

## SPARKLING WINE QUALITY IN A ROMANIAN WINE PROCESSING UNIT-STUDY CASE

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### *Abstract*

*Based by the law of Vineyard and Wine, the wine quality category represents the level resulted upon its chemical, physical and sensorial features, established by the natural conditions, cultivated species and the applied technology. Wines designated to the public consumption have to be obtained by authorized treatments and practices and correspond to some features required by the hygiene standards. Due to the more and more increased importance of the quality of food products in the modern society, the present study proposes to assess the quality of five sparkling wine sorts processed in a Famous Romanian wine processing unit. There were analyzed the chemical and physical parameters and also the sensorial ones. The sensorial parameters referred to were: colour, smell, taste, aspect, pearling. The physical and chemical parameters referred to were: alcoholic concentration, total acidity g/l tartaric acid, volatile acid g/l acetic acid, pressure at 20°C, reducing carbohydrates. The result samples of the five wines were statistically compared and there were concluded upon the best quality. As a major conclusion it is noticed that the wine quality in all the studied sorts keeps the quality standards in food production.*

**Key words:** *chemical, physical, sparkling wine, Romania, sensorial parameters.*

### INTRODUCTION

Wine technology or oenology is the science linked to the study of the processes, methods and preparing and conditioning of wines and the other products obtained by wine and grapes juice to achieve some final products to the market (pop, 2004). Sparkling wines represents the most important and appreciated group of the special wines (Banu, 2000). These are effervescent wines which contain whole carbon dioxide, endogenous origin that means it comes from the second alcoholic fermentation of added sugar or residual one, due to the activity of the yeast in close recipients (Antoce, 2005; Marin, 2006). At the bottle opening and pouring in the glass, the sparkling wine produces a strong and long effervescence, due to the carbon dioxide releasing, as large foam, which disappear and appear again at the surface of the liquid (Cotea, 2005; Pomohaci et al., 2001). The quality of these wines is appreciated by fine savour, the richness and continuing foam and the finesse of pearls (Petcu, 2006).

### MATERIALS AND METHODS

The present paper had as aim a study regarding the quality of the sparkling wine produced in a top unit of the Romanian industry. There were studied five sorts of sparkling wine: D.O.C. Extra Brut White, D.O.C. Brut White, D.O.C. Semidry White, D.O.C. Semidry Red and D.O.C. Brut Pink. There were carried out 50 samples of each sort. The quality of the wine products has in view two major aspects: the chemical and physical composition of the wine and its sensorial aspects. The quality control consisted in checking, examining, analyze and measuring the stipulated by standards parameters. These activities consisted in the studied unit in permanent checking on the technological flow and adopting the necessary measures to avoid different inconvenient. By the physical and chemical assessment of wine it was analyzed the sparkling wine quality by establishing the main parameters as: alcohol percentage, total and volatile acidity, reducing sugar, pressure and also the sensorial parameters.

The alcoholic concentration represents the content in ethylic alcohol, expressed in volume percents (% vol.), at 20°C. It was used the

steam distillation method and the concentration establishing with the aid of hydrostatics balance.

The total acidity represents the sum of all the titrable acidities to pH =7, by adding a titrable alkaline solution. It was used a solution of NaOH 0,1 N, after anterior elimination of CO<sub>2</sub>. By volatile acidity it is understood the part of fat acids owing to acetic series in wines, free or as salts. The method principles is water steams releasing of the volatile acids and titrating the distillate with NaOH 0,1N in the presence of phenolphthalein as indicator.

The sensorial analyze of wine, called wine tasting is based upon the biologic senses of the peripheral organs of the organisms. This analyze solicits the five biologic senses: view (limpidity, colour, oxidative status), smell (intensity and purity of odour), hear (effervescence), taste (acidity, sweetness, astringency, bitterness) and tactile sense (temperature, consistence, fluidity). After sampling and analyze there were calculated the main variability parameters.

## RESULTS AND DISCUSSIONS

The following chart presents our results regarding the alcohol percentage of the analyzed sparkling wines.

It may notice the low variation of this parameter among 11,5% and 12,5%.

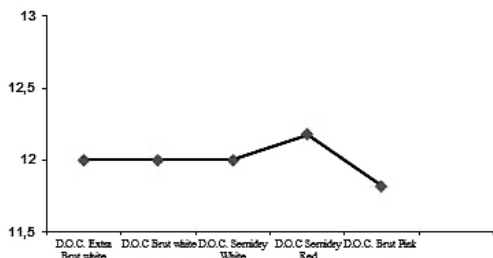


Figure 1. Alcohol percentage in the mean sample of the analyzed wines.

The total acidity expressed in g/l in tarttric acid of the analyzed sparkling wines is presented in chart number 2. It may also noticed the variation of this parameter in the five analyzed wines, being recorded a decreasing of the values, starting from almost 6.31 g/l to 5,86 g/l. the lowest total acidity was recorded in D.O.C. Semidry Red.

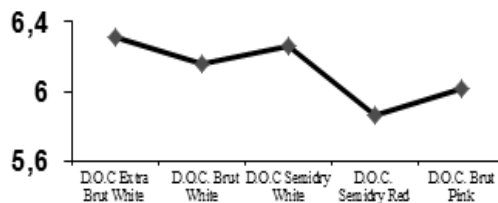


Figure 2. Total acidity percentage in the mean sample of the analyzed wines

The volatile acidity expressed in acetic acid g/l in the analyzed sparkling wines is presented synthetically in chart number 3. It may notice the different values of this parameter, starting from 0.55 to 0.65.

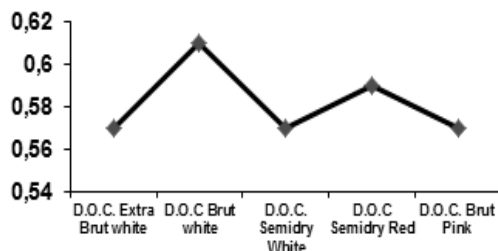


Figure 3. Volatile acidity percentage in the mean sample of the analyzed wines.

Chart number 4 presents the amount of reducing sugar expressed in g/l of the analyzed sparkling wines.

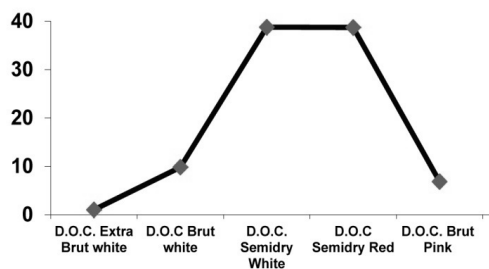


Figure 4. Reducing sugar in the mean sample of the analyzed wines.

Following the comparison of the five analyzed sparkling wines regarding the pressure at 20°C chart number five was made. The highest value

was recorded in D.O.C. Semidry Red and the lowest in D.O.C. Brut White.

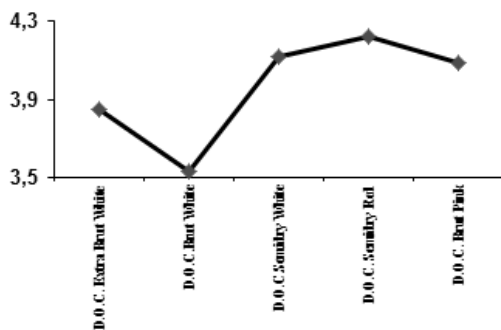


Figure 5. Pressure at 20°C in the mean sample of the analyzed wines

## CONCLUSIONS

Upon the studies achieved to assess the quality of the five sparkling wines sorts we may conclude the following:

1. The all five sorts of sparkling wines analyzed in the elite unit in the Romanian industry are framed in the maximum admitted limits regarding the physical and chemical parameters, as in the sanitary veterinary standards.
2. Analyzing the content of alcohol it may notice that in all three white wine sorts, DOC Extra Brut, Brut White and Semidry White, the alcohol percentage was 12.00%, while in DOC Brut Pink, or DOC Semidry Red, the value of the alcohol percentage easily increased, it recording average values of 12.18% in DOC Semidry Red, respectively 11.82% in DOC Brut Pink.
3. The total wine acidity, expressed in g/l tarttric acid had a mean value of 6.12 g/l, with small differences among the samples analyzed in the five sorts, varying between 5.86 g/l in DOC Brut Pink wine and 6.31 g/l in DOC Extra Brut white wine.
4. As the total acidity, the volatile acidity of wine, expressed in g/l acetic acid, a had a low variation, recording an average value of 0.58 g/l, with oscillations between 0.57 g/l

in DOC Extra Brut wine, Semidry white wine and DOC Brut pink wine and 0.59 g/l in DOC Semidry Red, respectively 0.61 g/l in Brut white wine.

5. Reducing sugar content established for the five analyzed wine sorts recorded larger variations, explained by the sugar content of the sorts. Thus, it may notice that in the white dry wines, the concentration in reducing sugars was low, it having an average value of 1,02 g/l in white wine DOC Extra Brut and 9,82 g/l in Brut white wine, besides them being DOC Brut pink wine, with an intermediary average value of the reducing sugar of 6,84 g/l. The demi dry wines, the white one and the red wine recorded higher values, reaching 38,71 g/l in DOC Semidry Red and 38,77 g/l in Semidry white.
6. As in every sparkling wine, one of the analyzed physical feature was the pressure at 20°C. Conformingly the carried out analyzed, this feature had an average value of 3.96 atm, with low oscillations between the five analyzed sorts. It may notice that the superior value was recorded in DOC Semidry Red wine, 4.22 atm, followed by 4.12 atm in DOC Brut pink wine, then decreasing to 3.53 atm in Brut white wine.

Following the physical and chemical quality control in this unit, we may say that the studied unit is a processing unit which respects the stipulated standards and keep itself within the top units in Romania.

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