L. Giurgiulescu, et all. Journal of Agroalimentary Processes and Technologies, Volume XIII, No.2 (2007), 393-396
Full Paper – Natural Food Extracts and Additives

RESEARCH REGARDING THE ACTION OF SELECTED YEASTS (L.S.A.) AND INCREASE DOSES OF SO_2 CONTENTS ON CHROMATIC CHARACTERISTICS OF CABERNET SAUVIGNON

L. Giurgiulescu[1], P. Săvescu[2], Felicia Stoica[2], Codre Anca[1]
[1]North University of Baia Mare, Science Faculty, Victoriei Street, No. 76, Baia Mare, Maramureş, Romania
[2]University of Craiova, Horticulture Faculty, A.I.Cuza Street, No. 13, Craiova, Dolj, Romania

Abstract

The knowing of biotechnological factors involved in obtaining of some red wines with high concentration in good substances for human body is very important for the orientation of technological process in the direction of realize of produces with high level alimentary safety and high nutritive values. The studies will show what types of enzymes can be used for extraction antioxidants substances from grapes and what kind of selected yeasts can be used in biotechnology for to have a sure and very good technological process.
***Keywords**: selected yeasts, enzymes, red wine, biotechnology, polyphenols, anthocyans, antioxidants*

Introduction

The reduced size of microbial cell determines a powerful influence from the environment through different chemical, physical and biological factors, leading either to its adjustment or to its disappearance (Ribereau-Gayón, 2003). The main factors that operate on the microbial cell are either of physical nature: temperature, the environment osmotic pressure, the homogenization degree during the fermentation and maceration phases, or chemical nature: the concentration of oxygen, SO_2, environmental pH, acetic aldehide, alcohol, glucide and nitrogen or by biochemical nature: exogenetic and endogenetic enzymes, growing factors, vitamins, Actibiol fermentation, activating agents (Gheorghita, 2002).

Experimental

We used experimental models that include the following aspects: the influence of selected yeasts about the containing in anthocyans between wine making, evolution of polyphenolic compounds between the red wine evolution and the influence of SO_2 doses too. Concerning the composition it was established the following parameters: the anthocyans, volatile acidity, color tonality and color intensity. The color intensity and color tonality by spectrophotometer method were determinate.

An experiment for identification the limit of sulphure anhydride who can exercise favorable actions by technological order witch strictly respect of OMS normative about utilization of this antiseptic and antioxidant product was made. We had determinate the influence at separation phases of grape juice and at 5 months after fermentation. All of the results are average of 3 measurement effectuated at term describe.

All the analysis (tests) were done in accordance with the elaborate methods of International Organisation of Vine and Wine (O.I.V.V.) and adopted by Institutul Central al Viei şi Vinului – Valea Călugărească (I.C.V.V.)

Results and Discussions

The effects of SO_2 in increasing doses in relation with biological factor – yeasts results from date of table 1. In similar conditions of experimental, sulphure anhydride in dose from 75 mg/l to 100 mg/l applied concomitant with load maceration recipients, determinate advantage of compositional, olfactory and economic order.

At 5 mounts from red wine obtaining, at variant without sulphure and at variant with low doses of sulphure, anthocyanic complex registered important modification. In this way, the content in anthocyans record lower values between 8-31 % from total anthocyans compounds, and color intensity record decrease between 26.1-31.2 %. The color tonality record increase wit 8 and 18 percents as against with variant with 75 mg/l sulphure added where the tonality record an increase with 6 percent.

The high values of color tonality at non sulphure variant after 5 months from wine making shoes that oxidation process destroyed in important measure the red pigments who determinate modification in chromatic structure by increase the proportion of yellow and orange pigments. These situation determinate modifications in taste, smell and color like in oxides cassation – red wine disease.

The red wines without sulphure added and red wines with low doses in sulphure, haven't antioxidant protection present at the finish of fermentation period and after 5 months from wine making, increase in volatile acidity as against wit all of variants with sulphure anhydride with 50 mg/l doses.

The doses over 100 mg/l SO_2 determinate low difficulty by organoleptic order and diminution of color intensity determinate of substance discolor.

Conclusions

As a consequence of their superior power of fermentation, selected yeast leaves less residual sugar in wine, but the proportion of residual sugar in wine, for the same kind of yeast, varies depending on the fermentation activator we chose, fact that suggests that the parameters of chemical composition we analyzed vary not only according to the yeast that achieves fermentation but also according to the process of stimulating it. The use of biotechnologies in the wine-making industry determines the obtaining of intensively colored dark-red wines by surpassing the legislation requirements and making possible the diminishing of the maceration period from the economic and qualitative point of view.

References

Gheorghită, M, Muntean, C., Baduca, C. (2002). *Enologie. vol. II*. Ed. Sitech, Craiova

Ribereau-Gayón, P., Glories, Y., Maujeau, A.Y., Dubourdieu, D. (2003). *Tratado de enología. (Tomo II). Química del vino. Estabilización y tratamientos*. Hemisferio Sur y Mundi Prensa.

Table 1. The conjugate influence of selected yeasts (Y.S. – T73/P) and increase doses of SO_2 on chromatics characteristic and volatile acidity from red wines (Cabernet Sauvignon, Banu Mărăcine)

Characteristic	Technologic stage	SO_2 Doses (mg/l)						
		0	25	50	75	100	125	150
Anthocyans mg/l	At phases separation (PS)	615	640	696	726	732	740	768
	After 5 months (5 M)	420	590	605	642	667	670	672
Color Intensity	At phases separation (PS)	0.61	0.69	0.79	0.99	1.15	1.20	1.24
	After 5 months (5 M)	0.42	0.51	0.68	0.85	0.93	0.98	1.01
Color Tonality	At phases separation (PS)	0.61	0.58	0.52	0.50	0.48	0.49	0.46
	After 5 months (5 M)	0.72	0.63	0.59	0.53	0.52	0.50	0.50
Volatile acidity g/l H_2SO_4	At phases separation (PS)	0.48	0.43	0.36	0.34	0.31	0.30	0.30
	After 5 months (5 M)	0.62	0.51	0.48	0.40	0.43	0.40	0.40

Color intensity = $D_o420 + D_o520 + D_o620$: Color tonality = D_o420/ D_o520
D_o420 = Optical density read at 420 nm wave length
D_o520 = Optical density read at 520 nm wave length
D_o620 = Optical density read at 620 nm wave length
Experimental condition: Sugars 212g/l; Acidity 4.629 g/l H2SO4;
Classical process of maceration, Temperature of maceration = 27-28°C