ANTHOCYANIN CONTENTS AND CHROMATIC PROPERTIES OF THE MAIN RED WINES FROM THE VINE PLANTATIONS OF RDSVW DRĂGĂŞANI

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Abstract

The research and analyses were carried out in 2021-2023 in the plantations within the the Research and Development Station for Viticulture and Vinification (RDSVV) Drăgășani and the (RDSVV) Drăgășani Laboratory. The main noble grape cultivars representative of the Drăgăşani vineyard were analyzed, in order to obtain valuable wines, with an emphasis on modern analyses in clearly establishing the potential and nobility of the analyzed wines. The grape cultivars analyzed and studied were 'Alutus', 'Cabernet sauvignon', 'Negru of Drăgăşani' and 'Novac', varieties of certain value in obtaining quality red wines.

Key words: tonality color, anthocyanin, red wines, chromatic properties, vine plantations

INTRODUCTION

In Drăgăşani, then and now, the sweet and relatively rocky climate that ensures a slow, leisurely, prolonged autumn ripening, harmonized with a series of extremely valuable varieties, allows for delayed harvesting; also, the soil loaded with metallic salts ensures an exceptional harmony between sugar and acidity, allowing fermentation at low temperatures, which results in full, velvety wines, with a pleasant and persistent sweetness, preserving a characteristic liveliness until next summer, thanks to the presence of solubilized carbon dioxide. The Drăgăşani vineyard can, however, boast not only of its past, but also of a present that does not belie its old fame in any way.

The Drăgăşani vineyard assortment currently consists of the following groups of grape cultivar: - for white wines: 'Sauvignon', 'Chardonnay', 'Riesling Italian', 'Pinot gris', 'Fetească white', 'Fetească royal', 'Crâmpoşie'; - for aromatic wines: 'Tămâioasă românească'; - for red wines: 'Cabernet Sauvignon', 'Pinot Noir', 'Merlot' and more recently 'Negru of Drăgăşani' and 'Novac'.

Speaking about Romanian wines, ANDRIEUX P., 1939 writes: "Unfortunately, there are few opportunities in France to taste Romanian wines, and that is a pity. During the 1937 exhibition, the Romanian Restaurant, whose cellar was stocked with the finest wines, allowed us to appreciate a collection of bottles of real value.

MATERIALS AND METHODS

The grape cultivars analyzed and studied were 'Alutus', 'Cabernet sauvignon', 'Negru de Drăgăşani' and 'Novac', varieties of certain value in obtaining quality red wines. The physico-chemical analyses of the wine referred to: anthocyanins and color analyses of red wines.

Determination of anthocianins from wine:

Anthocyanins in wine are determined spectrophotometrically, by pH difference (Ribereau Gayon and Peynaud - 1961). The difference between the optical densities read at 520 nm of a solution, at two different pHs, is proportional to the amount of anthocyanins contained in the wine. From the optical density of the pH 0.6 solution, the optical density of the pH 3.5 solution is subtracted, obtaining $\Delta\sum$. The anthocyanin concentration is established according to the calibration curve, drawn based on the data and is expressed in mg/l.

Color determination:

Principle of the method:

The absorbances of wine samples are measured at wavelengths 420-520-620mm and the color intensity is calculated, which is given by the sum of the absorbances, the color nuance, which is given by the ratio of the absorbances 420mm/520 mm (the overlap of red color over yellow color).

Equipment:

Spectrophotometer for measuring between 400-700 mm - Glass spectrophotometric cuvettes, with optical path of 0.1-0.2-0.5-1.0-2.0cm - Laboratory centrifuge for clarifying wine samples - Vacuum tube, for removing CO2 from effervescent wine samples.

Working method:

Sample preparation. The wine is clarified by centrifugation for 5 min, at 3-5 thousand rpm. /min. Young wines and those rich in CO2 must be degassed by shaking under vacuum. Absorbance measurement. Choose cuvettes with optical paths that correspond to absorbances with values between 0.3 and 0.7; distilled water is introduced into one of the cuvettes and the wine sample into the other. Adjust the scale of the device with distilled water, then measure the absorbance of the wine samples at the three wavelengths. The absorbance values are related to the 1 cm optical path, by dividing the absorbances read on the device by the optical path of the cuvettes used.

Calculating the results:

Calculate: color hue (Nc) resulting from the superposition of the red color measured at a wavelength of 520mm, over the yellow color measured at a wavelength of 420 mm (P. Sudraud, 1990). Color intensity (Ic) resulting from the summation of the absorbances:$Ic=A_{420}+A_{520}+A_{620}$

RESULTS AND DISCUSSIONS

Regarding the anthocyanin content and chromatic properties of red wines, we have presented in table 1 and figures 1-3, very good values in three repetitions, which favor the production of high quality wines.

The red wine grape cultivar 'Alutus' has anthocyanin contents ranging from 630 mg/l to 688 mg/l in the period 2021-2023, with an average over the three years of 665.66 mg/l.

The anthocyanin contents determine the color intensity values, with values ranging from 14.11 to 14.30, the average over the three years being 14.18. The average color tone is high at 0.494.

The wines of the 'Cabernet sauvignon' grape cultivar present valuable anthocyanin contents during the three years studied with values ranging between 702 mg/l and 708.3 mg/l, with an average of 708.96 mg/l. The colour intensity presents levels directly related to the anthocyanin contents of 15.62 and 15.97, the average over the three years being 15.85. The average colour tone has a good value of 0.476.

The anthocyanin content of the 'Negru of Drăgăşani' wine grape cultivar in the

three years studied, respectively three variants, is extremely valuable with values ranging between 760 mg/l and 798 mg/l, the average being 776.66 mg/l. The color intensity has values ranging between 15.90 and 16.00 in direct relation to the anthocyanin content, the average over the three years being 15.94. The average color tone is consistent with the color intensity, having a good value of 0.521.

The wine of the 'Novac' grape cultivar has in its composition anthocyanin contents with values ranging over the three years studied, ranging from 752 mg/l to 788 mg/l, the average being 769.33 mg/l. The color intensity has values of 15.24 to 15.92 in direct accordance with the anthocyanin contents, the average being 15.52. The average color tonality has a value of 0.528, which is good.

Table 1 Average anthocyanin contents and chromatic characteristics of red wines analyzed in 2021-2023

Soiul Variety	Antociani Anthocyanins mg/l	Tonalitatea culorii The tonality of the color (Nc) DO420/ DO 520	Intensitatea culorii The tonality of the color (Ic) DO420nm+ DO520nm+ DO620 nm
'Alutus'	665,66	0,494	14,18
'Cabernet sauvignon'	708,96	0,476	15,85
'Negru de Drăgăşani'	776,66	0,521	15,94
'Novac'	769,33	0,528	15,52
Medie Average	**730,15**	**0,504**	**15,37**

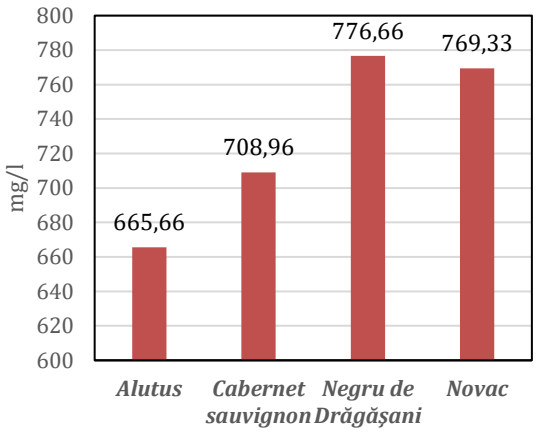

Figure 1 Anthocyanins-2021-2023

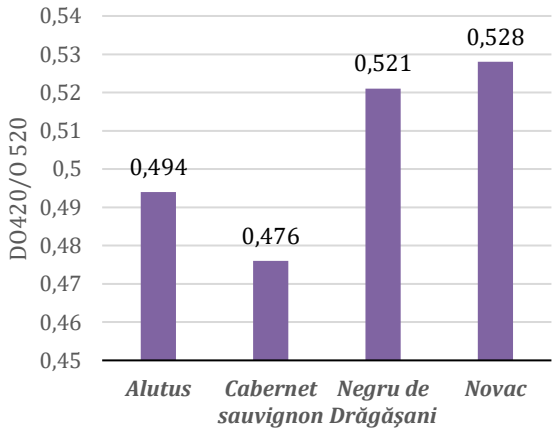

Figure 2 The tonality of the color-2021-2023

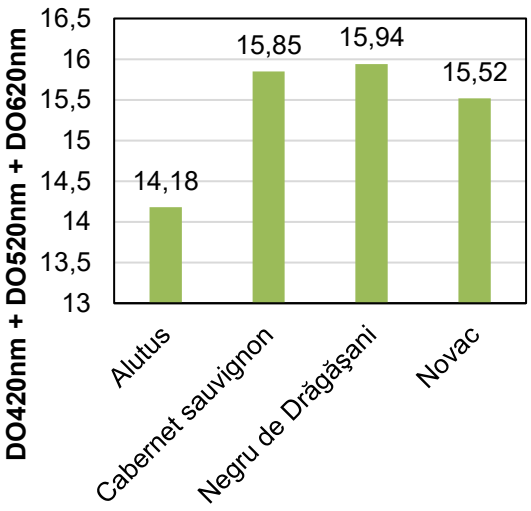

Figure 3 Color intensity-2021-2023

CONCLUSIONS

The study was carried out in the Drăgăşani vineyard, an old vineyard in Romania, called the great-grandmother of viticulture, in the plantations of the Drăgăşani Viticulture and Winemaking Research Station, the varieties analyzed having a very good adaptability to the existing climatic and pedological conditions.

The anthocyanin contents are very good in the analyzed red wines, the color intensity presenting value levels directly related to the anthocyanin contents, with a very good, even intense color tone.

The studied wines meet all the conditions to be classified as DOC and IG wines, due to the oenological qualities they possess.

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