Aims

The aim of the study was to examine the sensory and chemical components driving wine experts’ and consumers’ perceptions of Australian Shiraz wine quality.

Material and Methods

One hundred Australian Shiraz wines were selected based on Australian wine show results, expert opinion and Langton’s wine classification. The wines were allocated to one of the four quality levels of the Australian wine show grading system (no medal, bronze, silver and gold) by eight wine experts. Out of these 100 hundred wines, 10 of each quality level, representing different wine regions across Australia, were selected for chemical and descriptive sensory analyses.

Volatle flavour compound analyses

All chemical analyses were performed for three bottles of each wine and included:

- Standard chemical composition (pH, TA, sugars, alcohol, VA)
- Phenolic composition (Somers measurements)
- Flavour profile by GC-MS (oak and fermentation volatiles, low molecular weight sulfur containing compounds)

Based on threshold values of the analysed volatile flavour compounds, Odour Activity Values (OAV) were calculated and only compounds having an OAV above 1 were included in subsequent data analyses.

Descriptive sensory analyses

A trained descriptive analysis panel (n=12) evaluated the 40 wines in triplicate, rating 17 aroma, 15 flavour and 7 mouth-feel attributes.

Consumer testing

Out of the 40 wines, three of each quality level were selected for consumer evaluation. In three independent trials, a total of 347 consumers evaluated four each of the twelve coded wines in randomised order, stating their liking, subjective quality rating and product-evoked emotions.

Results

Comparison of experts’ and consumers’ quality perceptions

The results show rather weak correlations between experts’ quality ratings and individual consumers’ hedonic liking, as well as between experts’ quality ratings and individual consumers’ quality ratings (r ranging between 0.062 and 0.144 for the three independent trials). At the population level, the gold medal wines were liked most in all three trials and a clear trend could be found for trials 2 and 3. In trial 1 the ‘No medal’ wine was rated better than bronze and silver medal wines. This wine had a higher concentration of residual sugar and was especially liked by women.

Table 1: Consumers’ rating of quality *(1 = low to 5 = high-quality)*

<table>
<thead>
<tr>
<th>Wine</th>
<th>Consumers’ rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold, G1</td>
<td>3.8 A</td>
</tr>
<tr>
<td>Silver, S1</td>
<td>3.5 B</td>
</tr>
<tr>
<td>No Medal, NM1</td>
<td>2.6 C</td>
</tr>
<tr>
<td>Gold, G2</td>
<td>3.7 A</td>
</tr>
<tr>
<td>Silver, S2</td>
<td>3.5 B</td>
</tr>
<tr>
<td>No Medal, NM2</td>
<td>2.6 C</td>
</tr>
<tr>
<td>Gold, G3</td>
<td>3.7 A</td>
</tr>
<tr>
<td>Silver, S3</td>
<td>3.5 B</td>
</tr>
<tr>
<td>No Medal, NM3</td>
<td>2.6 C</td>
</tr>
</tbody>
</table>

Figure 2: Biplot of the product space with significant descriptors retrieved from the descriptive analyses. Only descriptors perceived on the palate are shown to keep the plot clear as they are highly correlated with the aroma descriptors.

Figure 3: Biplot of the product space with significant volatile compounds with OAV > 1.

Conclusion 1:

Experts and consumers concurred on quality ratings/licing of the gold/high quality wines and were similar for 2 out of 3 no medal/low quality wines, but did not fully align for the intermediate quality. Silver and bronze rated wines were liked similarly and no difference in quality perception by the consumers was found.

Acknowledgements:

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Conclusion 2:

A clear differentiation between high and low quality Shiraz wines could be made based on sensory characteristics and volatile compounds. Oak flavour, complexity, body, and overall flavour intensity were identified as sensory drivers for consumers’ and experts’ quality perception of Australian Shiraz wines. The chemical composition of the wines strongly supports these findings.