Winetech Scan

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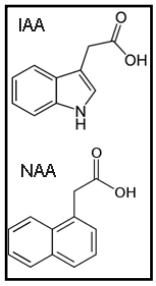
Research News

- Auxins are a class of growth substances which play an essential role in many growth and behavioural processes in plants. In grape vines, the concentration of the auxin indole-3-acetic acid (IAA) in the berry decreases from a maximum in flowers and young berries, and is low at veraison (the onset of ripening). A study investigated the application of the synthetic auxin analogue 1-naphthaleneacetic acid (NAA) (with similar chemical structure to IAA, see right). Shiraz berries were sprayed twice during the pre-veraison period with 50 mg/L NAA. Unsprayed (control) fruit were harvested at a mean Brix level of 24.6°, while the NAA-treated fruit reached a similar level only ten days later. Although not sensorially different, the wines produced from NAA-treated berries had a somewhat different headspace volatile compound composition to the wines made from untreated berries. In addition to the 10 day delay in ripening, an NAA-induced synchronization of ripening was also observed, in that the number of berries reaching optimal maturity at the same time was significantly increased. This treatment could be beneficial by reducing the levels of underripe and overripe fruit in parcels of grapes, and thus altering wine style. Berry size was increased by the NAA-treatment, but the anthocyanin to sugar ratio was not effected by the treatment. Any treatment that can delay the onset of ripening may be useful, for example in alleviating winery bottlenecks, or allowing ripening to occur under more favourable climactic conditions. http://dx.doi.org/10.1111/j.1755-0238.2010.00110.x



- Very few studies characterizing glycoproteins in wine have been reported. However, given the implication of glycoproteins in different organoleptic characteristics such as sensorial quality, foamability and protein stability, a thorough study of the glycoprotein content in wine is necessary. An estimated 500 million people suffer allergic reactions to wine, and as glycoproteins are generally implicated in food allergies, the role of glycoproteins in wine allergies needs to be elucidated. Wines with higher concentrations of glycoproteins are less susceptible to haze formation. A glycoprotein analysis was performed on a 2008 unwooded Chardonnay white wine from Turi in Italy. A multiplexed glycopeptide enrichment strategy in combination with tandem mass spectrometry was carried out in order to analyze the glycoproteome of white wine. A total of 28 glycoproteins and 44 glycosylation sites were identified. Glycoproteins derived from grape, such as invertase and pathogenesis-related (PR) proteins, and derived from yeast, were found after the vinification process. Bioinformatic analysis revealed sequence-similarity between the identified grape glycoproteins and known plant allergens. Further investigations are necessary to examine the potential for several of the identified glycoproteins to prevent haze formation, and to study the allergenic potential of several of the PR proteins in order to validate the importance of glycoproteins in wine. These findings may eventually lead to wine-making processes that reduce the concentration of the culprit glycoproteins and thus offer consumers low-allergenic wines. http://dx.doi.org/10.1021/pr100298j

- Grapes are a primary source of indigenous yeast microbial communities that play an important role in alcoholic fermentation. Although *S. cerevisiae* is the main organism responsible for the conversion of grape juice into wine, indigenous yeasts are important contributors to the chemosensory properties of the wine. The application of chemical fungicides to prevent the growth of the fungus *Botrytis cinerea*, which causes grey mould, is a routine viticultural practice where weather conditions favour the disease. Although the application of fungicides is an effective control against *B. cinerea*, they might be nonspecific and might also act on other organisms, such as yeasts. The influence of three commonly used fungicides (iprodione, pyrimethanil and fludioxonil plus cyprodinil) on yeast populations present on grape berries was evaluated in a vineyard with the Rebula white grapevine variety in the Goriška Brda wine-growing region, Slovenia, in 2002 and 2003. Among the 23 yeast species identified, *Cryptococcus magnus*, *Rhodotorula glutinis* and *Sporidiobolus pararoseus* dominated on sound grape berries. The fungicide containing pyrimethanil suppressed the growth of all basidiomycetous yeast species, while the sporadically occurring fermentative yeasts were unaffected. Fungicides with fludioxonil plus cyprodinil and iprodione as active substances showed specificity for certain species. However, the fungicides had only a minor impact on the composition of grape berry yeast communities in comparison with the effect of weather conditions and the mode of grape berry sampling. The results suggested, that after the fungicide safety interval, the presence of fungicides had a minor impact on the composition of grape berry communities, although at the time of fungicide applications, the yeast species composition changes. At the time of harvest, larger yeast counts were found on the treated grapes than on the control samples. http://dx.doi.org/10.1111/j.1567-1364.2010.00635.x

- 80 different red wines from 4 different regions in Spain, all aged in American oak barrels, were analyzed and statistically treated for differentiation according to their origin, variety, storage time, and oenological parameters. The results showed that the alcoholic degree of wines increased with ageing time, and geographical areas could

also be differentiated by the alcoholic degree. A higher alcoholic degree was observed in red wines from the area with the lowest annual rainfall, regardless of storage time. A relation was also observed between the content of fermentation products of the red wines and the alcoholic degree and total acidity, although the varietal factor and ageing time modulated the concentration of these compounds. Cabernet Sauvignon wines presented the highest concentrations of esters, while those with Cencibel (Tempranillo) had the highest concentrations of fatty acids. Wines that were aged the longest in barrels had higher concentrations of ethyl esters of organic acids, so these esters can be considered markers of ageing. http://dx.doi.org/10.1016/j.foodcont.2008.05.003

- The ecology and population dynamics of lactic acid bacteria (LAB) during the malolactic fermentation (MLF) of Tempranillo wine made at five wineries in Castilla-La Mancha, Spain, were analysed for two consecutive vintages (2006 and 2007). The wineries were selected because they had never used commercial starters for MLF. The LAB were typed using Randomly Amplified Polymorphic DNA-Polymerase Chain Reaction (RAPD-PCR) and subsequently identified using molecular and phenotypic methods. *Oenococcus oeni* was the predominant species. The number of different genotypes identified at each winery ranged from 8 to 22. In all the wineries there was a small number of genotypes that were detected most frequently (>10%) and could thus be described as predominant, and a large number of genotypes whose presence was less than 10%. There was also a small number of genotypes which were present in both vintages, but whose frequency of participation varied from year to year. It was noted that three of the wineries shared the largest number of coincident genotypes, despite being located in separate provinces, confirming the existence of a coincident population of *O. oeni* genotypes endemic to this wine region. The persistent presence of some of the genotypes in all the wineries indicates they play an important role in the vinification, and suggests a potential industrial utility. Thus they need to be technologically characterized for selection as a starter culture. http://dx.doi.org/10.1016/j.foodcont.2009.04.002

Local research news

- The handling, storage and disposal of agrochemicals on farms are governed by a multitude of laws and there is a national standard, SANS 10206, which summarises the legal requirements for all types of farming. Based on this, a handy guide for the users of agrochemicals in the South African wine industry has been prepared to enable them to comply with all legal requirements. Written in an accessible style without legal jargon, it addresses all aspects in a clear and logical way, including the specifications for and permitted location of an agrochemical storehouse, placement of chemicals, warning notices, responsible persons, security, handling of spillages, emergencies, fire fighting, preparation of spray formulations and filling points, record keeping, worker health and training, protective equipment, ablution, and the disposal of surpluses and containers. It can be downloaded at www.sawislibrary.co.za/dbtextimages/DuPlessisKR.pdf (see p.7 onwards). In addition, the Scheme for Integrated Production of Wine (IPW) provides guidelines for sustainable and environment friendly viticulture. A current list of all registered pesticides for use in sustainable viticulture is available at www.ipw.co.za/ip_codings.php

Other News

- Having recognised a growing demand for low-alcohol wines, a New Zealand winery has created a low-alcohol, low-calorie Marlborough Sauvignon Blanc (9% alcohol by volume), a 30% reduction in both alcohol and calorie content. This was achieved through a combination of technology and a fundamental change in viticultural and winemaking techniques in this wine's management. A vineyard parcel that always produces ripe flavours and is on early ripening soils was selected. The management of the canopy was completely changed to allow more sunlight in the mornings, thus ripening the fruit without high sugar accumulation, which eventually results in the lower alcohol content. The grapes were harvested at night and kept in the winery under an ultra-protective regime excluding all oxygen contact and fermented using a yeast that promotes ripe flavours. The wine was given an intense period on the lees which helped to create the texture and body required in a lighter alcohol wine. www.thedrinksbusiness.com/index.php?option=com_content&task=view&id=11393&Itemid=66

- We reported that the world's oldest drinkable champagne had been found in a shipwreck (*Winetech Scan* August 2010). Eventually 168 bottles were recovered, and while initially the bottles were believed to be from the 1780s, experts have now dated them to the early 19th century, without as yet establishing the exact years. Two of the 200 year-old bottles, one a Veuve-Clicquot and the other from the now extinct house of Juglar were recently opened and tasted. As the contents were poured, a thick, nose-wrinkling bouquet could be smelled several metres away. A champagne expert, Richard Juhlin (right, at the tasting), described the Juglar as 'more intense and powerful, mushroomy,' and the Veuve-Clicquot as more like Chardonnay, with notes of 'linden blossoms and lime peels' . Some of the bottles will be sold at an auction, where Juhlin estimated they might fetch more than $70 000 each. The wreck also held a number of bottles of what is believed to be the world's oldest drinkable beer. Some of it may be sold to brewers who can recreate it from the same yeast root, as incredibly the bottled yeast is still alive. www.physorg.com/news/2010-11-world-oldest-champagne-uncorked.html