

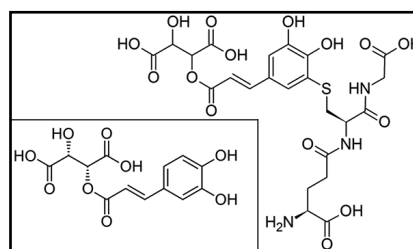


International Research News

'Phenolic' taste in white wines

The effects of the phenolic composition, alcohol and acidity levels of white wines on mouth-feel and bitterness have been investigated using experimental winemaking, sensory, and advanced compositional analysis. 'Phenolic taste' is ill-defined, but is proposed to include the taste and textural attributes of astringency, bitterness, viscosity, oiliness, metallic and pungency/burning. Using 'total phenolics' isolated from commercial wines it was shown, for the first time, that wines with different phenolic composition can display different textures when tasted in the same matrix (alcohol, pH, tartaric acid, etc). This suggests that phenolic composition influences textural differences in white wines. It was also established that alcohol concentration positively enhanced four major taste/textural attributes (astringency, viscosity, bitterness and hotness) in white wine, and that phenolics and alcohol contributed in an additive way to these attributes.

It was found that the astringency of Pinot Gris/Grigio wines was mostly associated with low pH. To further understanding of the molecular basis of textural perception, the two most dominant phenolic molecules in Australian white wines were isolated and then tasted. The first was caftaric acid (bottom right). It is usually the most abundant hydroxycinnamate in both juice and wine. The second was 2-S-glutathionyl caftaric acid (also known as Grape Reaction Product (GRP)) (top right). Caftaric acid was shown to reduce the burning hotness from alcohol, and GRP was shown to increase palate oiliness. Higher bitterness can be attributed to phenolics, but the specific types responsible are yet to be identified. While it was found that phenolics were important in defining the style and quality of white wines, they (the phenolics) were perceived to be less important by consumers. The project also developed an advanced high-performance liquid chromatography (HPLC) method which allows separation of more than 80 identified (40 of which can currently be quantified) phenolics in white juices and wines. This is a notable advancement on previous analytical methods, and also requires minimal sample preparation. www.gwrdc.com.au/site/page.cfm?u=43&t=project&cld=2796



Machine harvesting better than hand harvesting for New Zealand Sauvignon Blanc

The traditional view that hand picking of grapes is required to produce the best wine is being challenged, with a research comparison showing that machine harvesting results in higher levels of the passion-fruit and grassy aromas that are desirable in New Zealand Sauvignon Blancs. The researchers also found that adding sulphur dioxide (SO₂) as soon as the grapes are harvested also results in higher levels of the characteristic aromas. Adding adequate SO₂ prior to fermentation, to match grape juice oxidation status, stops naturally-occurring enzymes from destroying the thiol compounds responsible for the passion-fruit aromas, particularly during longer transport times. This addition does not result in higher levels of SO₂ in the final product as it is broken down by the yeast responsible for fermentation. <http://phys.org/news/2012-06-machines-trump-hand-harvest-sauvignon-blanc.html>

Moderate consumption of alcohol is associated with a reduced risk of rheumatoid arthritis

Rheumatoid arthritis is a chronic inflammatory joint disorder that usually develops between the ages of 40 and 50. About 1% of the world's population is affected, with the occurrence for women three times more than for men. The relation between alcohol intake and rheumatoid arthritis is unclear. Now researchers have analysed this association among 34 141 Swedish women born between 1914 and 1948. Detailed information about alcohol consumption, diet, smoking history, physical activity and education level was collected in 1987 and again in 1997. Women who reported drinking more than three glasses of alcohol per week in both 1987 and 1997 had a 52% reduced risk of rheumatoid arthritis compared with non-drinkers at both assessments. One glass of alcohol was defined as 500ml beer, 150ml of wine or 50ml of liquor. The reduced risk was similar for all three types of alcoholic drink.

These findings add to a growing body of evidence that long term moderate alcohol consumption is not harmful and may protect against a chronic disease such as rheumatoid arthritis, according to the researchers. They suggest that in this case this is most likely to be due to alcohol's ability to lower the body's immune response. This is relevant because rheumatoid arthritis is an autoimmune disease. www.bmj.com/content/345/bmj.e4230

Local Research News

Interactive effect of temperature and irrigation on grape composition in Cabernet Sauvignon

Most viticultural field trials attempt to explore the influence of a single variable, e.g. plant water status, on one or more aspects of grape and/or wine composition. This study attempted to carry this further, by looking at interactive effects between the two variables of temperature and plant water status in Cabernet Sauvignon grapevines grown in two climatically distinct localities

within the Swartland region. The results could in future be used to model berry ripening in Cabernet Sauvignon, and possibly to forecast the response of key phenolics to variations in temperature and water. Grapevines near Philadelphia, closer to the ocean, experienced less water constraints compared to those further inland near Wellington. Stem water potential could also be related to soil water matric potential, which tended to have a more pronounced effect on grapevine on water constraints further inland. In the warmer climate of Wellington, severe constraints reduced yield. Under the latter conditions, grapes started to ripen earlier than those in the cooler climate. Sugar per berry was highest where grapevines experienced moderate constraints. These seemingly balanced grapevines had the highest sugar accumulation, probably due to optimum photosynthesis and carbohydrate utilization. Low water constraints increased vegetative growth which could be a sink for sugar loading. In addition to sugar loading, degree Balling (°B) increases could also have been due to a concentration effect.

Berry volume, rather than °B, seemed to be a more reliable indicator of grapevine functioning. Sugar and anthocyanin biosynthesis, *i.e.* on a per berry basis, could be co-regulated. Anthocyanin biosynthesis reached a plateau when the sugar content reached 200 to 220mg/mL. At véraison, the most intense grape colour occurred where grapevines experienced moderate water constraints. At harvest, grapes from the cooler climate tended to have more intense colour and higher phenolics, indicating that lower temperatures favoured anthocyanin biosynthesis. Water constraints tended to increase sensorial wine colour intensity, as well as wine fullness. Moderate water constraints at both localities produced better wine quality as opposed to severe constraints. In warmer climates, the moderate water constraints required to achieve balanced grapevine functioning can be obtained with irrigation, but this might not be the case in cooler climates. www.sawislibrary.co.za/dbtextimages/MyburghPA8.pdf

Development of a rating system for quality grapes

While grape quality assessment for specific cultivars and wine types is of utmost importance to winemakers, there are no specific guidelines for such assessments. Parameters used for the grading of grapes vary from cellar to cellar and tend to be traditional ones such as sugar, tartaric acid and pH. A project that examined 9 575 grape loads at several cellars over three vintages has created a classification system that is based on the most important viticultural and oenological parameters, which are known (and measurable) parameters from the vineyard, climate, cultivation practices and chemical analysis.

These quality assessment parameters have been incorporated into a computer program which is now available for the grading of grape loads at cellars. As the importance of the parameters will depend on the input of the viticulturist, winemaker and the harvest data of a specific cellar, the parameters in the programme can be adjusted to match the cellar's needs and to accommodate the requirements for each wine style. This new approach for grape classification could have a huge impact in the industry as it should encourage producers to deliver grapes with higher quality and could result in a more justifiable classification and thus a more equitable remuneration for grapes delivered. www.sawislibrary.co.za/dbtextimages/EllisLP1.pdf

Other News

Wine in a beer bottle

In a first for South Africa, and possibly in the world, a wine estate in the Wellington district has started bottling some of its output in 500ml 'beer' bottles closed with a crown cap (right). According to the estate, the bottle style appeals particularly to the 'younger set'. In other countries (e.g. US, Austria), crown caps have occasionally been used as wine bottle closures for some years. And most Champagnes are held under crown caps until the wine's secondary fermentation in the bottle is complete.



A minimum price for alcohol in Scotland from 2013

In an attempt to deal with alcohol misuse, Scotland is to introduce a minimum price for alcohol in 2013. Alcohol will be sold at a minimum price of 50 pence (R6.50) per unit after lawmakers voted 86 to one in favour. Under the new law, a 700ml bottle of 37.5% alcohol vodka would cost at least £13.13 (R170), while a 750ml bottle of 12.5% alcohol wine would be sold for no less than £4.69 (R61). Critics say the law will hand supermarkets a profits windfall and punish poorer people. Scottish lawmakers have already banned discount deals such as 'two for the price of one' on bottles of wine, restricted 'irresponsible' drinks promotions and advertising around premises where liquor is sold or served, and set a requirement for age verification. <http://medicalxpress.com/news/2012-05-scotland-minimum-price-booze.html>

Winery Social Media Index launched

Wineries in the US are keen to put Internet technology to work for 'direct-to-consumer' sales that result in far higher profits than going through distributors, who still dominate the market. As wine is social, there is vast potential for marketing with social media such as Twitter and Facebook in the wine industry. VinTank, which describes itself as a digital think tank for the wine industry in the US, produces software for social media monitoring and customer relationship management (CRM). It has now launched a 'Winery Social Media Index' to measure engagement through Facebook and Twitter. The index changes daily with more than 600 wineries involved so far. It measures across multiple public data factors including engagement, activity, fan growth, and ranking within the wine industry, and ultimately measures how well a winery manages its social media presence. VinTank says that anyone who 'talks' about your brand is some sort of customer, and servicing them is a key component of brand loyalty and brand awareness. www.winebusiness.com/blog/?go=getBlogEntry&dataId=99474

Winetech Scan is available on the Winetech website www.winetech.co.za

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