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QUALITATIVE PECULIARITIES OF THE FLAVOURED WINES AND OF THE VERMOUTH TYPE WINES, OBTAINED FROM THE SAUVIGNON BLANC VARIETY

Rodica Elena CULEA[1], Radiana Mariana TAMBA-BEREHOIU[1], Ciprian Nicolae POPA[2]

[1]University of Agricultural Sciences and Veterinary Medicine Bucharest, 59 Marasti, District 1, 11464, Bucharest, Romania, Phone: +40242332077, Fax: +40242.33.20.77, Mobile: +40721327214, Emails: rodica.culea@gmail.com, radianatamba@yahoo.com
[2]S.C. Farinsan S.A., Gradistea Commune, Giurgiu County, Phone: +40246282112, Fax: +40 246282111, E-mail: cipnpopa@yahoo.com

Corresponding author: rodica.culea@gmail.com

Abstract

In order to establish the dynamics of the physical-chemical parameters of flavoured wines and vermouth type wines, obtained by the addition of hydroalcoholic macerates from plants to the Sauvignon Blanc wine variety, we analyzed certain physical and chemical characteristics (D^{20}_{20}, Alcool %, Total dry extract g/l, Free sugar g/l, Unreducing extract g /l, Total Acidity g/l $C_4H_6O_6$, Free SO_2 mg/l Total SO_2 mg/l) for 9 samples. Compared to the main wine parameters, the tested parameters had the following evolution: Alcoholic strength, Free sugar and Density increased in vermouth type wines, Total acidity decreased slightly in flavoured wines and more obvious in vermouth type wines. The total dry extract increased sharply in vermouth type wines and the unreducing extract decreased sharply in vermouth type wines. The amount of Free SO_2 was higher in flavoured wines, but Total SO_2 had lower values, both for flavoured wines and vermouth type wines, comparative to Sauvignon Blanc wine. Plants macerates added to the Sauvignon Blanc basic wine, influenced most of the physical-chemical parameters and provided new qualitative features to resulting beverages.

Key words**:** *flavoured wines, hydroalcoholic plants macerates, quality parameters, Sauvignon Blanc, vermouth type wines*

INTRODUCTION

Vermouth type wines are quite popular drinks in European countries, in USA and also in Asia. The obtaining technology of aromatized wines is known since antiquity, but modern research flavored wines producers are channeled towards getting richer plants extracts in active flavoring ingredients, and also in finding the most effective methods to extract these flavors [2, 3, 5].
Parts of plants (herbs, spices), such as: leaves, flowers, fruits, seeds, can be used to obtain the hydroalcoholic macerates which introduced in the basic wines, cause changes and improvement of the the sensorial and physical - chemical properties [1, 2, 4].
The aim of this paper is to highlight the changes of the physical-chemical quality parameters of Sauvignon Blanc variety wine, by simple addition of hydroalcoholic extracts of plants in the process of obtaining flavored wines and hydroalcoholic extracts of plants mixed with other ingredients, in the process of obtaining vermouth type wines [2].Currently, there are few studies concerning the physical - chemical characterization of the white flavoured wines and vermouth type wines, especially from Sauvignon Blanc variety. Our research topic is important because addresses to the study of wine industry products, which through their sensorial, physical-chemical and nutraceutical properties, have the quality of functional foods.

MATERIALS AND METHODS

In order to emphasize the qualitative features of own recipes prepared drinks, we performed measurements of some physical - chemical parameters for the next samples:
- a specimen of Sauvignon Blanc wine, called basic wine; we mention that the wine used as raw material has been obtained in 2007, at

S.C. OSTROVIT S.A., from Ostrov Wine Center.

- 4 specimens of flavored wines (samples 1, 2, 3 and 4) obtained by the addition of hydroalcoholic extract (filtered plants macerate) to the basic wine;
- 4 specimens of vermouth type wines (samples 5, 6, 7 and 8) obtained by the addition of hydroalcoholic extract plus other ingredients (sugar, citric acid, ethyl alcohol, water) to the basic wine.

In order to prepare the hydroalcoholic macerates from plants we used two recipes of herbal mixtures:

-*recipe I*, consisting of 16 plants (anise, cumin, thyme, yarrow, coriander, cloves, fennel, hyssop, wilde rose, marjoram, peppermint, chamomile, nutmeg, ,wormwood, balm mint, elder);

- *recipe II* consisting of 5 plants (anise, wilde rose, nutmeg, orange peel, lemon peel).

The macerates from plants have been prepared in ethyl alcohol 45% vol. (recipes IA and IIA) and 60% vol. (recipes IB and IIB), in ratio 1:10.

For the flavored wines and the vermouth type wines, hydroalcoholic extract was added to the Sauvignon Blanc basic wine in a proportion of 3%.

For the vermouth type wines, we added to 100 ml basic wine, the ingredients as follows:

- 21,22 g sugar, 0.12 g citric acid, 9.80 ml ethyl alcohol, 15,43 ml water for recipes IA and IIA;
- 21,22 g sugar, 0.12 g citric acid, 9.13 ml ethyl alcohol, 16.1 ml water for recipes IB and IIB

[2].

The following quality parameters were determined: d^{20} (picnometric method STAS 6182/8-71), Alcool Content, % vol. (picnometric method, STAS 6182/6-70), Total Dry Extract g/l (densimetric method STAS 6182/9-80), Free Sugar g/l (iodometric method – Schoorl, STAS 6182/18-81), Unreducing Extract g/l (difference from Total Dry Extract value and total sugar value) Total Acidity g/l, $C_4H_6O_6$ (titrimetric method STAS 6182/1-79), Free SO_2 mg/l, (iodometric method), Total SO_2, mg/l [6,7].

RESULTS AND DISCUSSIONS

The addition of hydroalcoholic plants extracts, required to obtain flavored wines and vermouth type wines, to the Sauvignon Blanc wine, led to significant changes in physical-chemical parameters, compared with reference values of basic wine.

Tabel 1. Physical-chemical measurements of the flavored wines and vermouth type wines

Sam-ple no.	Sample type	Physycal and chemical analysis			
		d_{20}^{20}	Alcohol (vol%)	Total dry extract (g/l)	Free sugar (g/l)
Basic wine					
-	**Sauvignon Blanc**	0.9922	12.9	23.5	2.0
Flavoured wines					
1.	Sauvignon Blanc + recipe I A (45% alc)	0.9901	13.7	20.3	1.7
2.	Sauvignon Blanc + recipe I B (60% alc)	0.9891	14.4	19.8	7
3.	Sauvignon Blanc + recipe II A (45% alc)	0.9901	13.8	21.4	1.7
4.	Sauvignon Blanc + recipe II B (60% alc)	0.9889	14.5	19.8	1.7
Vermouth type wines					
5.	Sauvignon Blanc + recipe I A (45% alc) + ingredients	1.0414	17	165.4	150
6.	Sauvignon Blanc + recipe I B (60% alc) + ingredients	1.0421	17	165.9	150
7.	Sauvignon Blanc + recipe II A (45% alc) + ingredients	1.0414	17	166	150
8.	Sauvignon Blanc + recipe II B (60% alc) + ingredients	1.0415	17	166	150

Source: Own calculation

The results of the physical-chemical determinations of Sauvignon Blanc basic wine, as well as the results for the samples of flavoured wines and vermouth type wines, are highlighted in Table 1.

Tabel 2 Chemical measurements of the flavored wines and vermouth type wines

Sam-ple no.	Sample type	Physycal and chemical analysis			
		Unre - ducing extract (g/l)	Total acidity (g/l) $C_4H_6O_6$	Free SO_2 (mg/l)	Total SO_2 (mg/l)
Basic wine					
-	**Sauvignon Blanc**	21.5	5.19	40	145
Flavoured wines					
1.	Sauvignon Blanc + recipe I A (45% alc)	18.6	4.83	35	117
2.	Sauvignon Blanc + recipe I B (60% alc)	18.1	4.83	37	110
3.	Sauvignon Blanc + recipe II A (45% alc)	19.7	4.75	37	115
4.	Sauvignon Blanc + recipe II B (60% alc)	18.1	4.91	40	112
Vermouth type wines					
5.	Sauvignon Blanc + recipe I A (45% alc) + ingredients	15.4	4.52	37	87
6.	Sauvignon Blanc + recipe I B (60% alc) + ingredients	15.9	4.50	25	92
7.	Sauvignon Blanc + recipe II A (45% alc) + ingredients	16	4.52	27	90
8.	Sauvignon Blanc + recipe II B (60% alc) + ingredients	16	4.36	30	90

Source: Own calculation

The results of the chemical determinations of Sauvignon Blanc basic wine, as well as the results for the samples of flavoured wines and vermouth type wines, are highlighted in Table 2.

From the data obtained it is observed that the addition of plants hydroalcoholic extracts, as well as the necessary ingredients for the vermouth type wines, led to significant changes of physical - chemical parameters compared to the reference values of Sauvignon Blanc basic wine.

All flavored wines had slightly lower Density compared to the Sauvignon Blanc variety basic wine, because of the alcohol addition. All vermouth type samples showed higher Density, compared to the original basic wine, thanks to the addition of sugar and citric acid, according to the recipes used.

Total dry extract values decreased in flavored wines, whatever recipe we used, but increased sharply to vermouth type wines, compared with the Sauvignon Blanc basic wine.

Speaking of Unreducing extract parameter, its value decreased in all samples, compared with the value recorded in the basic wine. The decreases were less pronounced in the case of aromatized wines and more pronounced in the case of vermouth type wines.

Alcoholic strength, Free sugar and Total acidity are responsible for the quality of wine, mostly influencing its taste. Free sugar also influences the amount of Total dry extract. Flavoring the wine and its transformation into vermouth, also changes all these parameters.

We observed in figure 1 that the Alcoholic strength grew more in flavored wines with plants macerates in 60% alcohol, as was natural, in comparison with the Alcoholic strength of Sauvignon Blanc basic wine.

Also, the addition of plants hydroalcoholic macerates in flavored wines, therefore the addition of alcohol, increased the Alcoholic strength to 14.5%, compared with 12.9% in the basic wine.

The vermouth type wines presented an Alcoholic strength value of 17% vol, according to the classic recipe.

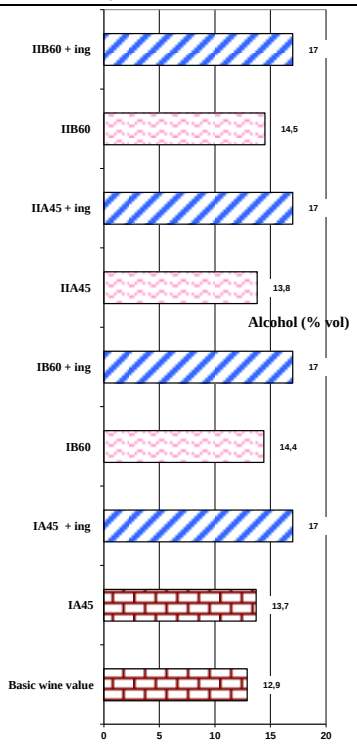

Fig. 1. The Alcoholic strength of flavored and vermouth type wines prepared from Sauvignon Blanc basic wine

The evolution of Sugar free parameter in flavored wines and vermouth type wines made from Sauvignon Blanc is shown in figure 2.

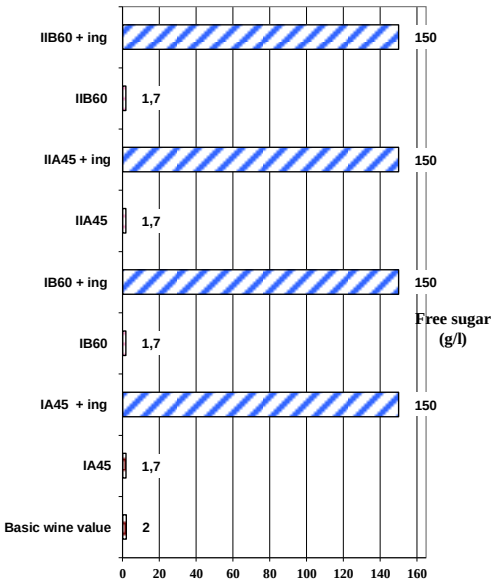

Fig. 2. The Free sugar of flavored and vermouth type wines prepared from Sauvignon Blanc basic wine

Sauvignon Blanc basic wine was sour than the reference mean, but Sugar free value decreased pretty much in flavored wines, for all recipes. In vermouth type wines, Sugar free complied the standard limits, being placed at 150 g/l, whatever recipe.

The Total acidity dynamic of the beverages derived from Sauvignon Blanc, processed with hydroalcoholic plants macerates plus some ingredients is shown in Figure 3.

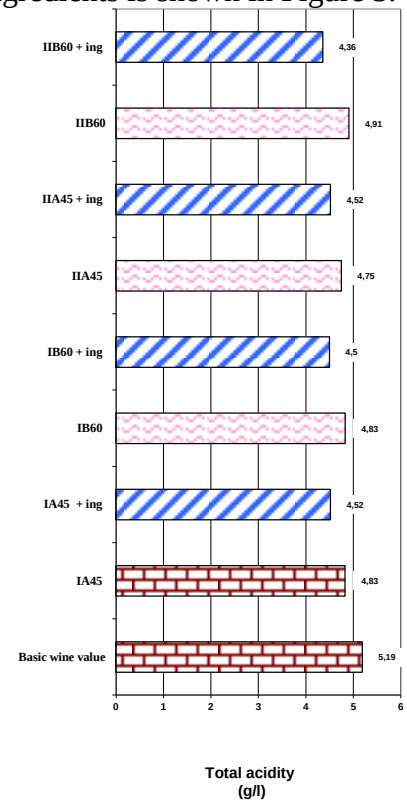

Fig. 3. The Total acidity of flavored and vermouth type wines prepared from Sauvignon Blanc basic wine

All flavored wines had a diminished Total acidity and vermouth type wines are even less acidic. We observed a great homogeneity of the values of this parameter, both in flavored and in vermouth type wines.

The Total dry extract increased sharply in vermouth type wines, being about seven times higher, compared to the basic wine (figure 4).

The Nonreducing extract decreased for all beverages prepared by us, compared to its value in the origin wine (figura 5).

Free SO_2 and Total SO_2 showed diminished values in potential nutraceutical drinks, the decrease being significant, especially in vermouth type wines (figure 6).

It could be seen that qualitative peculiarities of aromatized wines and vermouth type wines

are different to each other and to the wine from which they originated.

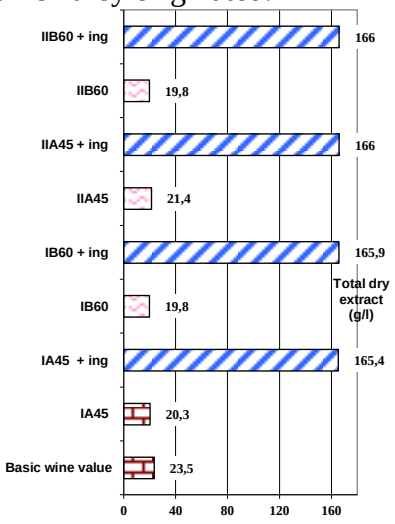

Fig. 4. The Total dry extract of flavored and vermouth type wines prepared from Sauvignon Blanc basic wine

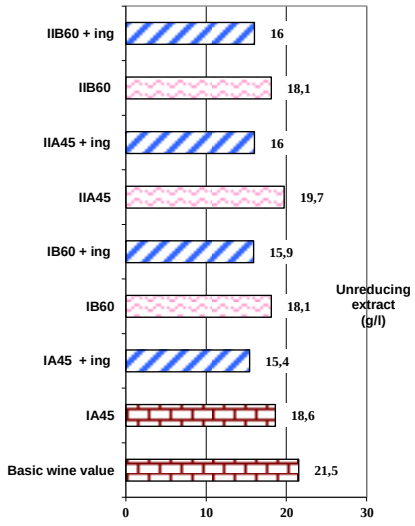

Fig. 5. The Unreducing extract of flavored and vermouth type wines prepared from Sauvignon Blanc basic wine

CONCLUSIONS

The addition of hydroalcoholic macerates to Sauvignon Blanc wine modified slightly the Density of the new drinks. In contrast, the Total dry extract increased seven times compared to its amount in Sauvignon Blanc wine and the Unreducing extract decreased in all types of new wines.

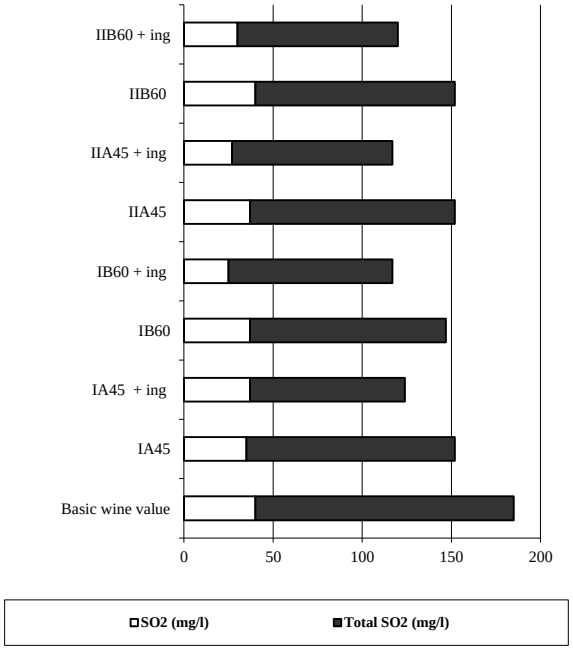

Fig. 6. The evolution of free SO_2 and total SO_2 in flavored and vermouth type wines prepared from Sauvignon Blanc basic wine

The Free sugar and Alcoholic strength parameteres may be changed in the desired direction, depending on how much hydroalcoholic extract of plants, or alcohol, or sugar are added to the basic wine. In this regard, all vermouths reached in the standard Alcoholic strength of 17% and in the standard Free sugar of 150 g/l.

Also, hydroalcoholic plants macerates addition lead to the decrease of Total acidity, Free SO_2 and Total SO_2 values, for both flavored wines and vermouth type wines.

In conclusion, the nutraceutical beverages domain provides further a wide range of interdisciplinary research topics.

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