

SENSORY PROPERTIES OF SOME WHITE WINES, FLAVORED WINES AND VERMOUTH TYPE WINES, PREPARED BY USING OWN RECIPES

Rodica Elena CULEA¹, Radiana Mariana TAMBA-BEREHOIU¹, Nicolae Ciprian POPA²

¹University of Agricultural Sciences and Veterinary Medicine Bucharest, 59 Marasti, District 1, 11464, Bucharest, Romania, Phone: +40242.33.20.77, Fax: +40242.33.20.77, Mobile: +40721.32.72.14, Emails: rodica.culea@gmail.com, radianatamba@yahoo.com

²S.C. Farinsan S.A., Gradistea Village, Giurgiu County, Phone: +40 246.282.112, Fax: +40 246.282.111, E-mail: cipnpopa@yahoo.com

Corresponding author: radianatamba@yahoo.com

Abstract

In order to characterize, from sensorial point of view, the basic white wines White Fetească, Italian Riesling, Sauvignon Blanc, as well as flavored wines and vermouth type wines, obtained by addition of hydroalcoholic plants macerates to basic wines, tasting technique was used. It is known that sensory analysis is a method that can provide an overview of a wine. The main features analyzed were: appearance, color, smell and taste. Initial, wines presented specific features of grapes variety from which they belong, being characterized by harmony and complex flavor. The hydroalcoholic macerates were obtained by preparing two recipes (labeled I and II) of different mixtures of plants. Recipes I A in 45% alcohol and I B in 60% alcohol, had characteristics of appearance, color, taste and smell, very intense, specific, prevailing the taste of anise, fennel and coriander. The macerates prepared with recipes II A in 45% alcohol and II B in 60% alcohol (mixture of a few herbs and peel of citrus fruits) showed peculiarities of taste, odor, flavor less intense, prevailing the smell of nutmeg and citrus flavor. Recipes I A and I B of hydroalcoholic plants macerates decisively influenced the color, taste, flavor, smell and appearance of flavored wines. Recipes II A and II B influenced discreetly the sensory properties of flavored wines. Vermouth type wines obtained by addition of hydroalcoholic plants macerates + other ingredients (citric acid, alcohol, sugar), presented harmonious sensory characteristics, balanced, discreet, subtle, compared with flavored wines obtained only by the addition of hydroalcoholic plants macerates to the basic wines. The latter had a color, aroma, taste, smell, more intense, more rustic. Herbal recipes I B and II B (prepared in 60% alcohol), have strongly influenced the sensory properties of flavored wines, compared to recipes I A and II A (prepared in 45% alcohol).

Key words: flavored wines, hydroalcoholic plants macerates, vermouth type wines, wine sensory properties

INTRODUCTION

It is known that in Romania it is produced a wide range of wines, as well as beverages with various additives, based on wine. This is due to the many different areas of geographical, climatic, soil and grape variety cultivated, points of view. In the category of beverages derived from wine, an important place is occupied by flavored wines and vermouth type wines.

One of the ways by which Romania may have an interesting offer for exporting wines, in the current context of fierce competition in the field, is to develop a range of indigenous varieties wines, well-adjusted, of high quality. The advantage of our country is that we have large areas covered with indigenous varieties which are found only in our country, or in some neighboring countries.

In most EU countries, including Romania, the relevant in the field legislation, clearly stipulates that oenological practices must respect the integrity of the natural composition of wine, as well as the particularities and features given by origin and grapes variety [3,9].

Thus, granting the right to write on the label "wine with controlled nomination of origin" is made only by adherence to strict quality criteria.

These criteria relate to grapes culture technologies, winemaking and to minimal physical-chemical and sensory parameters [6, 8].

In this context, the quality of wines can be appreciated in compositional and sensory properties terms. Thus, the wines and wine-based drinks, used for trading purposes and consumption, must be accompanied by tests

reports with data relating to the composition indicators.

These indicators are: alcoholic strength, free sugar, total and volatile acidity, total and dry extract, free and total SO₂, microbiological picture (absence or presence of microorganisms, their types and number) sensory features (appearance, color, aroma, taste).

Sensory analysis is made by tasting, considered by winemakers as a basic method for assessing wines. Chemical and microbiological analysis are considered auxiliary methods that support the sensory examination of wines [1, 2, 10].

The purpose of our research is to highlight in a comparative way, concerning the sensory aspects, the modifications of wines quality from White Fetească, Italian Riesling and Sauvignon Blanc varieties (called basic wines), caused by the addition of hydroalcoholic plants extracts (flavored wines), or hydroalcoholic plants extracts plus other ingredients (vermouth type drinks) [4].

Our researches draw attention to analyzed quality wines type, to vineyard where they come from and emphasize the importance of wine and flavored beverages, which by their physical-chemical, nutraceuticals and sensory properties, have the quality of functional foods.

MATERIALS AND METHODS

A number of 31 samples were analyzed in terms of sensory characteristics as follows [3, 4, 5, 7]:

-3 wine specimens, namely: White Fetească, Italian Riesling and Sauvignon Blanc obtained in SC OSTROVIT SA, from Ostrov Centre Vineyard, harvest 2007;

-4 specimens of hydroalcoholic plants macerates prepared with 2 own recipes (I and II) which have been used to flavor the wine samples. The plants macerates were prepared in ethylic alcohol 45% vol., and 60% vol. as follows:

- Recipe I A (45% alc);
- Recipe I B (60% alc);
- Recipe II A (45% alc);
- Recipe II B (60% alc).

- 12 samples of flavored wines (three varieties of wine x 4 versions), obtained by simple addition of hydroalcoholic macerates of plants to wine (Procedure I);

- 12 samples of vermouth type wines (3 types of wine x 4 versions), obtained by addition of hydroalcoholic plants macerates plus other ingredients (sugar, citric acid, alcohol) to wine (Procedure II).

Recipes for herbal mixtures contain:

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

- Recipe II - 5 plants (anise, wilde rose, nutmeg, orange peel, lemon peel). Alcohol: plants mixture ratio was 1:10. Hydroalcoholic plants extracts were added to the basic wines at a rate of 3%, for obtaining the flavored wines, as well as for obtaining the vermouth type wines [4]. Additional ingredients for obtaining vermouth type wines were added so, as finally to obtain an alcoholic strength of 17% vol., a total acidity between 4.36 to 4.52 g/l and a sugar free quantity of 150 g/l.

The technique used for the sensory examination is tasting [7,9,10]. The main features analyzed to the mentioned samples were: appearance, color, smell and taste. For a fair assessment, were complied the conditions and specific stages of tasting technique.

For freshening of senses and maintaining gustatory capacity during tasting, it was used bread without salt, apples and unsalted cheese (curd).

RESULTS AND DISCUSSIONS

The relevant aspects of the sensory examination for the three varieties of wine, used as starting specimens for the preparation of flavored wines and vermouths type wines, are presented in Table 1.

It was noted that concerning the sensory properties, especially of taste, wine varieties were appropriate, but the savor tended to fade in descending order, as follows: Sauvignon Blanc, Italian Riesling and White Fetească, although there were no notable differences, from this point of view.

Table 1. The sensory properties of the basic wines

Wine variety	Sensory properties			
	Appearance	Color	Taste	Odor
White Feteasca	Clear, without suspended particles or sediment	Straw	Dry, vine taste, with traces of sugar, without defects	Without foreign Smell
Italian Riesling	Clear, without suspended particles or sediment	Yellow green	Dry, fruity taste, refreshing due to acidity, with traces of sugar, without defects	Without foreign Smell
Sauvignon Blanc	Clear, without suspended particles or sediment	Gold yellow	Dry, half- flavored, lively and fruitful with traces of sugar, without defects	Without foreign Smell

Sensory characteristics of the 4 hydroalcoholic plants macerates are shown in table 2.

In fact, the 4 hydroalcoholic macerates were

concentrated in plants extract. As a result, flavors, taste, smell and color were emphasized.

Table 2. The sensory properties of the hydroalcoholic plants extracts

No.	Type of alcoholic macerated	Sensory properties			
		Appearance	Color	Taste	Odor
1.	Recipe I A (45% alc)	Clear	Brown greenish	Rich flavor, bitter	Of various field plants
2.	Recipe I B (60% alc)	Clear	Brown greenish	Very flavored, more intensely bitter	Of various field plants
3.	Recipe II A (45% alc)	Clear	Cognac	Citrus flavor, slightly bitter	Citrus, nutmeg and anise
4.	Recipe II B (60% alc)	Clear	Cognac	Citrus flavor and taste firm bitter	Citrus and strong nutmeg and anise

All these extracts were characterized by a strongly bitter taste.

In I A and I B recipes prevailed the taste of anise, fennel and coriander, and in the next two, namely II A and II B, prevailed the taste of citrus and nutmeg.

Aroma was stronger for an alcoholic concentration of 60% vol., aspect that has been also met, in the case of flavored wines.

The sensory characteristics of the first 12 samples of wine, flavored only by adding hydroalcoholic plants macerated (procedure 1), are shown in Table 3.

It is observed as a general feature that the samples 2, 4, 6, 8, 10 and 12 (recipes I B and II B), regardless of the variety of wine from which they originated, showed a slight opalescence, had more intense colors, stronger tastes and more contoured smells than their counterparts, samples 1, 3, 5, 7, 9 and 11 (recipes I A and II A). It is possible that the opalescence was due to a slight fermentation process of samples 2, 4, 6, 8, 10 and 12, since the alcohol used in the recipe was of higher

concentration (60%) and the amount of fermentable compounds extracted from plants was also higher.

The same reasoning can be extended to explain the intensification of color, taste and smell of these samples.

Sensory characteristics of next vermouth type wines samples, marked with numbers 13 to 24, obtained by Procedure 2 with the addition of hydroalcoholic plants macerates + other ingredients (sugar, citric acid, alcohol, water) are shown in Table 4.

It is noted that the addition of ingredients "temperated" the sensory properties.

Thus, regarding the colour, the greenish tints disappeared, odours became discrete and subtle, flavours were balanced and became more harmonious.

It is observed the fact that in the vermouths type wines with addition of hydroalcoholic macerates in 60% vol. alcohol, the sensory properties were emphasized, which reveals a high concentration of plants extract in macerat.

Table 3. The sensory characteristics of the aromatic wines, obtained through procedure 1

No.	Type of flavored wine	Sensory properties			
		Appearance	Color	Taste	Odor
1.	White Feteasca + Recipe I A (45% alc)	Clear, without suspended particles or sediment	Yellow - dense	Flavored, slightly bitter	Discreet, plant field
2.	White Feteasca + Recipe I B (60% alc)	Quite clearly, without sediment (Slightly cloudy)	Yellow - dense	More intense flavor, stronger bitter	Well shaped plant field
3.	White Feteasca + Recipe II A (45% alc)	Clear, without or sediment	Straw	Discreet aroma, bitter	Discreet, citrus and anise
4.	White Feteasca Recipe II B + (60% alc)	Quite clear, no sediment, slightly cloudy	Straw	Shorter aroma and taste, sharper bitter	Ferm citrus and anise
5.	Italian Riesling + Recipe I A (45% alc)	Clear, without suspended particles or sediment	Yellow - green intense	More acidic, structured	Discreet, plant field
6.	Italian Riesling + Recipe I B (60% alc)	Clear, without sediment slightly cloudy	Yellow - green intense	Bitter	Well shaped plant field
7.	Italian Riesling + Recipe II A (45% alc)	Clear, without suspended particles or sediment	Yellow - pale green	Slightly bitter	Discreet, citrus and anise
8.	Italian Riesling Recipe II B + (60% alc)	Quite clearly, without sediment, slightly cloudy	Yellow - pale green	More flavored and bitter	Ferm citrus and anise
9.	Sauvignon Blanc + Recipe I A (45% alc)	Clear, without suspended particles or sediment	Yellow gold pale- green	Balanced, flavored, slightly bitter	Discreet, plant field
10.	Sauvignon Blanc + Recipe I B (60% alc)	Quite clearly, without suspended particles or sediment, slightly cloudy	Yellow Gold - intense green	Stronger flavor, bitter	Well shaped field plants
11.	Sauvignon Blanc + Recipe II A (45% alc)	Clear, without suspended particles or sediment	Yellow - gold	Bitter	Discreet, citrus and anise
12.	Sauvignon Blanc + Recipe II B (60% alc)	Quite clearly, without sediment, slightly cloudy	Yellow -gold	Stronger bitter	Ferm citrus and anise

Table 4. The sensory characteristics of the vermouth type wines, obtained through procedure 2

No.	Type vermouth	Sensory properties			
		Appearance	Color	Taste	Odor
13.	White Feteasca + Recipe I A (45% alc) + ingredients	Clear crystal	Straw yellow	Slightly bitter	Discreet, field plants
14.	White Feteasca + Recipe I B (60% alc) + ingredients	slightly opalescent	Straw yellow	More flavored	Discreet, field plants
15.	White Feteasca + Recipe II A (45% alc) + ingredients	Clear, without suspended particles or sediment	Yellow	Citrus flavor	Discreet, citrus and anise
16.	White Feteasca + Recipe II B (60% alc) + ingredients	slightly opalescent	Yellow	Citrus flavor	Discreet, citrus and anise
17.	Italian Riesling + Recipe I A (45% alc) + ingredients	Clear, without suspended particles or sediment	Yellow- green	Harmo-nious, flavored	Discreet, field plants
18.	Italian Riesling + Recipe I B (60% alc) + ingredients	Slightly opalescent	Yellow - green	Very flavored	Discreet, field plants
19.	Italian Riesling + Recipe II A (45% alc) + ingredients	Clear, without suspended particles or sediment	Yellow	Raw taste	Discreet, citrus and anise
20.	Italian Riesling + Recipe II B (60% alc) + ingredients	Slightly opalescent	Yellow	Taste and flavor more intense	Discreet, citrus and anise
21.	Sauvignon Blanc + Recipe I A (45% alc) + ingredients	Clear, without suspended particles or sediment	Gold- yellow	Very harmo-nious (balanced)	Discreet, field plants
22.	Sauvignon Blanc + Recipe I B (60% alc) + ingredients	Clear, without suspended particles or sediment	Gold -yellow	Stronger flavor	Discreet, field plants
23.	Sauvignon Blanc + Recipe II A (45% alc) + ingredients	Clear, without suspended particles or sediment	Yellow	Short flavor	Discreet citrus and anise
24.	Sauvignon Blanc + Recipe II B + (60% alc) + ingredients	Clear, without suspended particles or sediment	Yellow	Short intense flavor	Discreet citrus and anise

CONCLUSIONS

The wines used as basic material for obtaining the flavored wines and the vermouth type wines, showed flavor sensory properties, specific to grapes variety they belong, being characterized by harmony;

Hydralcoholic macerates differed significantly concerning the appearance, depending on the used recipe of herbs. Thus, the macerates obtained by recipes I A and I B (only plant mixtures) had characteristics of color, taste, smell-specific and very intense.

The predominantly tastes were the tastes of

anise, fennel and coriander. In macerates obtained with recipes II A and II B (mixture of fewer plants and citrus peel), although have been identified peculiarities of taste, odor, flavor, especially the smell of nutmeg and citrus flavor, they were not as intense.

All hydroalcoholic plants macerates had a bitter taste, more intense or less intense, depending on recipe.

The recipes I A and I B of flavoring plants influenced decisively color, taste, flavor, smell and appearance of aromatized wines, without being able to distinguish a specific fingerprint of certain plants (generally, it was felt only a smell of field plants).

The recipes II A and II B of flavoring plants influenced in a more discreet way the color, taste and appearance of aromatized wines, but it was able to distinguish specific flavors and odors (eg citrus and anise flavors).

The vermouth type wines prepared according to procedure 2 (with addition of alcoholic plant macerate + other ingredients) showed harmonious sensory characteristics, balanced, discrete, subtle, compared with flavored wines prepared according to procedure 1 (only with added hydroalcoholic macerates of plants), whose color, aroma, taste, smell, were more intense, more rustic.

The plants recipes I B and II B (prepared in 60% vol. alcohol), have strongly influenced the sensory properties of flavored wine compared with the recipes I A and II A (prepared in 45% vol. alcohol).

The flavored wines prepared with recipes I B and II B showed a slight tendency to ferment (slight opalescence) due to the high content of fermentable substances, extracted from plants by using a concentration of 60% vol. alcohol;

Sensory analysis is a method that can provide information on the origin and age of the variety of wine, namely a picture of it.

ACKNOWLEDGEMENTS

This research work was carried out with the support of the analysis laboratory staff from wine - growing Centre Ostrov, Calarasi County and Biotechnology Faculty,

University of Agricultural Sciences and Veterinary Medicine, Bucharest, Romania.

REFERENCES

- [1]Baxter, M., J., Crews, H.,M., Goodall, I., Anderson, D., 1997, The determination of authenticity of wine from its trace element composition, Food. Chem 60, pp. 443-450.
- [2]Bende, M., Nordin, S.,1997, Perceptual learning in olfaction: Professional wine tasters versus controls. Physiology & Behavior, 62, 1065-1070
- [4]Compendium of International methods of wine and must analysis, 2007, Organization Internationale de la vigne et du vin.
- [4]Culea, R., E., 2009, „Flavouring compounds used for improving the quality of white superior wines, in Ostrov Wine Center”, Doctoral Thesis, University of Agricultural Sciences and Veterinary Medicine, Bucharest.
- [5]Directory of commented Romanian standards / Methods of analysis, 1997, I.R.S. Romanian Institute for Standardization, Bucharest.
- [6]HG 1134/2002 pentru aprobarea Normelor metodologice de aplicare a Legii viei si vinului in sistemul organizarii comune a pietei vitivinicole nr. 244/2002.
- [7]Jacobson, J., 2005, Introduction to Wine Laboratory Practices and Procedures, Springer Kindle.
- [8]Nămolosanu, I., Antocea, A., O., 2005, Oenologie- Controlul si prevenirea fraudelor, Editura Ceres, Bucuresti.
- [9]Peynaud, E., 1996, The Taste of Wine: The Art Science of Wine Appreciation, Editura Wiley, USA
- [10]Pomohaci, N., Nămolosanu, I., Nămolosanu, A., 2000, Producerea si îngrijirea vinurilor, Editura Ceres, Bucuresti.

