Compounds influencing the aroma differences of Shiraz wine with additions of grape leaves or stalks

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Complexity and texture, or hard and herbal?
Whole bunch fermentation is of increasing interest for red winemaking, including for Shiraz from cooler climates. The use of grape stems in a ferment can allow additional tannins to be extracted, but can give rise to ‘green’, ‘stemmy’ aromas, and potentially bitterness.

The addition of stalks and leaves was assessed in a winemaking trial using hand-picked 2014 Shiraz fruit from a premium Adelaide Hills vineyard. The treatments in the trial were:
• grape berries only
• grape berries plus grape stems (both the rachis and the peduncles - the part of the stalk that joins the bunch to the vine)
• grape berries plus the peduncles only
• grape berries plus grapevine leaves, equivalent to common levels of MOG.

Wines were assessed via sensory and chemical analysis after a year in bottle.

Sensory profile
The sensory properties were profiled using sensory descriptive analysis (n=9 judges x 2 or 3 ferment reps x 3 presentation reps).

Correlation of key volatile aroma compounds and sensory attributes
50 wine aroma compounds were quantified and 32 differed in concentration significantly due to the treatments.

• The added stems treatment had high isobutyl- and isopropyl-methoxypyrazine and elevated monoterpenes and tannin.
• The berries, leaves and peduncles wines had higher β-damascenone, which was related to the fruit attributes.

Conclusions
• For this Shiraz fruit, even a year post-bottling, the wine with added stems clearly showed ‘green’ characters with higher astringency.
• Methoxypyrazine from the stems was a major contributor to the sensory properties of the wine.
• There was no enhancement of any ‘green’ character of the wine when leaves were added, and in fact the presence of leaves gave a fruitier wine than the wine made from grape berries alone.

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