EVALUATION OF A PECTIN RINSE PROCEDURE FOR IMPROVING ACIDITY, BITTERNESS AND ASTRINGENCY EVALUATION OF RED WINES  
BY A TRAINED PANEL

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Introduction

Astringency is a long lasting sensation that is perceived increasingly intense upon repeated ingestion to astringent foods or beverages. The use of a pectin rinse (1 g/L) between successive sips has been shown to reduce this carry-over effect in evaluation of red wine astringency by time-intensity methodology (1). The effectiveness of this protocol for improving the performance of the sensory panel for acidity, bitterness and astringency assessment in descriptive analysis of a red wine was evaluated.

Materials and Methods

DESCRIPTIVE SENSORY EVALUATION

19 paid subjects (6 men and 13 women, between 19 and 57 years of age) were trained in descriptive analysis for  the attributes of acidity, astringency and bitterness in 5 sessions of two hours each. During the formal sensory evaluation, conducted in individual computerized booths, they rated the intensity of acidity, bitterness and astringency of 6 samples of red wine with and without the pectin rinse protocol in two different sessions using an unstructured 10 cm line scale and INAO standardized black wine glasses.

The samples presented were: a pH 3.9 petit verdot wine (control wine), the pH 3.9 wine added with 0.5 g/L of a lyophilized grape stem extract (previously  used as an astringent standard), two samples of a pH 3.5 wine obtained from the control wine by bipolar membrane electrodialysis (acidic wine), and two samples of the pH 3.5 wine added with 10 mg/L of quinine HCL (bitter wine). Samples were presented with a monadic service.

Results

Analysis of Variance (ANOVA) (all products)

<table>
<thead>
<tr>
<th>Acidity</th>
<th>Probability With pectin rinse</th>
<th>Probability No pectin rinse</th>
<th>Number of judges</th>
<th>Eliminated judges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Astringency</td>
<td>0.5166</td>
<td>0.0054</td>
<td>19</td>
<td>3</td>
</tr>
<tr>
<td>Bitterness</td>
<td>0.5877</td>
<td>0.0653</td>
<td>19</td>
<td>5</td>
</tr>
</tbody>
</table>

Comparison of acidity , astringency and bitterness between samples evaluated with the pectin rinse protocol

A C P. Product/Judge for bitterness without pectin rinse

A C P. Product/Judge for bitterness with pectin rinse

SIP AND SPIT PROTOCOL WITH A PECTIN RINSE (1 g/L)

Judge correlation for bitterness ratings with and without a pectin rinse protocol

For a better evaluation of astringency, bitter samples were excluded from statistical analysis, and for the statistical evaluation of bitterness, astringent and non astringent pH 3.9 wines were excluded. Three to five panels were excluded from statistical analysis for the attributes of astringency and bitterness based on training performances, panel validation and on correlation circles.

Conclusions

The global ANOVA analysis showed no significant discrimination of the panel for acidity, bitterness or astringency when the wines were evaluated without a pectin rinse. The discrimination capacity and homogeneity of the panel in the evaluation of acidity, bitterness and astringency of red wine samples were significantly improved with the use of a sip and spit pectin rinse protocol.

References


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