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THE EXPRESSIVENESS OF THE CHARACTERS IN THE PROCESS OF CREATING NEW VARIETIES OF VINES

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Abstract

In the present article are reflected in results of the study about of resveratrol the concentration the juice berries of vine varieties both at the wild and how the culture. As the object of study having served: Muscadinia rotundifolia Michx. and varieties of interspecific hybridization results obtained with Vitis vinifera L. subsp. D.C. sativa, Vitis vinifera L. subsp. sylvestris C.C. Gmel., varieties of vine cultivation. Conducted a comparative analysis about the expressiveness of of resveratrol species of wild the vines and how the expresses the chemical compounds to progeny obtained as a result of hybridization. As a result of the researches it was concluded that the concentration of resveratrol species of wild vine is much larger, nearly double as compared to the descendants of these species and how it are advancing in generations, ie removing us from wild species the concentration of resveratrol decreases in the juice berries of vine.

Keywords: *berry, pathogenic agents, polyphenols, resveratrol, vines*

INTRODUCTION

The development of grapevine growth in the course of his evolution has known many breeding methods, such as the natural selection or directed (intraspecific interspecific clones, genetic engineering, etc.). An desideratum of the global science and practice remains to be the obtaining of new varieties of vines for quality, absolutely resistant to attack by phylloxera (root and leaf), etc. [2]

The process of creating new varieties of vines can bring the to changing and biochemical spectrum of chemical compounds responsible for flavor, color and taste of berries, juice and wine obtained.

The plants of vines in response to the attack of pathogenic agents (fungi, bacteria, etc.), secrete biologically active substances from the group of polyphenols - resveratrol with protective function.

As a result of studies carried out it was found that the red wine and especially is rich in polyphenols, the latter exerting positive effects on the body.

Basically, when reference is made to polyphenols, one means a the whole family chemical compounds that includes flavonoids, lignin or coumarin. Today, as a result of studies and researches are the more than 4 000 known polyphenols different the physiological of which the effects depend on the structure of the molecule. The plant polyphenols represents powerful antioxidant substances that protect cells and the body both the overall or by neutralizing free radicals are formed within processes or due to physiological influences environment where we live, managing to slow down the aging process of the body. [16; 17]

Polyphenols - resveratrol, for red wine characteristically is found in increased quantities in the grapes, berries and peel both in the grapevine buds. The plants produce this polyphenols (resveratrol) to protect themselves from infection. In wine, the amount of resveratrol varies according to the species of the vine, the pedo-climatic that increases the as well as method of cultivation of the plants (eg in vineyards sprinkled where the protection is secured externally the amount of polyphenol is lower).

This polyphenolic compound is found in nature in four different forms, of which trans-

resveratrol appears to be the most biologically active.

Resveratrol is of interest from three different points of view:

• oenological - phenolic compound involved in determination of color, taste and maturing the of the wine, participates in oxidation-reduction the reactions etc.

• phytopathological - proprietary of defense against phytopathogenic organisms;

• pharmacologically - the compounds with antioxidant properties / radical scavengers in the organism, preventing and treating different diseases: cardiovascular, cancer etc. [18]

MATERIALS AND METHODS

In the study were included species of vine: *Muscadinia rotundifolia* Michx., *Vitis vinifera* L. subsp. *sylvestris* C.C.Gmel., *Vitis vinifera* L. subsp. *sativa* D.C., hibrizii interspecifici de viță-de-vie: *Vitis vinifera* L. subsp. *sativa* D.C. x *Muscadinia rotundifolia* Michx. [3, 4, 6, 7, 8, 9, 16]

Uvological and biochemical studies have been conducted at the Agricultural the Superior School Montpelier, France and the Institute of Scientific and Practical Horticulture and Food Technology of the Republic of Moldova. [12, 13, 14, 16, 19, 21, 22]

RESULTS AND DISCUSSIONS

The resveratrol represents a fitoalexină of the vine which determines resistance to: *Botrytis cinerea*, *Daktulosphaira vitifoliae* (Fitch 1855) etc. [18, 19]

It is significant that the species of wild vines *Muscadinia rotundifolia* Michx. has the on average 35 mg/l of resveratrol. (Fig. 1 and Fig. 3)

Trans-resveratrol varies within from 4.9 mg/l to 13.4 mg/l and cis-resveratrol varies in the range of 9.2 mg/l to 35 mg/l. (fig. 2)

As a result of interbreeding *Vitis vinifera* L. subsp. *sativa* D.C. with *Muscadinia rotundifolia* Michx. have been created interspecific hybrids by vines.

Analyzing the juice from the berries varieties of vine *Vitis vinifera* L. subsp. *sativa* D.C. x *Muscadinia rotundifolia* Michx. It has been a higher concentration of resveratrol. Varieties with yellow-green berries have the resveratrol in the range of 4.9 mg/l (DRX-M4-510 etc.) to 9.3 mg/l (DRX-M4-515 etc.) and the variety of blue-violet berries have 8.5 mg/l (DRX-M3-3-1 etc.) to 14.0 mg/l (DRX-M4-660, etc.). (fig. 2)

By comparing the concentration of resveratrol of the vine varieties of Cabernet-Sauvignon, Merlot and Pinot Noir, cultivated in the south of the Republic of Moldova has been found that the concentration of resveratrol in the juice berries of these varieties have varied from 5-7 mg/l.

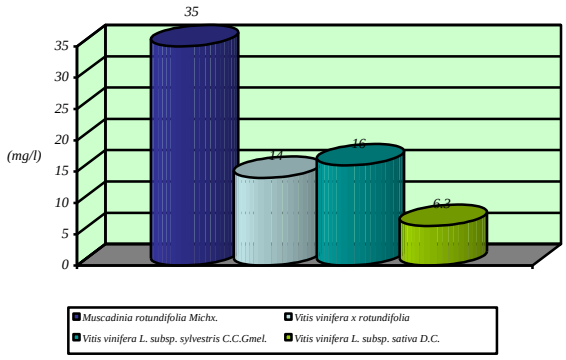

Fig. 1. The outstanding amount of resveratrol from of vines varieties.

Therefore, the concentration of resveratrol in interspecific varieties berries *Vitis vinifera* L. subsp. *sativa* D.C. x *Muscadinia rotundifolia* Michx., exceeds almost twice the concentration of this component as compared to with varieties *Vitis vinifera* L. subsp. *sativa* D.C.

Analyzing the juice of berries forest vine (*Vitis vinifera* L. subsp. *sylvestris* CCGmel.) with blue-violet berries, has been found that resveratrol concentration within the limits 16.0 mg/l. (Fig. 1)

By determining the concentration of resveratrol in vines berries varieties *Vitis vinifera* L. subsp. *sativa* D.C. it was found that the cis-resveratrol concentration which vary from 0.8 mg/l to 3.9 mg/l, and the concentration of trans-resveratrol varies over a range from 1.2 mg/l to 6.4 mg /l. (Fig. 4)

Analyzing the results of the biochemical study on grapevine berries the expressiveness of resveratrol it has been found that the juice of wild berries vines varieties resveratrol concentration is significantly higher than in cultivated varieties of vines.

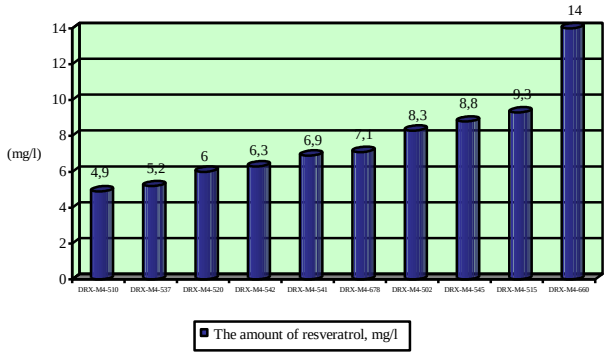

Fig. 2. The amount of resveratrol in berries varieties of interspecific vines *Vitis vinifera* L. subsp. *sativa* D.C. x *Muscadinia rotundifolia* Michx.

The wild vine of American origin *Muscadinia rotundifolia* Michx. has approximately 35 mg/l of resveratrol and varieties of interspecific hybridization result of obtained with this species have on average about 11 to 14 mg/l.

Looking at the further the works interspecific hybridization, the interspecific varieties with involve, by advancing generations, it is determined that the concentration of this chemical compound, also will decrease.

This assertion may be observed when creating the vine varieties within species *Vitis vinifera* L.

By determining the total concentration of resveratrol in the berries of the vine forest, subspecies *Vitis vinifera* L. subsp. *sylvestris* C.C.Gmel. within the limits 16 mg/l. However, subspecies, varieties of the grapevine cultivated *Vitis vinifera* L. subsp. *sativa* D.C. varies between average of 4-6 mg/l.

Therefore, be found that, the more is advanced in generations, appropriate by obtaining new varieties of vines, thus moving away our from of the initial the species (of spontaneous) concentrations of the chemical compounds (especially resveratrol) are the decreasing.

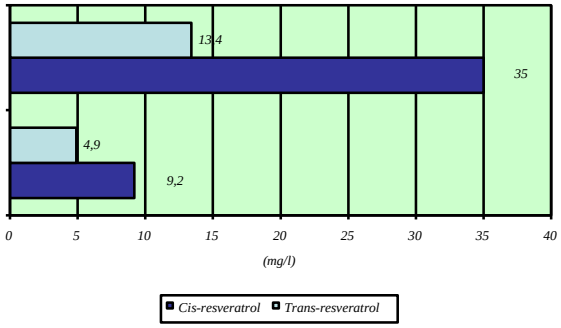

Fig. 3. The concentration of resveratrol in the berries of *Muscadinia rotundifolia* Michx.

It is very important as to the creation of new the vines varieties, both the interspecific hybridization method, and the intraspecific to take into account of the concentration of the chemical compounds in berries that provide plant resistance to certain of the environment factors.

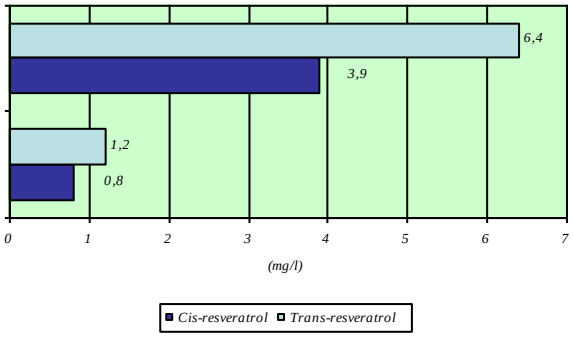

Fig. 4. The concentration of resveratrol in the berries of *Vitis vinifera* L. subsp. *sativa* D.C.

CONCLUSIONS

When creating of new the vines varieties, both the interspecific hybridization method, and the intraspecific it is very important to take into account the concentration of the chemical compounds in the berry, resveratrol that ensure plant resistance to certain of the environment factors.

The concentration of resveratrol of the species of the wild vine is much larger, nearly double as compared to the descendants of these species and as well as it progresses in the generations, ie moving away us from the wild species, the concentration of resveratrol in the juice berries of vines decreases .

The generation is advancing by obtaining new varieties of vines, thus moving away from our of the initial the species (of spontaneous) concentrations of the chemical compounds (especially resveratrol) are the decreasing.

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