

## THE INFLUENCE OF DIFFERENT TECHNOLOGICAL PROCEDURES FOR OBTAINING RED WINES ON THE REPORTS BETWEEN THE COMPOSITIONAL PARAMETERS

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### Abstract

*To complete the wines' characterization (analytical, microbiological, sensorial), in order to certificate their naturalness, it was proposed the interpretation of the physiologo-chemical parameters with the help of some oenological parameters. These are reports or sums which indicate the values of the chemical characteristics (alcohol, acidity, glycerol, extract, ash and optic density to different wave lengths) that vary between certain limits to normal and healthy wines.*

**Keywords:** *selected yeasts, fermentation activators, pectolitiques enzymes.*

### Introduction

A present wine-making appeal to various biotechnical prepares, which support the improvement of the maceration-fermentation process (Guerrand, 2001).

During the last two decades, to prevent the difficulties in fermentation, the wine-making industry generalized the usage of selected yeasts and of fermentation activators.

Nowadays the benefic role of the rational consumption of red wines is known to be carried out by the polyphenolic complex, present in these products in proportions semnificatively greater than that in white wines. The catechinal tannins and the anthocyanes (components of polyphenolic complex) grants the red wine the value of protection food and defends man's health (Frankel, 1995; Fornari, 1995; Teissedre, 1996; Ravello, 1997).

That's why they looked for the adoption of the best technological processes for the improvement of the extraction of phenolic

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compounds from grapes and, on their ground, of the chromatic and the tasting features of wines. In this conception, the use of enzymatic preparations entered the current oenological practice, as well as the utilization of the selected yeasts.

The apparition in the wine-making industry of the selected enzymes, specific to the maceration process, led to the realization of some young red wines with better colouring, with a higher index of total polyphenols and with a better evolution of the intensity and the stability of colour (Laperche, 2001).

## **Experimental**

This paper presents a series of experiments, in which some biological and biochemical factors can interfere in the ratio as glycerol/alcohol, ash/extract and in the chromatic structure of the red wines obtained.

These ratio are used for establishing the naturalness and the compositional balance of wines. The naturalness and the normal physiological-chemical balance of wines are accomplished when the ratio of glycerol/alcohol and ash/extract are as close as possible of 10%. Concerning the quality of colouring, this is situated at the level of actual exigencies when the ratio between the yellow pigments and the red ones (the tonalzy of colour) is situated between 0.50 and 0.60, on the fund of a coloured intensity that does not get down under 0.8.

The variants experimented observed not only the influence of the present or absent bunches but also the pectolitiques enzymes and the fermentation activators action on the quality of the produced wines. These variants will be presented at the same time with their results.

During these experimented variants the fermentation process unfolded under the action of the selected yeasts (IOC R 9001, a doze of 15 g/hl), maintaining the dozes of SO<sub>2</sub> used in pressing of grapes to a constant value (75 mg/l), the period of maceration-fermentation (120 hours) and the number of incorporation of the solid faze into the liquid one (4 times/day). In the variants with enzymes the added quantity of enzymes (Vinozym G) was of 3g/hl and at the variants with fermentation activators (Actibiol) the doze was of 20g/hl.

The analysis was effectuate after official methods recommend by O.I.V. and adopted by I.C.V.V.

## **Results and Discussions**

The main characteristics of chemical composition of red wines obtained are presented in table 1.

Analising the wines Cabernet Sauvignon from both vineyards areas and their alcohol and glycerol content, it is easy to observe the significant differences between the witness, with or without bunch, and the variants with added pectolitic enzymes. These variants have a higher rate of alcohol into 0.6 % vol (V2) than the witness. Also, the fermentation activators increased the volume of alcohol with almost 0,4% vol in comparison with the witness (V3).

In the case of the fourth variant (V4), where were added both enzymes and activators, was recorded the highest volume of alcohol in Cabernet Sauvignon from the two areas (12.9 % vol).

Because of the enzymes and the activators added in these variants, the quantities of glycerol were always larger than those contained by the witness. An interesting situation is seen at the wines from Banu Marăcine, where to the maceration-fermentation process appear bunches which decrease the quantity of glycerol with almost 0.40 g/l contrary to the witness without bunch (V11 toward V9).

The wines Merlot, Drăgășani and Banu Marăcine rect in the same way. The alcohol volume is a bit higher than in Cabernet Sauvignon and oscillates between 12.0 % vol and 13.3 % vol. Only wines like Merlot – Banu Marăcine have the volume of alcohol higher than 13 % vol in all variants (V13 – V16).

Just like Cabernet Sauvignon wines, the variants with pectolitic enzymes contain, at the end of the fermentation process, a larger quantity of alcohol than the witness.

Contents of glycerol varies from 10.22 g/l (V7) to 11.55 g/l (V14) and its quantity is always larger than the existing one from the variants with enzymes. Again, the presence of the bunches in pressing of grapes determines diminution of glycerol in comparison with the variants without bunches.

At all types of wine, the unreducing extract and ash content presents, at the variants with enzymes, growing values and the presence of the bunches in the process of maceration-fermentation increases the extract and the ash.

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**Table 1.** The main characteristics of composition of the red wines from the vineyards Drăgășani and Banu Mărăcine, 2003

Kind/ Vineyard	Variant	Alcohol % vol	Glycerol g/l	Un- reducing extract g/l	Ash g/l	% glycerol toward alcohol	% ash toward extract
<b>Cabernet Sauvignon (Drăgășani)</b>	V1: Witness- without B <sup>a</sup>	12.3	9.48	26.01	2.32	9.75	8.91
	V2: without B + E <sup>b</sup>	12.9	10.31	27.11	2.62	10.11	9.66
	V3: without B + A <sup>c</sup>	12.7	10.66	27.05	2.69	10.62	9.94
	V4: without B + E + A	12.9	10.57	28.21	2.80	10.37	9.92
<b>Merlot (Drăgășani)</b>	V5: Witness - without B	12.1	10.26	24.85	2.31	10.73	9.30
	V6: without B + E	12.5	10.41	25.84	2.46	10.54	9.52
	V7: Witness - with B	12.0	10.22	25.44	2.36	10.78	9.27
	V8: with B + E	12.1	10.30	26.22	2.55	10.77	9.72
<b>Cabernet Sauvignon (Banu Mărăcine)</b>	V9: Witness - without B	12.1	10.45	26.25	2.41	10.93	9.18
	V10: without B + E	12.3	10.68	27.10	2.61	10.99	9.63
	V11: Witness - with B	12.1	10.05	26.30	2.39	10.51	9.08
	V12: with B + E	12.2	10.30	27.35	2.62	10.68	9.57
<b>Merlot (Banu Mărăcine)</b>	V13: Witness - without B	13.0	10.91	25.90	2.25	10.62	8.68
	V14: without B + E	13.2	11.55	26.52	2.41	11.07	9.08
	V15: Witness - with B	13.1	10.88	26.02	2.43	10.51	9.33
	V16: with B + E	13.3	11.05	26.89	2.55	10.51	9.48

<sup>a</sup> - Bunches; <sup>b</sup> - enzymes; <sup>c</sup> - activators

Analising the value of the glycerol/alcohol and ash/extract ratio, we notice that this comes very close to, or even overpasses the value of 10 % - considered as ideal, signifying from this point of view the raised qualitative level of red wines obtained in the two viticultural areals.

The use of the pectolitiques enzymes determined an increase in the chromatic intensity with values from 3.75 % to 7.72 % at Cabernet Sauvignon and from 1.62 % to 3.15% at Merlot. The macerated variants which don't contain pectolitiques enzymes, have a larger intensity in colors (table 2).

**Table 2.** Red wines' structural chromatic elements obtained through different procedures of maceration, yield 2003

Kind/ Vineyard	Variant	Ic	Tc
<b>Cabernet Sauvignon</b> (Drăgășani)	V1: Witness-without bunches	1.373	0.643
	V2: without bunches + enzymes	1.479	0.632
	V3: without bunches + activators	1.412	0.646
	V4: without bunches + enzymes + activators	1.465	0.709
<b>Merlot</b> (Drăgășani)	V5: Witness- without bunches	0.983	0.725
	V6: without bunches + enzymes	1.014	0.707
	V7: Witness-with bunches	1.046	0.729
	V8: with bunches + enzymes	1.063	0.726

## Conclusions

The conjugated action of the three factors of intervention – selected yeasts, fermentation activators and pectolitiques enzymes – attracts numerous advantages: alcoholic degrees that have exceeded, in all the cases, the minimal level established for the wines with superior quality (generally 12 % vol and even over 13 % vol), good contents and even very good in glycerol ( in few cases almost of 10 g/l, most of the cases up to 11.55 g/l), but in extract and ash (the extract proportions situated frequently somewhere about 25 g/l and even more), a riche coloration, on the base of a raised coloured intensity (with values passing a lot by 1.00 in the majority of the cases) that interweaves harmoniously with the shade given by a favorable structure of the different categories of pigments.

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As a results, the glycerol/alcohol and ash/extract ratio draws near a lot or surpasses, most of the cases, the value of 10 %, considered as ideal, from this point of view, too, emphasizing a raised qualitative level of red wines obtained under the action of biological and chemical factors. The presence of the bunches in pressing of grapes, during the maceration-fermentation process, brings light growth of the contents in extract and mineral substances.

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