Wine Yeast under investigation

NEWS AND INNOVATION ON WINE YEAST

Nº1 INTEGRATED SULFUR MANAGEMENT WITH WINE YEAST

Consumer awareness of SO_2 content in wine, particularly since the label "Contains sulphites" is mandatory, has resulted in a trend toward reducing the addition rate of this compound. Reducing SO_2 content in wine is now a major concern for winemakers, at both level: technical and commercial.

Formation of compounds such as acetaldehyde (SO_2 - binding), and H_2S (wine fault, rotten-egg aroma), are also a worrisome concern during winemaking. Wine yeasts can produce SO_2, acetaldehyde and H_2S during fermentation, depending on fermentation conditions. These synthesis of the different metabolites are yeast strains- dependent and it exists an important variability among wine yeasts. (Figure 1)

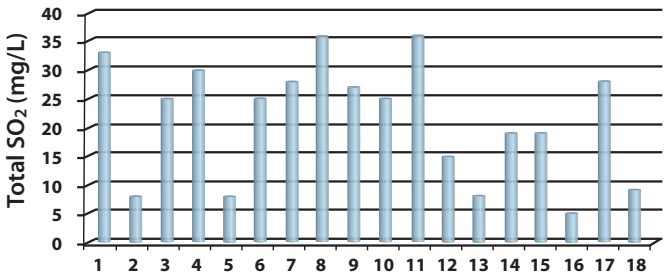


Figure 1. SO_2 produced by different wine yeasts

WINE YEASTS PRODUCING LESS SO_2, H_2S AND ACETALDEHYDE

In a collaborative study, the molecular basis of SO_2 production have been identified thanks to the QTL research approach. This strategy involves several steps: identifying the genes for the desired trait (non-production of SO_2, acetaldehyde and H_2S) and naturally transferring it to another yeast chosen for its fermentation performance and other oenological qualities. Transferring the genes involved repeated crosses (backcrossing) between the low-SO_2 yeast and the target yeast. This is a non-GMO technique that can occur naturally in yeast. With this method, we obtained a yeast that produces very low to no concentrations of SO_2, H_2S and acetaldehyde.

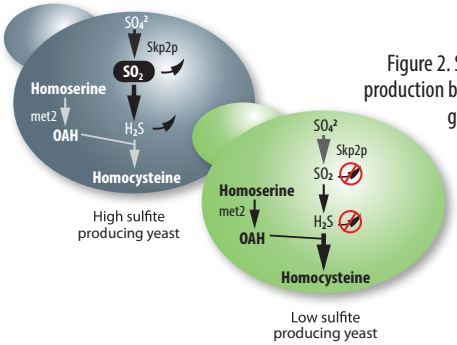


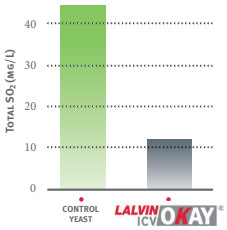
Figure 2. Simultaneous control on SO_2 and H_2S production by the combination of *SKP2* and *MET2* genes, and indirectly on acetaldehyde

LESS SO_2, MORE AROMAS

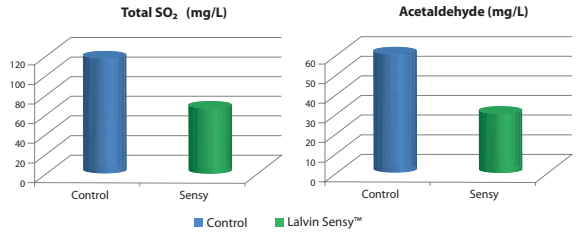
A NEW GENERATION YEAST

This approach has enabled the development of an innovative technique to select wine yeasts producing very low levels of SO_2, H_2S and acetaldehyde (Patent EP2807247). The first wine yeast issued from this process are: LALVIN® ICV OKAY™, Lalvin Sensy™, Lalvin ICV Opale 2.0™.

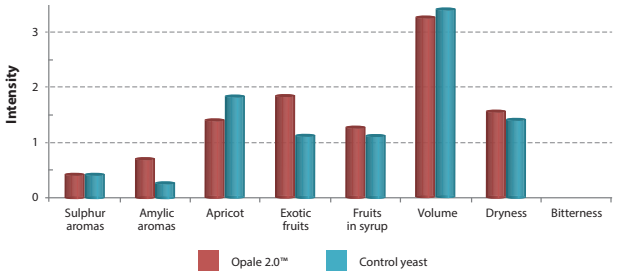
The Lalvin ICV OKAY™ is the first yeast that was issued from the QTL process. This robust wine yeast is used for fresh aromatic and clean white and red wines with low to no SO_2, H_2S and acetaldehyde production in a wide range of winemaking conditions.



The Lalvin Sensy™ used for white wines where varietal aromas are sought after, also shows the remarkable ability to diminish the levels of sulphur compounds and sulphur-binding compounds such as acetaldehyde. In trials carried out during its selection, the SO_2 levels were reduced by half, whereas the acetaldehyde was also reduced almost by half. The resulting wines are cleaner and the aromas of the wines can be better expressed (figures below). It is important to note that under certain conditions (especially high initial SO_2 levels), the Lalvin Sensy™ is able to produce H_2S. In our new generation of yeasts, the sulfite reductase, responsible for the direct conversion of SO_2 to H_2S, is still active to provide the cells with the sulfur amino acids needed to grow and ferment. Exogenous SO_2 can be imported into the yeast cells and being converted in H_2S, independently of the regulation exerted by MET2 and SKP2 genes. In the Lalvin Sensy, the sulfite reductase is more active than other wine yeasts, leading to this potential H_2S detection.



Lalvin ICV Opale 2.0™ helps make premium white and rose wines with 'exotic' profiles, achieved by its production of complex, intense, fresh fruity aromas (citrus fruit, peach, exotic fruit, white flowers, litchi, blackcurrant, and strawberry) (Figure below).



Sensory profile of Viognier (France) at 13.5% alcohol, at pH 3.5 (ICV France) with Lalvin ICV Opale 2.0™ versus a control yeast.

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