COMPOSITION CHARACTERISTICS OF CABERNET SAUVIGNON AND PINOT NOIR WINE FROM THE TÂRNAVE VINEYARD, IN 2010-2011

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Abstract
Târnave vineyard is part of the Transylvanian Plateau, located in the river basin Târnava Mică and Târnava Mare and it is the largest vineyard from Transylvania. It has an area of over 2100 hectares of vines, which are renewed annually (10-16 ha). Grape varieties which are grown are white and red. Once replanted vineyards, there is a change of variety, by replacing varieties with high quality production.
Târnave vineyard is characterized by a moderate continental climate, with cool summers and long autumns and sunny, which allowing the accumulation of increased quantities of sugar. Autumn fog that forms favors flavor accumulation in grape and preserve acidity. The landscape is hilly, with slopes, being arranged in terraces. Therefore, the quality of wine obtained depends by the climatic conditions.
The study is conducted on two varieties of red grapes, Cabernet Sauvignon and Pinot noir, the most famous from this vineyard, making a comparison of the compositional characteristics of these wines, during the years 2010 and 2011.
Cabernet Sauvignon wine is characterized by an aroma of blackberries. Aroma is diversified, get a flavor of cranberry or mint. After aging in barrels, in his imposing and elegant aroma, distinguish fine vanilla smell.
Pinot noir wine is less harsh than Cabernet Sauvignon and can be dry and with remaining sugar. High acidity, at the sugar concentrations above 200 g / l, allows participation in realization of the raw material for sparkling wines. The wines are floral and pleasant. The wine which was malolactic fermented and filtered through oak barrels are elegant and fine. Over time, develops flavors of meat game and truffles.

Keywords – Cabernet Sauvignon, Pinot noir, vine, red grapes, composition.

Introduction
The wine is obtained by alcoholic fermentation of grape must, differing by must not only flavor, taste and density, especially by chemical composition. Wine is a complex system physico-chemical, in unstable equilibrium, that change in a continuous and regular time. In the training phase until degradation, wine can be characterized only by physico-chemical analysis, whose results determine the quality of wines and their classification. Quality of wines, expressed through their organoleptic properties and composition, through the characteristics of typical and natural, is provided by a variety of factors, particularly by the quality of raw materials and technology of winemaking. Knowledge of processes taking place in the wine, along with analytical data on physico-chemical composition of a wine underlying
the development of modern winemaking, the wines achieve different categories and types, especially high quality wines with designation of origin.

Red wines are made more complex than white wines because phenolic compounds, which gives them red-ruby color, smooth, astringent taste, fatness, physico-chemical stability and long storage.

An important role in obtaining quality red wines, Cabernet Sauvignon and Pinot Noir in Târnave vineyard is climatic conditions, a moderate continental climate, with cool summers and long autumns and sunny, allowing the accumulation of increased quantities of sugars and fog that forms fall helps preserve acidity in grapes, wine produced from them is more refreshing and crisper.

Red wines by their composition, have a therapeutic action on peoples, as the positive influence of human nutrition, stimulates secretion, regulates gastric pH and has diuretic action. It also has antiseptic, bactericidal and antiviral action.

So, quality red wine obtained can vary from year to year, due to climatic conditions, which also vary from year to year. Cabernet Sauvignon and Pinot noir are originating from France, but have adapted quite well to our country, achieving a high quality wine.

Substances belonging to the composition of the wine are found in wine in a quantity greater than 1 g / l, that give wine quality. These substances are alcohol, acids, sugars, etc.

**Materials and methods**

Determination of alcohol, acidity and sugars are basic tests that can describe a wine.

- **Determination of alcohol**

  Ethyl alcohol or ethanol (C₂H₅OH) is the main component of wine, which determines the type of wine, organoleptic features and a series of transformations that occur in evolutionary phases of wine. Is expressed in percent by volume (% vol). Alcohol determination was performed by means ebulliometer.

  Principle of method - the method is based on the determination of the boiling wine, which is placed between the boiling point of water (100°C) and ethyl alcohol (78.4°C).

- **Determination of volatile acidity**

  Volatile acidity is the sum of volatile acids, which are as free form and as salts form. It is expressed in milliequivalents grams acetic acid or sulfuric acid per liter. Is an indication of
health of the wine.

Principle of method - involving steam distillation and titration of volatile acids obtained with 0.1 n sodium hydroxide, in the presence of phenolphthalein as indicator.

• **Determination of total acidity**

  Total acidity is the sum of total acidities, caused by acidic substances in wine that can be titrated with an alkaline solution in the presence of a pH indicator that turns at 7. It is expressed in grams per liter sulfuric acid.

  Principle of method - the acidity of wine is titrated with sodium hydroxide solution in the presence of phenol red as indicator.

• **Determination of reducing sugar**

  Wines contain two reducing sugars, glucose and fructose which derived from grapes, but some wines can contain sucrose. Sugar is determined by two chemical methods - Bertrand method and Schoorl method, which ensures high accuracy of results.

  Principle of method (Bertrand method) - reducing sugars reduce hot alkaline solution of the complex cuproarctic to cupros oxide. Cuprous oxide is dissolved in a solution of ferric sulphate ( Fe$_2$(SO$_4$)$_3$ ).

**Results and discussion**

In this study we sought physical and chemical analysis, in terms of alcohol content, total acidity, volatile acidity and sugars in the red wines of Cabernet Sauvignon and Pinot noir, vintage 2010 and 2011, for to determine the year of harvest which was more favorable to obtain these types of red wines.
<table>
<thead>
<tr>
<th>Type of wine</th>
<th>Analysis</th>
<th>Cabernet Sauvignon 2010</th>
<th>Pinot noir 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol (% vol)</td>
<td>13,2</td>
<td>12,7</td>
<td></td>
</tr>
<tr>
<td>Total acidity (g/l H$_2$SO$_4$)</td>
<td>3,43</td>
<td>4,01</td>
<td></td>
</tr>
<tr>
<td>Volatile acidity (g/l CH$_3$-COOH)</td>
<td>0,33</td>
<td>0,31</td>
<td></td>
</tr>
<tr>
<td>Sugar (g/l)</td>
<td>0,80</td>
<td>1,10</td>
<td></td>
</tr>
</tbody>
</table>

Table 2

<table>
<thead>
<tr>
<th>Type of wine</th>
<th>Analysis</th>
<th>Cabernet Sauvignon 2011</th>
<th>Pinot noir 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol (% vol)</td>
<td>12,5</td>
<td>12,3</td>
<td></td>
</tr>
<tr>
<td>Total acidity (g/l H$_2$SO$_4$)</td>
<td>3,18</td>
<td>4,41</td>
<td></td>
</tr>
<tr>
<td>Volatile acidity (g/l CH$_3$-COOH)</td>
<td>0,35</td>
<td>0,34</td>
<td></td>
</tr>
<tr>
<td>Sugar (g/l)</td>
<td>4,28</td>
<td>1,92</td>
<td></td>
</tr>
</tbody>
</table>

In this two years studied, 2010 and 2011, were obtained fine wines, soft, aromatic, which can develop very good organoleptic characteristics that are aged in oak, even for a short period of time.
For the two types of red wine, Cabernet Sauvignon and Pinot Noir we have obtained better results in terms of alcohol content in 2010 and in terms of sugar content of wines, the most favorable year was 2011. Acidities values of the two red wine in this two years studied, were quite close.

Conclusions

The progress of ripening red grapes allowed optimal timing of harvest for each wine year (2010 and 2011), depending on the degree of accumulation of sugars in grapes and technological needs. Thus, maturation of grapes, which are raw materials for obtaining wines, is greatly influenced by climatic conditions, that raw material quality varies greatly from one year to another, the quality of grapes remaining uncertain until their collection.

For obtain dry red wine, grape harvesting must be done around the time indicating technological maturity. The supramaturation is performed under optimum conditions for achieving semisweet and sweet wines and grapes will yield at the supramaturation.

Because of climatic conditions and accumulation of sugars and acidity that were made during the study, we can say that Târnave vineyard offers optimal conditions to obtain high quality red wines, wines that can compete with those wines obtained in other wine regions from the country. The resulting wines are intensely colored and with a considerable amounts of anthocyanins.

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