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Research on obtaining flavoured wines based on house wine

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Abstract The research was carried out in 2017, in the laboratory of the Oenology discipline of Timisoara Faculty of Horticulture and Forestry. Three varieties of wine were studied, each constituting a blend, as follows: 1. White wine – Mustoasă de Măderat and Muscat Ottonel blend; 2. Rose Wine – Muscat Ottonel and Muscat de Hamburg blend; 3. Red Wine – Merlot and Burgund blend. The alcohol content of the wine samples was measured, and for each of the three varieties of wine an aromatic herb extract was prepared, each consisting of the same sample of wine distillate but with different aromatic herb recipes. The white wine - Mustoasă de Măderat and Muscat Ottonel blend had an alcohol content of 12.5%, the Rose Wine - Muscat Ottonel and Muscat de Hamburg blend contained 10.5% alcohol, and the Red Wine Merlot and Burgund blend - 14% alcohol.

In order to obtain the aromatic herbs extract, a different time interval was required, depending on the intensity of the aromatic compounds of the plants or the dried fruits that had entered the composition. Thus, recipe 1 required an extraction time of 8 days, recipe 2 - 15 days, and recipe 3 - 7 days to keep the plants or dried fruits in contact with the wine distillate.

According to the technology of obtaining the flavoured wines, after the preparation of the plant or fruit extract, the sugar syrup was prepared for recipe 2 and the caramelized sugar syrup for recipe 1 and 3. The parts were then assembled and the resulting products were aged for 30 days, after which they were analysed chemically and organoleptically.

Recipe 1 comprises both herbs and medicinal herbs in different quantities, namely: 10.3 g tutsan, 5.8 g mint, 4.4 g thyme and 3.5 g horsetail. Recipe 1 was mixed with white wine 1 – Mustoasă de Măderat and Muscat Ottonel blend.

Recipe 2: contains only herbs: 3.5 g broom quail, 10 g elder, 4.6 g mint, 6.5 g small-leaved lime. It was mixed with the red wine 3 – the Merlot and Burgundy blend.

Recipe 3 includes 27.68 g of dried fruit consisting of: apple, rose hip, orange peel, rose petals.

Key words

flavoured wine, aromatic herbs, sugar syrup, alcohol

There is a close connection between the history of herbal wine and, of course, the history of viticulture, since the basis of such beverages is wine.

The oldest herbal wine recipe was found on a Sumerian clay plate, discovered in 1910, following an archaeological excavation at Nipur, south of Baghdad. On this, in cuneiform writing, the recipe of a curative wine of a doctor from 2230 BC was discovered. [5]

This category of flavoured wines can be obtained in two ways: by infusing flavour and taste constituents during alcoholic fermentation or by the addition to wine of quantities of refined alcohol or wine distilled, sugar or wort, macerated herbs or fruits. [7] Vermouth is defined as a fortified wine with an alcoholic strength in the range of 15-21% (v / v) aromatic with a mixture of herbs and spices. It can be said that vermouth or aperitif wines consist of grape wine, herb and spice mixture or their alcoholic macerates [1, 3]. Besides, in vermouth sugar is added or grape wort, as well as ethyl alcohol with an alcoholic degree of 90-96% (v / v) [4].

Material and Method

The research was carried out in 2017 in the laboratory of the Oenology discipline of the Faculty of Horticulture and Forestry, USAMVB "Regele Mihai I al României" in Timisoara.

Three types of wines were studied: white, rosé and red, each representing a blend. Separately, recipes of flavouring herbs and medicinal herbs were created in different proportions, which were used to obtain plant extracts using an alcohol (wine distillate) with an alcoholic strength of 56% vol.

1 .White wine - Mustoasă de Măderat and Muscat Ottonel blend; 2. Rose wine - Muscat Ottonel and Muscat de Hamburg blend; 3. Red wine - Merlot and Burgund blend [2] . The amount of wine used is 2 litres of each wine category so that the final product (flavoured wine) is divided in 2.5 l portions.

Aromatic herbal extract:

Recipe 1 comprises both herbs and medicinal herbs in different quantities, namely: 10.3 g tutsan, 5.8 g mint, 4.4 g thyme and 3.5 g horsetail.

Fig.1 Both and medicinal herbs

Recipe 2: comprises only medicinal herbs: 3,5 g milfoil, 10 g elder, 4.6 g mint, 7.1 g small-leaved lime.

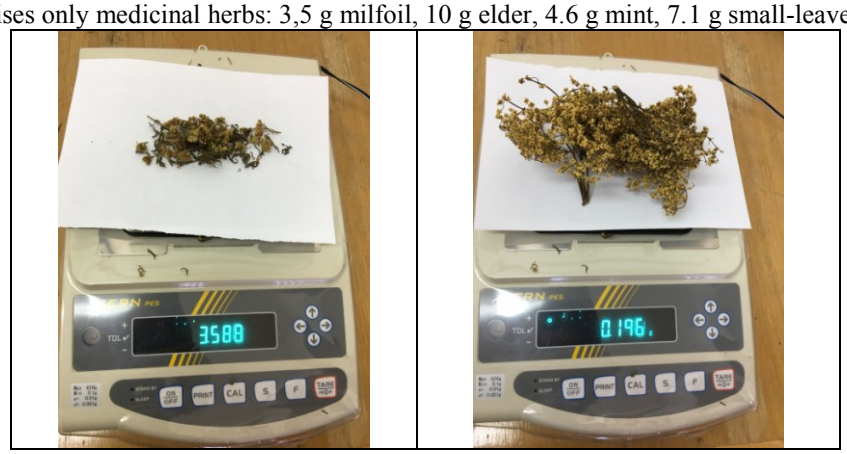

Fig.2. Medicinal herbs

Recipe 3: comprises 27,68 g dried fruits.

Fig.3. Dried fruits mix

The analytical balance was used for performing laboratory weighing, the alcohol content of each wine that was added to the flavored wine was determined, the sugar concentration of the sugar syrup was determined by the refractometric method, and after the actual production of the aromatic wine its alcohol content was determined by using the ebulliometer.

The plants were harvested and dried by bundling and exposed to shelter, to air streams away from moisture. After drying, they were shredded and mixed with distilled wine, each of the recipes following a certain extraction time of the aromatic compounds.

Thus, recipe 1 required an extraction time of 8 days, recipe 2 - 15 days, and a recipe 3-7 days to keep the plants or dried fruits in contact with the distilled wine.

Obtained results

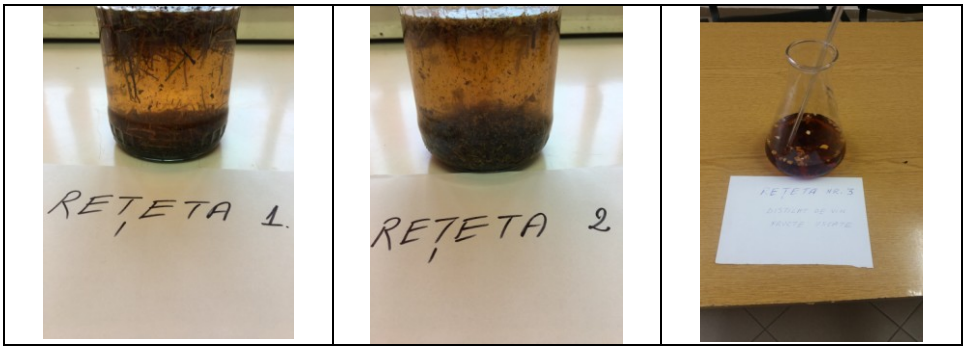

Fig.4 Extraction of the aromatics compounds

At the same time, the sugar syrup was obtained by dissolving the amount of sugar initially in a small amount of wine, then it was mixed in the whole mass of the wine, but also the caramelized sugar syrup by burning the sugar on fire and then diluting it over the whole wine.

Some studies have shown that adding sugar to the prescription may have the potential to protect the antioxidant properties of vermouth during storage. [6]

After obtaining the aromatic herbs extract, all the components were assembled, namely wine, plant extract, sugar syrup or caramelized sugar syrup and citric acid.

The proportions were calculated by reference to the quantities of distilled wine which entered the composition but, in particular, to the alcoholic strength of the wine from which it was started and the distilled used. For this, the rectangle method was used, resulting in the constituent parts of each of the two components (wine and plant extract).

Thus, to obtain 2.5 litres of flavoured wine based on rosé wine with an alcoholic strength of 10.5 the proportion of the two components (wine and distillate) was 2.17 litres of wine and 0.33 litres of distillate. The alcoholic strength of the aromatic wine obtained was 16.5% by volume alcohol.

To obtain 2.5 litres of flavoured wine based on white wine with an alcoholic strength of 12.5, the proportion of the two components (wine and distillate) was 2.24 litres of wine and 0.26 litres distilled, the alcoholic strength of the obtained aromatic wine being 17% vol. alcohol.

Table 1

The components of flavoured wine - recipe 1

Plant	Type of wine	Wine degree of alcohol	Distilled wine (% alcohol)	Sugar quantity
Hypericum perforatum (Tutsan)	Rose wine – Muscat Ottonel and Muscat de Hamburg blend	10,5%	56%	80 g/l
Mentha piperita (Mint)				
Satureja Hortensis (Thyme)				
Equisetum arvense (Horse tail)				

To obtain 2.5 litres of flavoured wine based on red wine with alcoholic strength of 14, the proportion of the two components (wine and distillate) was 2.28 litres of wine and 0.22 litres of distilled wine, the alcoholic strength of the aromatic wine obtained being 17.5% volume of alcohol.

After assembling all of the ingredients, the flavoured wines have been aged for 30 days for all ingredients to blend and the wine to reach the desired quality.

Table 2

The components of flavoured wine - recipe 2

Plant	Type of wine	Wine degree of alcohol	Distilled wine (% alcohol)	Sugar quantity
Achillea Millefolium (Milfoil)	White wine – Mustoasă de Măderat and Muscat Ottonel blend	12,5%	56%	80 g/l
Sambucus Nigra (Elder)				
Mentha piperita (Mint)				
Tilia cordata (Small-leaved lime)				

Table 3

The components of flavoured wine - recipe 3

Dried fruits mix	Type of wine	Wine degree of alcohol	Distilled wine (% alcohol)	Sugar quantity
Malus domestica (Apple), Rosa canina (Dog rose), rose petals, orange peel	Red wine – Merlot and Burgund blend	14%	56%	80 g/l

Conclusions

The aromatisation of wines through the use of medicinal and aromatic herbs leads to the achievement of wines, cherished by an important segment of consumers, having also beneficial effects on the body due to the cumulative effect of some substances in the wine together with some substances in the plants used.

Flavoured wines, consumed as appetizers, are a healthy alternative to alcoholic beverages obtained by the addition of synthetic flavours, especially if the curative properties of each plant are included in the three recipes.

Following the homogenization of the ingredients to obtain the three aromatic varieties of wine, the wine was aged for 30 days to improve its qualities. All flavoured wines have been found to have a satisfactory degree of clarification and, based on the feedback provided by a tasting test group of 20 people, the most organoleptic wine was the flavoured red wine followed by the white and the rosé wine. Knowing that

white wines require a higher amount of clarifying substances to achieve a certain degree of clarity, in this case also, the flavoured wine obtained on the basis of white wine did not have a high degree of clarity, also due to the fact that the basic wine from which it was created from had not undergone any treatment.

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