ASPECTS REGARDING THE INFLUENCE OF CERTAIN OENOLOGICAL PRODUCTS ON THE PHYSICO-CHEMICAL PARAMETERS OF SOME COTNARI WINES

ASPECTE PRIVIND INFLUENȚA UNOR PRODUSE OENOLOGICE ASUPRA PARAMETRILOR FIZICO-CHIMICI LA UNELE VINURI DE COTNARI

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Abstract. *The oenological products used in wine-making allow its potential qualities to be emphasised. Depending on the goal, one can distinguish oenological products specific to certain technological development stages (enzymatic products, selected yeasts and malolactic bacterial starter cultures), maturation, clarification, stabilization and filtration of wines. This study aims to present the influence of some oenological products (selected yeasts, enzyme preparations and nutrients) on the physical-chemical parameters of Fetească albă and Tămâioasă românească white wines obtained in the Cotnari vineyard in 2009.It was noticed that the best results were obtained in the case of selected yeasts, nutrients, clearing and extraction enzymes usage.*

Key words: Cotnari, Fetească albă, Tămâioasă românească

Rezumat. *Produsele oenologice utilizate în elaborarea vinurilor permit punerea în evidenţă a calităţilor lor potenţiale.În funcţie de scopul urmărit, se pot distinge produse oenologice specifice etapelor tehnologice de elaborare (preparate enzimatice,levuri selecţionate şi bacterii malolactice selecţionate), limpezire, stabilizare, filtrare şi maturare a vinurilor. În acest studiu s-a urmărit influenţa pe care o exercită unele produse oenologice (levuri selecţionate, preparate enzimatice şi nutrienţi) asupra parametrilor fizico-chimici ai vinurilor albe obţinute din soiurile Fetească albă şi Tămâioasă românească din podgoria Cotnari,recolta 2009. S-a constatat că cele mai bune rezultate s-au obţinut la varianta la care s-au utilizat levuri selecţionate, nutrient, enzime de limpezire, respectiv enzime de extracţie.*

Cuvinte cheie: Cotnari, Fetească albă, Tămâioasă românească

INTRODUCTION

If in the past, the obtained wines had high sensory qualities only in climatically favourable years, today the same does not apply. The wine-maker possesses different practices and oenological products that lead to producing high-quality wines, capable to highlight the varietal characteristics of the grape variety (Croitoru C., 2009).

The present study follows the influence exerted by some oenological products (selected years, enzymes and nutrients) on the physical-chemical characteristics of white wines obtained from Fetească albă and Tămâioasă românească grape varieties in Cotnari vineyard, 2009 harvest.

The selected yeasts ensure a better transformation of must sugars in ethical alcohol and also a better underlining of different grape varieties oenological potential.

The oenological enzymes products ensure the accelerations of must clearing processes, colour extraction and stabilisation, varietal aroma potential and quickening the filtering processes (Croitoru C., 2009).

The nutrients are products that activate the alcoholic fermentation by enhancing a high sterols quantity and other indispensable cellular growth factors for the yeasts (non saturated fatty acids, pantomimic acids and other vitamins, microelemets). These products allow the wines' sensory profiles to be differentiated, in regards to the initial musts, to technological conditions used and the winemakers' choice towards wine class to be obtained (Croitoru C., 2006).

MATERIAL AND METHOD

Grape harvest took place in September 2009 when the grape sugars reached 197g/L reducing sugars and 8,54 g/L $C_4H_6O_6$ total acidity for Fetească albă and 202 g/L reducing sugars and de 8,75 g/L $C_4H_6O_6$ total acidity in Tămâioasă românească.

The wines were obtained by following white dry wine prodicing technology (Cotea V., 1985) with the specification that the grapes from Tămâioasă românească variety were subjected to a 8-12 hours maceration process in order to extract aromas and the Vulcazym aroma extraction enzymes (2 g/hL), except the control sample.

The variants taken into consideration for the Fetească albă grape sort were the following:

- M - spontaneous fermentation (control sample);
- V_1 _ selected yeasts added to musts (Zymaflore X 16), 20 g/hL;
- V_2 - selected yeasts (Zymaflore X 16), 20 g/hL and nutrient (Fermoplus integrateur), 35 g/hL were added to the must;
- V_3 - selected yeasts (Zymaflore X 16), 20 g/hL and nutrient (Fermoplus integrateur), 35 g/hL; clearing enzymes (Pecvine V) were added to grapes 3 g/100 kg;
- V_4 - selected yeasts (IOC Expresion), 15 g/hL and nutrient (Fermoplus integrateur), 35 g/hL; clearing enzymes (Pecvine V) were added to grapes 3 g/100 kg;

The variants taken into consideration for the Tămâioasă românească grapes were the following:

- M - spontaneous fermentation (control sample) without using extraction enzymes;
- V_1 - selected yeasts added to musts (Fermol aromatic), 25 g/hL;
- V_2 - selected yeasts added to musts(Fermol aromatic), 25 g/hL and nutrient (Fermoplus integrateur) , 35 g/hL;
- V_3 - selected yeasts added to musts (Fermol aromatic), 25 g/hL and nutrient (Fermoplus integrateur), 35 g/hL, clearing enzymes (Zymoclaire CG), 1,5 g/hL;
- V_4 - selected yeasts added to musts (Zymaflore X 5), 20 g/hL, nutrient (Fermoplus integrateur), 35 g/hL and clearing enzymes (Zymoclaire CG), 1,5 g/hL.

At the end of the alcoholic fermentation, wines and less were separated; after filtration and sulphitation, they were bottled.

For the obtained samples, the main physical-chemical characteristics were analysed (on the base of international and national standards indicated methods and by the specific literature): alcoholic concentration, reducing sugars content, total acidity, pH, relative density, total dry extract, non-reducing extract, free and total sulphur dioxide.

The physical chemical parameters for the above mentioned samples were analysed in January-February 2010 in the Oenological Laboratory within the University of Agricultural Sciences and Veterinary Medicine „Ion Ionescu de la Brad“ Iaşi.

RESULTS AND DISCUSSIONS

The obtained results following the analyses are presented in tables 1 and 2.

For the obtained wines, Fetească albă and Tămâioasă românească, the best results were registered in the third variant in which selected yeasts, enzymes and nutrients were used.

For the Fetească albă wines, the used oenological products (selected yeasts, clearing enzymes and nutrients) lead to a high alcoholic concentration (11,65 % alcohol for the third variant) in comparison to the control sample that had 11,35 % alcohol.

Table 1

Main physical-chemical parameters for Fetească albă obtained wines

Sample	Alcohol content %	Reducing sugars g/L	Total acidity $C_4H_6O_6$ g/L	pH	Relative density	TDE g/L	NRE g/L	SO_2 mg/L	
								free	total
M	11,35	2,40	6,70	3,39	0,9940	23,50	21,10	35	115
V_1	11,63	2,65	7,80	3,17	0,9939	23,70	21,30	30	107
V_2	11,50	2,90	7,57	3,10	0,9939	24,00	21,10	32	114
V_3	11,65	2,65	7,85	3,10	0,9940	24,50	21,85	37	126
V_4	11,60	2,85	7,12	3,27	0,9939	24,00	21,15	35	110

Also, for the Tămâioasă românească wine samples, the same situation is presented: the sample treated with selected yeasts (Fermol aromatic), nutrients (Fermoplus integrateur), clearing enzymes (Zymoclaire CG) and extraction enzymes (Vulcazym arome), the alcoholic concentration reached a peak of (11,80 % alcohol, but the minimum value was obtained at the control sample (11,65 % alcohol). The obtained wines are dry (under4 g/L sugars).

For the control samples, the total acidity registered minimum values (6,70 g/L $C_4H_6O_6$) for Fetească albă and 6,95 g/L $C_4H_6O_6$ for Tămâioasă românească. By using selected yeasts, nutrients and enzymes, the third variant reached maximum values (7,85g/L $C_4H_6O_6$ for Fetească albă and 7,60 g/L $C_4H_6O_6$ for Tămâioasă românească).

Table 2

Main physical-chemical parameters for Tămâioasă românească wines

Sample	Alcohol content %	Reducing sugars. g/L	Total acidity $C_4H_6O_6$ g/L	pH	Relative density	TDE g/L	NRE g/L	SO_2 mg/L	
								free	total
M	11,65	3,00	6,95	3,49	0,9939	24,2	21,20	38	118
V_1	11,72	2,48	7,16	3,55	0,9938	24,2	21,72	30	97
V_2	11,75	2,35	7,35	3,31	0,9937	24,0	21,65	35	123
V_3	11,80	2,12	7,60	3,27	0,9936	23,70	21,58	32	90
V_4	11,78	2,30	7,52	3,15	0,9936	23,70	21,40	27	80

The pH values are normal, varying between 3,1, and 3,5, fact that strongly influences the sensory characteristics if wines, limpidity, colour, proteic and tartaric stability (Târdea C., 2007).

The extract is highly important in defining wine quality, by enhancing their corpulence, amplitude, body and personality (Macici M., 2008) by analysing the extract one can emphasise some illegal practices like adding water to wine, adding alcohol, glicerol, mineral acids etc. (Târdea C., 2007).

For the Fetească albă wines, the non-reducing extract registers values between 21,10 g/L (control sample) and 21,85 g/L for the third variant.

In the case of Tămâioasă românească wine, the minimum non-reducing extract value was registered at the control sample (21,20 g/L), while the maximum one in the first variant due to the addition of selected yeasts.

CONCLUSIONS

The best results, in regard to compositional characteristics were obtained at the variant where selected yeasts, nutrients, clearing enzymes and extraction enzymes were used.

In order to achieve successful wine-making process, the use of oenological products is necessary in order to enhance the oenological potential of a certain grape variety.

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