

Article

YEAST STRAIN CHOICE AND SAUVIGNON BLANC AROMAS

It has been known for some time that certain varietal characteristics in Sauvignon Blanc are associated with particular aromatic thiols. These volatile thiols provide tropical aromas and flavors that winemakers and consumers associate with this variety. The main volatile thiols are 4-mercapto-4-methylpentan-2-one (4MMP), 3-mercaptohexan-1-ol (3MH) and 3-mercaptohexylacetate (3MHA). Among the descriptors are passion fruit, box tree, gooseberry, grapefruit and guava.

It has also been thought (beginning about two decades ago) that the presence of these compounds might be enhanced by use of certain yeast strains. In fact, some yeast strains do release more 4MMP and 3MH from non-aromatic precursors than others. Further, yeast strains also differ in their ability to convert 3MH to 3MHA.

To study this question, seven different commercial yeast strains were evaluated by the Australian Wine Research Institute (AWRI). These strains (in alphabetical order) were Lallemand L2056, Anchor NT 116, Lallemand QA23, Anchor VIN 7, Anchor VIN 13, Laffort VL3 and Laffort X5.

After fermentation, wines made from these strains were tested for the ef-

fect the yeast strain choice may have had upon volatile thiol concentrations and wine aromas. Both small scale (20 liter lots) and large scale commercial trials were done. Small scale trials were done in triplicate while large scale fermentations (for practical reasons) were one of a kind. Volatile thiol analyses were done by the Sarco Laboratories (of Laffort Oenologie). The authors note that yeast populations were not fingerprinted after fermentation.

Despite some differences between the small scale and large scale trials, the authors state clearly that a “trend appears to exist for strains grouped as ‘high thiol releasers’ and ‘low thiol releasers’ regardless of the scale of the ferment.”

Below are four charts illustrating how yeast strains can differ in their ability to release and convert volatile thiols in Sauvignon Blanc.

Chart A illustrates the ability of commercial wine yeast to release 4MMP from the cysteine conjugate precursor. 4MMP is associated with box tree and passion fruit-like aromas.

Chart B illustrates the ability of commercial wine yeast to release 3MH from the cysteine conjugate precursor. 3MH is associated with passion

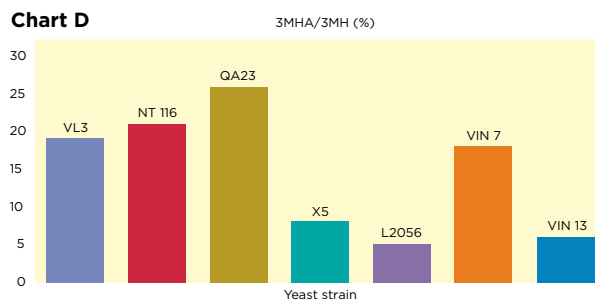
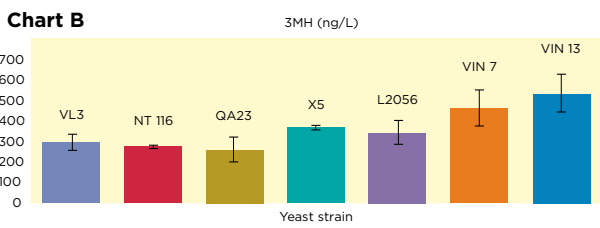
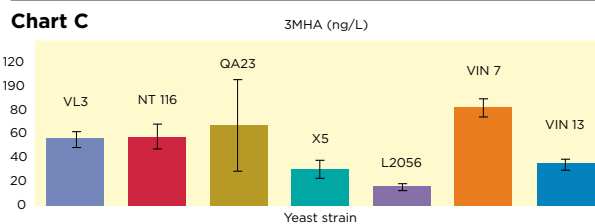
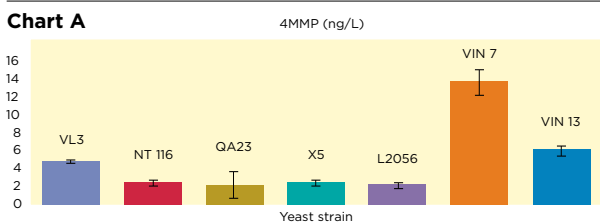
fruit, grapefruit, gooseberry and guava type aromas.

Chart C illustrates the ability of commercial wine yeast to convert 3MH to 3MHA in small scale wine ferments. 3MH and 3MHA are associated with passion fruit, grapefruit, gooseberry and guava type aromas.

Chart D illustrates the ability of commercial wine yeast to convert 3MH to 3MHA in small scale ferments. 3MHA is associated with passion fruit, grapefruit, gooseberry and guava type aromas. The ratio between 3MHA concentration and 3MH concentration is an indication of the yeast’s thiol converting capacity.

At the close of their article the authors state that “Although there can be variation in the amount of thiol precursors present in the grape, the major limiting factor is the ability of the selected yeast to release the thiols from the precursors.”

Yeast selection appears to be one of the most promising tools in manipulating passion fruit, grapefruit and gooseberry aromas in Sauvignon Blanc wines. It is important to note as well that viticultural and winemaking decisions can also have significant impacts.



This article has been written with kind permission from the Australian Wine Research Institute (AWRI). The complete original article is referenced below:

Swiegers, J.H., Francis, I.L., Herderich, M.J. and Pretorius, I.S. Meeting Consumer Expectations Through Management in Vineyard and Winery: The Choice of Yeast for Fermentation Offers Great Potential to Adjust the Aroma of Sauvignon Blanc Wine. Australian and New Zealand Wine Industry Journal 21:34-42 (2006).