

PROTECTION AND TREATMENT IN PREFERMENTATIVE STEP

Management of oxidation phenomena

Céline SPARROW¹

Research and Development Director at Martin Vialatte®

Rosé winemaking has been in constant evolution over the last 20 years, in search of the trendy colour and most expressive aromas to offer the market the "Rosé de Provence" style, easy to drink, with a pale colour and an intense aromatic profile. Winemakers aiming to make this style of wine must consider that Rosé winemaking is highly dependent on the oxidation mechanisms taking place during the pre-fermentation stage as they directly affect the compounds responsible for colour and aromas. Managing oxidation means protecting the must by controlling it at all stages of the process.

The biochemical reactions taking place in the must, as well as its composition, are directly related to its turbidity, making it a key parameter to control as those reactions can lead to the apparition of off flavours and herbaceous, green characters. It has been shown that targeting an average turbidity of 150 NTU allows for enough precursors of varietal aromas like thiols in the lees and prevents from the apparition of unwanted aromas (Dufourcq, 2009).

When combined with fining agents, flotation is an adequate soft clarification process that leads to the regulation of turbidity and to the elimination of polyphenols and quinones that lead to browning. The cap of flocks formed at the surface also limits must oxidation.

The mechanisms of oxidation of phenolic acids into quinones involving PPO² and laccase in the presence of oxygen are dependent on heavy metals (iron and copper ions are enzymatic co-factors). The reducing elements naturally present in the must (such as glutathione) are trapped by quinones, making the must unprotected against oxidation when they are fully consumed during pressing and settling. The addition of products containing yeast derivatives rich in these elements, ensures the protection of the precursors and therefore of the aromatic potential.

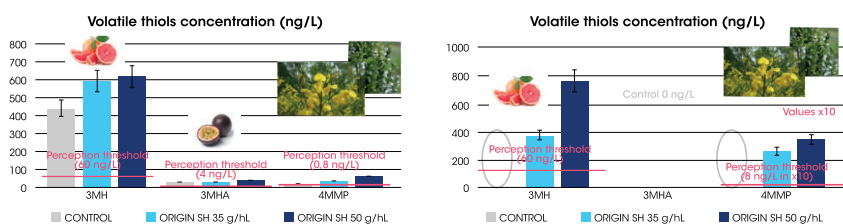
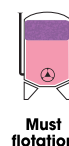


Figure 1. Volatile thiols concentrations in Sauvignon blanc (2016 Val de Loire), treated with ORIGIN SH at 35 g/hL and 50 g/hL, just after bottling (A) and 4 years later (B).

Another path to protect polyphenols in must involves nutrition. It is known that yeast is a major bio-resource providing compounds that are potentiooxidationally useful in oenology. The choice of yeast strain and nutrition enables the aromatic potential to be exploited and the desired aromatic profile to be achieved.

Synergistic combination of plant proteins and chitin derivatives, KTS® FLOT ensures fast, thorough settling of musts with improved compaction of the cap during flotation. It also helps to protect against oxidation by acting on acid phenols and decreases the yellow hue of the must before alcoholic fermentation.



Added just after settling and before yeasting, ORIGIN SH eliminates heavy metals and allows for the protection of thiols. It also helps in the management of oxidation phenomena and in the release of reductive compounds during AF for an improvement of wine longevity.



Nutrient exclusively made up from specific yeast derivatives rich in amino acids, NUTRICELL® AA enables good alcoholic fermentation management and optimizes the aromatic profile of wine by promoting the production of superior esters and superior alcohol acetates (derived from breakdown of amino acids) along with revealing thiols during alcoholic fermentation.



Selected for the expression of thiols during vinification of grape varieties rich in aromatic precursors, VIALATTE FERM® W28 is a *S. cerevisiae* yeast which intensifies citrus and passion fruit notes, giving wines a very contemporary style. It has excellent fermentation capacity even under difficult conditions (low temperature, high alcohol levels, nitrogen deficiency, etc).



The protection against oxidation and the choice of the type of fermentation (T°, turbidity, yeast, nutrition) allow the optimization of the raw material and the desired wine profile. However, the post-fermentation part should not be neglected.

REFERENCES:
Understanding the leverage of the Colombar wine aromatic quality produced in Gascony by modeling climatic, agronomical, enological and analytical data.
T. Dufourcq, A. Desprats, E. Serrano, J. Lallemand and S. Roussel. OIV 2010.