INTRODUCTION

The employment of indigenous strains as starters for wine fermentations has become a common practice to improve malolactic fermentation (MLF) efficiency and reliability. Microorganisms presenting resistance to the stressful environment found in wine and the ability to produce desirable sensory compounds are of great value in winemaking industry.

In addition, the development of high quality wines requires the absence of metabolites of safety concern such as biogenic amines (BAs) and ethyl carbamate (EC) which are generally promoted by microorganisms naturally present in the enological environment.

The objective of the present study was to identify interesting indigenous lactic acid bacteria (LAB) not producing metabolites of safety concern and suitable to be used as starter cultures. To that end, 33 samples of must and wine at all stages of vinification were analyzed from different wineries of the Rioja Alavesa region, a portion of the Qualified Denomination Of Origin Rioja, in the north of Spain.

RESULTS AND DISCUSSION

- **Typing of isolates by RAPD-PCR**
- **Bacterial population found during winemaking process**
- **Analysis of O. oeni strains diversity**
- **Quantitative analysis of biogenic amines during winemaking process by RP-HPLC**
- **Ability of isolated bacteria to produce biogenic amines and degrade arginine**

Table 1: Number of isolates and genotypes of O. oeni during must (1), tumultuous MLF (2) and final MLF (3).

<table>
<thead>
<tr>
<th>Isolates</th>
<th>Must</th>
<th>Tumultuous MLF</th>
<th>Final MLF</th>
</tr>
</thead>
<tbody>
<tr>
<td>O. oeni</td>
<td>158</td>
<td>118</td>
<td>112</td>
</tr>
<tr>
<td>O. oeni</td>
<td>2</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>O. oeni</td>
<td>1</td>
<td>8</td>
<td>5</td>
</tr>
</tbody>
</table>

**Table 2:** Detection of AB production by phenotypical analysis in MDA media and subsequent RP-HPLC confirmation.

- Low incidence of AB production by LAB
- High aminobiogenic capacity of *Staphylococcus* and *Paenibacillus*
- High rate of arginine degrading *O. oeni* via ADI pathway

CONCLUSION

*Oenococcus oeni* was the most abundant species found in this study. It showed a great genotypic diversity underlying its major role in MLF. Although species diversity was moderate, species rarely found in wine such as *Staphylococcus* and *Paenibacillus* which exhibit great aminobiogenic capacity were detected. LAB ability to produce AB was minor; however, it was detected a great number of strains belonging to *O. oeni* and *L. hilgardii* with a high capacity of degrading arginine via ADI pathway, highlighting the potential risk for the formation of EC precursors.

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