Impact of grape harvesting on varietal thiols in Sauvignon blanc wines

T Allen, M Herbst-Johnstone, M Girault, P Butler, G Logan, S Jouanneau, L Nicolau and PA Kilmartin

The University of Auckland, Private Bag 92019, Auckland, New Zealand.
Corresponding author: p.kilmartin@auckland.ac.nz

Poster Abstract

For most wine styles, higher quality wines are associated with hand-picked grapes - the intense tropical fruit style of many Sauvignon blanc wines is an exception to this rule. A major contribution to this fruity style is made by the varietal thiols 3-mercaptohexanol (3MH) and 3-mercaptohexyl acetate (3MHA), largely derived from odourless precursors in the grape. In experimental wines made from hand-picked grapes, we have typically found that the varietal thiol concentrations are 5 to 10 times lower than in commercial Marlborough Sauvignon blanc wines, produced mainly from machine-harvested grapes. A trial was then set up in 2010 in which grapes and juice were sourced from five locations in Marlborough and at five stages during the harvesting process, and fermented in 750 mL bottles. These included grapes picked by hand immediately prior to mechanical harvesting, samples taken directly from the mechanical harvester, as the grapes arrived at the winery, along with commercial free run and 1 bar pressed juices.

The juices were analysed for a range of chemical parameters, including concentrations of the odourless cysteine and glutathione 3MH conjugates by HPLC-MS. The concentrations of cys-3MH and glut-3MH varied between sample sets, but in each case were highest in the 1 bar pressed juices. With three of the juice sets there was an increase in varietal thiol content for wines made from juices that had been machine harvested compared to the hand-picked samples, while in the other two cases there was little effect from harvesting points, but these were also lower thiol wines. In each case the 1 bar pressed juices produced lower thiol concentrations despite having the highest concentrations of cys-3MH and glut-3MH. A further juice parameter related to oxidative conditions, and easily measured in the winery, was identified that consistently led to low thiol wines.