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The sensoriel perception of astringency: prediction models based on UV spectroscopy.

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Astringency is a major characteristic of wines sensorial perception. It is ascribed to tannins. Astringency is assessed by sensory analysis, which is time-consuming and lacks of repeatability with little and not trained panels. So alternative methods such as the Gelatine Index, the Bovine Serum Albumine assay (BSA), the Methyl-Cellulose Assay or the Saliva Precipitation Index have been proposed.

This study: (1) evaluates the capability of the BSA assay to predict astringency; (2) proposes alternative methods which involve: wines absorbance at 230nm; total oligosaccharide and polysaccharide content.

**EXPERIMENTATION**

Twenty-one wines of different grapes and vintages were selected, mainly from the Languedoc-Roussillon region. Sensory analysis was performed with a panel of 20 judges, selected and trained to astringency description. Chemical analysis was also performed: classical parameters, polyphenols by HPLC-DAD after phloroglucinolysis, oligosaccharides and polysaccharides after separation by gel permeation chromatography. Then the BSA assay was chosen and evaluated.

Astringency (noted Imax) was predicted by BSA and by all models from 1 to 4 variables. The best ones according to their R² and their error of cross-validation are reported below.

**RESULTS**

<table>
<thead>
<tr>
<th>R²</th>
<th>BSA assay</th>
<th>Abs. 230 nm</th>
<th>Imax =</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.83</td>
<td></td>
<td></td>
<td>10.2 * A230</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>+ 0.0096 * oligosaccharides</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- 0.0036 * polysaccharides</td>
</tr>
</tbody>
</table>

**CONCLUSIONS**

→ The BSA assay confirms its capability to yield a good prediction of astringency.
→ The absorbance at 230nm is proposed for a quick estimation of astringency
→ Polysaccharides decrease astringency, as already reported
→ We observed that oligosaccharides have a direct effect to increase astringency.

**REFERENCES**

Boulet, J-C., Trarieux, C., Souquet, J-M., Ducasse, M-A., Caillé, S., Samson, A., Williams, P., Doco, T., Cheynier, V., Models based on ultraviolet spectroscopy, polyphenols, oligosaccharides and polysaccharides for prediction of wine astringency, Food Chemistry (2015), doi: http://dx.doi.org/10.1016/j.foodchem.2015.05.062