International Journal of Agriculture Innovations and Research
Volume 11, Issue 4, ISSN (Online) 2319-1473
Manuscript Processing Details (dd/mm/yyyy):
Received: 08/12/2022 | Accepted on: 29/12/2022 | Published: 12/01/2023

Research on the Authenticity of the Wines Obtained in the Area of the Pietroasele Vineyard

Alina Maria Poparlan
Bioterra University of Bucharest, Bucharest, Romania.
Corresponding author email id: alinapop1997@yahoo.com

Abstract **– Wine is a widely consumed product and establishing its authenticity represents one of the most important aspects in food quality and safety. authentication, identifying fraud and determining product compliance with the specifications listed on label are consumer requirements. The authentication of wines involves several aspects, such as the geographical origin, year of production, variety, producer and quality. It is important that the proof of the wine's authenticity should be based on those chemical parameters that do not undergo changes during vinification or which are difficult to falsify. A number have been developed over the years of methods for verifying the authenticity of wines, from traditional analytical methods, to methods using advanced instrumental techniques.**

Keywords **– Wine Authenticity, Biochemical Analysis, Wine Quality, The Specificity of Wine-Growing Centers, Year of Production.**

I. INTRODUCTION

The production of wines is a business that obliges the winegrowers to create the technical means necessary for their production at the highest possible quality level. For this purpose, the wineries and cellars located in the vineyards [4], formerly fully owned by the state, are now useful to them, which are developing in the form of cooperative wineries. Anyway, there are all the prerequisites that, in a short time, viticulture and vinification will adapt to the new conditions in which they can be practiced, now being able to intervene to a greater extent and the pride of each producer to obtain the best and most appreciated wines. From a physico-chemical point of view, the wine must not contain foreign substances or substances not allowed by the wine legislation [3]. In other words, it must contain those compounds that it has as a dowry from the grapes or those that it has acquired in the processes of formation, maturation and aging, as well as those substances allowed to be used by the winemaking technique. Another aspect, not to be neglected, is related to the proportion and ratios that must exist between the various components for the respective wine to be considered an authentic product [6].

II. MATERIAL AND METHOD

The pigments from the grapes of the white varieties, along with other polyphenols, mostly found in white wines, give the basic character and general appearance of these products in a defining way [7].

As stated by HARBORNE J.B. (1980), the biosynthesis of pigments in grapes begins with the transformation of phenylalanine in the cytoplasm, after which several stages take place in the plasma membrane, the last phase being the combination of glucose with various substances inside the vacuoles [5].

Using modern methods for the extraction and analysis of polyphenols from grapes Roggero J.P., Coen S., Ragonnet B. (1996), as well as Wenzel K., Dittrich H.H. (1997) produced solid evidence regarding the amount of coloring matter in grapes. For their part, Bucelli P., Faviers V., Giannetti F., Giglitti A. (2002) succeeded in an exceptional way to demonstrate how the different fractions of the polyphenolic complex evolve during grape ripening.

The thermal resources and moderate duration of Sunshine, existing in the Pietroasa and Sahateni Viticultural

-enters in Buzau County, have the effect of a good biosynthesis of pigments in the grapes of all the varieties grown in the respective areas [2]. The pigments have characteristic physico-chemical properties, which determine a specific evolution of the wines [6].

The Dealu Mare wine-growing area is developed in a band shape, along a length of about 70 km between the Buzău and Teleajen rivers, approximately on one side and the other of the parallel of 45° northern latitude and between the meridians of 26° and 26°45' eastern longitude. Administrative, D.O.C. Dealu Mare is located in Prahova and Buzau counties. This name also has the following sub-names of origin: Boldesti, Valea Calugareasca, Urlati, Ceptura, Tohani, Pietroasa, Sahateni, Merei and Zoresti [1].

The research took place in the period 2020-2022, using grapes, at technological maturity, from the following varieties: Romanian Tamaioasa, White Feteasca, Royal Feteasca - cultivated in the Pietroasa viticultural center and Romanian Tamaioasa, White Feteasca, Royal Feteasca-cultivated in the center Sahateni vineyard.

From precisely determined amounts of grains, the pigments were fully extracted with acidic hydro-alcoholic solutions. In order to establish the proportions of pigments in grapes, as well as the elements of the chromatic structure, high-performance spectrophotometric methods were used [5]. When designing and applying the experimental models, on this topic, the following aspect was taken into account: the color of white wines accepted by authorized consumers is defined not only by the amount of coloring matter existing in them, but also by the quality of the components of the chromatic structure, in which they are involved the different categories of pigments (reds, red-violets, yellows, oranges, etc.) [7].

III. Results and Discussion

The content of coloring matter in grapes, along with the other two quality partners (carbohydrates and acidity) are listed in table 1.

Table 1. The main quality parameters of grapes of white varieties (at technological maturity) average 2020-2022.

The Vineyard Area	Variety	Pigment mg/100 g Beans	Carbohydratesg/l	Acidity mg/l H_2SO_4
Pietroasa Village	Romanian Tamaioasa	150	235	4,68
	White Feteasca	91	207	4,60
	Royal Feteasca	64	195	3,75
Sahateni Village	Romanian Tămâioasă	144	229	4,75
	White Feteasca	105	210	4,52
	Royal Feteasca	52	188	3,66

In both reputed wine-growing areas, the grapes of the "leading" varieties-Romanian Tamaioasa and White Feteasca "store" important contents of coloring matter (144-150 mg/100g berries and respectively 91-105 mg/100g berries), in order to print a color intense, specific to wines. Apart from Royal Feteasca, where the proportions of coloring matter are modest (52 - 64 mg/100g of berries), in the other varieties, the pigments can provide the wines with chromatic characteristics in accordance with current requirements.

The elements of the chromatic structure of the hydroalcoholic extracts, obtained from Comparable quantities

of grapes, determined by high-performance spectrophotometry, confirm in another way the data regarding the content in coloring substances.

As in the previous situation (see table 1), the coloring intensity values (I = D0 420nm + D0 520 nm) place the Romanian Tămâioasă variety in first place, followed by an important difference from White Feteasca and at a significant distance from the other variety.

However, analyzing the ratio between the different categories of pigments, the ratio given by the tonality (T = D0 420 nm / D0 520 nm), it appears that in the chromatic structure of the coloring matter from the Romanian Incense grapes, shades of yellow, orange and green are more present than in the other cases, where the values mean a good balance between the different categories of pigments, the premise of a pleasant color even for very young wines.

It is particularly interesting that, in hydroalcoholic extracts from grapes, the wavelength at which the maximum absorption occurs is more or less different than that indicated by SUDRAUD (520 nm). That is why E max shows small differences compared to E 520 nm. The data in table 2 have the gift of completing the picture regarding the ratio between the yellow and orange pigments (D0 420 nm), on the one hand, and the red, purple-red and red-violet pigments (D0 520 nm), on the other hand. With the highest proportions of yellow-orange pigments, the Romanian Tamaioasa variety (94.66 and 95.60 %), followed in descending order by: Royal Feteasca (94.46 %) and White Feteasca (88.37 %) .

The chromatic structure of the coloring matter from the grapes is faithfully reflected in the intensity and tonality of the color of the obtained white wines.

Table 2. The proportions of yellow-orange and red pigments with different shades from the coloring matter of grapes.

The Vineyard Area	Variety	Yellow-Orange Pigments %	Red Pigments %
Pietroasa village	Romanian Tamaioasa	94,66	5,34
	White Feteasca	88,37	11,63
	Royal Feteasca	94,46	5,54
Sahateni village	Romanian Tamaioasa	95,60	4,40
	White Feteasca	87,51	12,49
	Royal Feteasca	93,88	6,12

IV. CONCLUSIONS

Following what was presented, the following conclusions were drawn:

The grape processing technology includes a set of procedures and operations with the help of which the juice of the grain is set free and separated from the solid parts of the grape, i.e. bunches, skins and seeds. After processing, two large categories of wines can be prepared, namely: white and red. In the first case, the must is separated from the bostina as quickly as possible and fermented separately, while in the preparation of red wines it is fermented together with the bostina.

As important aspects related to the legislation for the prevention and repression of fraud in the wine industry, we consider that the following aspects should be addressed:

- Romanian legislative instruments for combating fraud;

- Compliance with the legislation

- Wine and derived products in the legislation; types of wine;

- The organoleptic properties of the wine stipulated in the legislation;

- The physico-chemical properties of the wine stipulated in the legislation;

- The legislation regarding wine packaging and labeling.

The pigments from the grapes of the white varieties, along with other polyphenols, mostly found in white wines, give the basic character and general appearance of these products in a defining way.

Depending on the age of the wine and the variety used for vinification, the concentration of free pigments differs a lot, being 100 mg/l in young Royal Feteasca wines and 1500 mg/l in Romanian Tămâioasă wines, but decreasing during the ripening and aging of the wines.

The highest pigment contents are found in the varieties Romanian Tămâioasă and White Feteasca, proportions located far above what is necessary to obtain specific colored white wines, the premise of a particularly favorable evolution over time from a visual perspective.

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AUTHOR'S PROFILE

Alina Maria Poparlan, She was born in 1973. She graduated from the Faculty of Agrotourism Management, is PhD university lecturer and works at Bioterra University of Bucharest, Bucharest, Romania.