

THE INFLUENCE OF THE MIXING REGIME ON THE PROCESS OF MACERATION - FERMENTATION IN ROTARY TANKS

Prof.Ph.D.eng. Ovidiu TITA
Faculty of Agricultural Sciences ,Food
Industry and Environment Protection
„Lucian Blaga” University of Sibiu



Drd.ing. Axenia RADULESCU
Univ. L. Blaga of Sibiu, Faculty of
Agricultural Sciences, Food Industry
and Environmental Protection, Sibiu



REZUMAT : Lucrarea prezinta un studiu privind influența regimului de amestecare în procesul de macerare-fermentare în cisterne rotative, pentru struguri de vita de vie Cabernet Sauvignon, podgoria Dragasani.

Cuvinte cheie: macerare-fermentare, recipient rotative,

ABSTRACT: This paper presents a study the influence of the mixing regime on the process of maceration - fermentation in rotary tanks a Cabernet Sauvignon grapes of Dragasani Vineyard .

Keywords: maceration-fermentation, rotary tanks, Cabernet Sauvignon, Dragasani.

1. INTRODUCTION:

Maceration-fermentation is an operation specify technology of preparation a red wine, which is aimed extraction of phenolic substances and coloring the solid parts of grape. Maceration must be conducted so as to achieve a selective extraction of different compounds, favoring the passage in grape juice especially those useful-anthocyanins[1]. To obtain high-quality red wines, particular importance is the process of maceration-fermentation of the grape juice with solid parts of the grain. The best results are obtained by using rotating metal tanks are equipped with special facilities. Homogenization of two phase - liquid and solid- by rotating recipients maceration enhances the contact between the two phases - liquid and solid, and facilitates the transport of substances dissolved in the liquid phase, thus accelerating the extraction of compounds from the skin. Using the rotating tank for maceration-fermentation, the red winemaking, has the following advantages: it is high quality red wines with superior technological parameters, to reduce the period of maceration and is created superior technological conditions for obtaining special wines, increase the economic efficiency of the equipment used.

2. MATERIALS AND METHODS

Were used as raw material for experimentation variety grapes of Cabernet Sauvignon red wine of Dragasani Vineyard what were subjected to maceration-fermentation process in thermostatic rotary tanks [3].

There have been successively the following operations:

- Filling containers at 80% capacity
- Sulfitation grape pulp with 100 mgSO₂ / kg grape
- Maceration- fermentation at 27 ± 1 ° C
- Rotating the tank in different regimes: 1x5min/h, 2x5min/h, 3x5min/h, 4x5min/h
- Interruption of maceration after 42h
- Separation of Fractions

On liquid phase separate after 42h were made a series of tests:

-*colour tint and colour intensity:* spectrophotometrically, expressed in optical density OD measured at 420 nm + 520 nm in 1 mm cuvettes (Tița, 2006a);

-*anthocyanins:* spectrophotometrically, at 520 nm, expressed in mg/l (Țârdea, 2007);

- *polyphenols,* titration with KMnO₄, expressed in g/l (Tița, 2006a).

3. RESULTS AND DISCUSSION

The data obtained the analysis liquid phase separate after 42h for the four cases mixing were included in table. 1.

Increasing the rotation length from 5min/h at 2x5min/h without increasing: the intensity colors of 0.08; the anthocyanin content of 70mg/l; total polyphenols of 0.18g/l; of polyphenols flavones of 0.135 g/l

Increasing the rotation length from 2x5min/h at 3x5min/h without growth lower values compared with the previous case: the intensity of coloring of 0.02; the anthocyanin content of 10mg/l ;the total polyphenols of 0.08g/l; the polyphenols flavones of 0.02 g/l.

Increasing periods of rotation (mixing) from 1x5min / h at 4x5min / h lead to increased extraction of phenolic compounds, process well highlighted as long as maceration is not accompanied by alcoholic fermentation. With the intensification of the process differences between the values extracted compounds from the skin, registered. In the first phase (18-24h) attenuates so in moment separation liquid fraction

values of the main constituents lies in close range. For the same period of maceration (42h) and about the same unfermented sugar content (25-30mg / l) were found close values of the intensity colors and of the content in anthocyanins. Most significant differences were recorded for polyphenols whose content increases obviously with increasing the number of periods of homogenization.

Table 1: *The influence of the rotation regime on the process of maceration-fermentation:*

No. crt.	Characteristics	ROTATION REGIME , min/h			
		1x5min	2x5min	3x5min	4x5min
1	Color intensity, (Do _{420nm} + Do _{520nm} , 1mm)	1.800	1.880	1.900	1.820
2	Color tint, (Do _{420nm} /Do _{520nm} , 1mm)	0.469	0.466	0.470	0.475
3	Anthocyanins,mg/l	780	850	855	820
4	Total polyphenols, g/l	1.740	1.920	2.000	2.040
5	Tannins polyphenols, g/l	0.675	0.750	0.770	0.780
6	Flavones polyphenols, g/l	1.065	1.200	1.220	1.240
7	Index of permanganate	40	44	45	46

4. CONCLUZII

1. Increasing periods of rotation (mixing) from 1x5min/h at 4x5min/h lead to increased extraction of phenolic compounds, process well highlighted as long as maceration is not accompanied by alcoholic fermentation
2. For the same period of maceration (42h) and about the same unfermented sugar content (25-30mg/l) were found close values of the intensity colors and of the content in anthocyanins for periods of rotation (mixing) from 2x5min/h at 4x5min / h.
3. Of technological and economic considerations can be considered as the homogenization regime 2x5min / h is sufficient.

5. REFERENCES:

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