAUVIGNON BLANC
  - ➢ Control and treatment LalVigne™ Aroma (beginning of veraison)
- Four replicates, 30 vines per plot.
- Data collection 2015 and microvinification
- Analysis of variance: ns, *, **, ***, not significant, P ≤ 0.05, P ≤ 0.01, P ≤ 0.001.

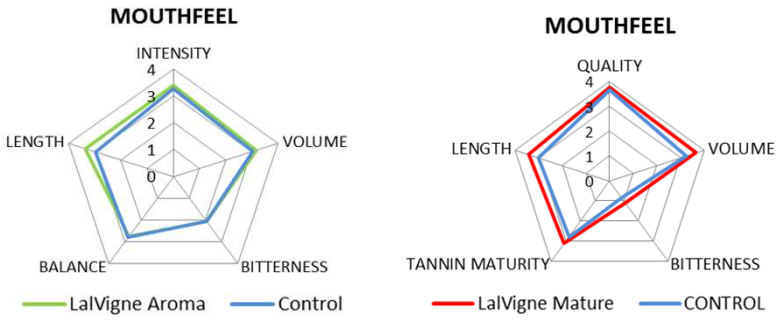

Figure 3: Taste analysis in Sauvignon Blanc (left) and Cabernet Sauvignon (right) wines.

RESULTS AND DISCUSSION

The measure of the Varietal Aroma Potential Index (IPAV) in grapes, that establish the concentration of glycosylated aroma precursors (Salinas et al., 2012; Serrano et al., 2014) showed that the foliar application of yeast derivatives at veraison increased the concentration of aroma precursors in grapes of cv. Sauvignon Blanc. Accordingly, Suklje et al. (2016) also found modifications in wine chemical and sensory composition between wines from control and treated grapes with LalVigne Aroma on the same cultivar.

Furthermore treated grapes with LalVigne Aroma showed a higher skin weight as this research group found in previous trials with the same products on the same cultivars (Téllez et al., 2015); same results by Villangó et al. (2015) using a puncture test on cv. Syrah after the application of LalVigne Mature

The evolution of grape tannins in cv Cabernet Sauvignon during ripening revealed a higher concentration in these phenolics in treated grapes than in control ones. Same results were observed by Lissarrague et al. (2014) and Téllez et al. (2015) applying the same yeast derivatives on cvs. Syrah and Cabernet Sauvignon respectively.

Besides, no significant differences have been observed by the application of yeast derivatives LalVigne Aroma or LalVigne Mature on vegetative growth, yield components or must quality parameters like °Brix, pH or Total Acidity

Generally, wines from Sauvignon Blanc and Cabernet Sauvignon treated vines have shown a better mouthfeel on the sensory analysis

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