VITICULTURE & ENOLOGY
UNIVERSITY OF CALIFORNIA DAVIS

New Zealand Sauvignon blanc distinct flavor characteristics: Sensory, chemical, and consumer aspects

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• "*Typicity*", in reference to a wine, is defined as "the qualities and flavor characteristics that can be expected from a region". In turn, "region" can be defined as "a broad geographic area distinguished by similar features". In a previous study, the authors found significant differences when comparing Sauvignon blanc wines from various regions within New Zealand. In the current study, they are interested in determining the differences (or similarities) among Sauvignon blanc wines from various countries of the world.

• To that goal, the authors evaluated the *sensory profile*, *chemical composition*, and *consumer preference* of 52 wines from 6 countries: New Zealand (Hawke's Bay, Wairarapa, Marlborough), France (Sancerre, Loire Valley, Bordeaux), Spain (Rueda), South Africa (Stellenbosch), Australia (South Australia, Western Australia, Victoria), and USA (Napa Valley, Russian River, Sonoma, Columbia River). [*The type of study Sauvignon blanc lovers have always waited for!]* The authors included 4 to 5 wines per country (except from Spain, from which they could only obtain 2 wines). Most of the wines were tank-fermented with little or no oak aging, but a few were aged in oak. The authors justify the inclusion in the study of these latter wines as follows, "oak-aged samples represent a particular stylistic rendition of Sauvignon blanc available to consumers". Retail prices ranged from $6-20.

• **Sensory analysis:**

> *'Trained panel' characteristics:*
> - *14 people without prior experience in wine assessment (3 males, 11 females)*
> - *completed 70 hours of training in descriptive analysis*
> - *paid an hourly wage*
> - *rated intensity of 16 attributes per wine using computers (scale used not specified)*
> - *evaluated 10-11 wines per session for a total of 15 sessions*
>   *(incomplete randomized block design)*

With the exception of wines from Hawke's Bay, **New Zealand wines were clearly distinguishable from international wines**. Marlborough and Wairarapa wines showed high attribute intensities for *fresh asparagus*, *sweet sweaty passion fruit* [*yes, this is* <u>one</u> *descriptor*], *capsicum*, *passion fruit skin/stalk*, *tropical*, *stone fruit*, and *apple*. In contrast, the wines from South Africa, France, Australia, United States, and Hawke's Bay were characterized by attributes of *bourbon*, *flinty/mineral*, and *canned asparagus*. Attributes in the "asparagus" category were particularly useful to further differentiate the wines: Wairarapa wines seemed to have higher levels of both *fresh* and *canned asparagus*; Marlborough wines had more *fresh asparagus*; international wines had more *canned asparagus*. (These differences were clearly observed when the authors plotted the data on two types of graphs: a Principal Component Analysis, or PCA, and a Canonical Variate Analysis, or CVA).

• **Chemical analysis:** The authors analyzed 2 **methoxypyrazines** (methoxy-isobutylpyrazine and methoxy-isopropylpyrazine and 2 **volatile thiols** (mercaptohexyl acetate and mercaptohexanol). We will refer to these compounds as MIBP, MIPP, 3MHA, and 3MH, respectively. (For reasons not specified, the authors did not include in the analysis the Spanish wines or one of the Hawke's Bay wines). Marlborough wines were found to be significantly higher in 3MHA (sweet sweaty passion fruit) and 3MH (passion fruit skin/stalk) than the rest of the wines. Wairarapa wines had higher concentrations of MIBP (capsicum) than the rest of the wines, and were also high in 3MH. No differences were found among wines in the concentrations of MIPP (snow pea).

•**Relationship between sensory and chemical analyses:** The volatile thiol 3MHA was highly correlated with the sensory attributes *tropical* and *sweet sweaty passion fruit.* Similarly, the pyrazine MIBP had the highest positive correlation with the *fresh asparagus* attribute, even though here the correlation was lower. These results support using the chemical measurement of **3MHA** as a predictor of the sensory perception of tropical and passion fruit character in a Sauvignon blanc wine. Interestingly, the alcohol content was not at all related to the attribute *bourbon* (which the panelists described more like an earthy/smoky character than an alcoholic character).

• **Consumer study:**

'Consumer panel' characteristics:
- *109 wine consumers (69% of which New Zealanders)*
- *41% drank mostly white wine, 20% red wine, 39% both*
- *within whites, 82% drank typically Sauvignon blanc, 64% Chardonnay, 48% Riesling*
  (some consumers mentioned more than one variety)

The above consumer panel significantly preferred two of the wines from Marlborough compared to wines from Hawke's Bay, Wairarapa, Australia, South Africa, and France. These two Marlborough wines had highest intensities of *stone fruit, sweet sweaty passion fruit, cat urine, passion fruit skin/stalk*, and *tropical*, as well as being lowest in *bourbon* and *flinty*. A closer look at the consumer panel identified two types of consumers: those who preferred a SB with passion fruit/stone fruit and capsicum/asparagus characters (77% of respondents, who also tended to be younger (<34 years), more likely to spend more than $15 in a bottle of wine, and mostly New Zealanders), and those who preferred a Sauvignon blanc with bourbon and flinty attributes (33% of respondents, with higher representation of women and divorced people in this group).

In brief, 2004 Marlborough New Zealand Sauvignon blanc wines showed a unique profile with high concentrations of thiols (3MHA and 3MH) and methoxypyrazines (MIBP), and the highest titratable acidity and residual sugar of all the international wines studied. This chemical composition caused New Zealand Sauvignon blanc to exhibit both high amounts of vegetal characteristics (capsicum, fresh asparagus), and fruity ones (tropical, passion fruit, stone fruit).