



CHROMATOGRAPHIC DETECTION OF RUTIN IN THE AROMATIC AND SEMI AROMATIC ROMANIAN AUTOCHTHONOUS MUSTS VARIETY

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Abstract: The aim of the present essay is the detection of the phenolic rutin compound, a phenolic compound with antioxidant properties, in musts coming from autochthonous variety. The detection and quantification of the rutin has been carried out through chromatographic methods HPLC, resulting the identification in three must variety, Sauvignon blanc (SB), Feteasca regala (FR), Pinot noir (PN), coming from Recas vineyard. The obtained values have been situated between 1.828 ng/l for Feteasca Regala and 200.945 mg/L for Sauvignon blanc.

Keywords: rutin, phenolic compounds, musts, HPLC

INTRODUCTION

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Rutin is the glucose form of the quercetin flavonoid, being considered by the specialists as a powerful antioxidant, with direct implications in the amelioration of capillary bleeding, which are a complication in cases of hematuria, diabetic retinopathy, petesiale hemorrhage, hemoptysis, digestive hemorrhage; the growth in capillary fragility associated to allergic disease, the capillary degeneracy associated to hypertension and arterosclerosis; gum bleeding (Zhao et al., 2011). The rutin improves the resistance of the capillary endothelium and the hemodynamic of the capillary system, facilitating the nutritional blood flux at the tissue level (Peng et al., 2011; Casella et al., 2011; Arrigoni et al., 2011). Rutin reduces the rate of capillary filtration with the diminution of the interstitial edema. This improves the exchange of oxygen and metabolisms at the cellular level. Plus, the rutin has a cytoprotection effect due to the antioxidant properties, protecting the endothelium cells against free toxic radicals (Crevillen et al., 2009; Hongbin et al., 2011; Rezaei et al., 2011). The rutin is benefic in the reestablishment of the normal functions of the capillary endothelium in the conditions of high capillary fragility.

Rutin can be found in citrus fruit, grapefruit, oranges, fruit as apples, berries, blackberry, bilberry but also in species as the asparagus and the *Fagopyrum tataricum* Gaertn, the Polygonaceae family.

MATERIALS AND METHODS

Musts coming from Recas vineyard, variety as Sauvignon blanc (SB), Feteasca regala (FR), Pinot noir (PN), Chardonnay (CH), Cabernet Sauvignon (CS), Merlot (M).

The fenolic compounds have been determined through the HPLC method, by using HPLS SURVEYOR PLUS PDA Plus detector – Thermo; Chromatographic column – Accuare PFP; Dimensions 100* 2,1 = Thermo Scientific; Particle dimension 2.6 microns. HPLC is fitted with: Cuaternal pump, with 2 pistons tandem in a series and continuous piston washing; Automatic sample injection system, injection loop of 25 micro liters; UV-VIS detector, array diode and fluorescence detector; Oven for the control of temperature; Degasification system for solvents; Control software for the HPLC system and data acquisition/processing. The final sample is filtered without any other preparation.

The results are expressed in mg/L - ppm

RESULTS AND DISCUSSIONS

As a result of the conducted determinations, it has been concluded that the rutin was not traced in the Chardonnay (CH), Cabernet Sauvignon (CS), Merlot (M) musts while its' concentration reaches 200,945mg/L in the Sauvignon blanc (Figure 1, Table 1) must. A value this high has never been signaled in Feteasca regala and Pinot noir, where this compound reaches values between 1,828mg/L and 5,201mg/L (Figure 2, Table 2).

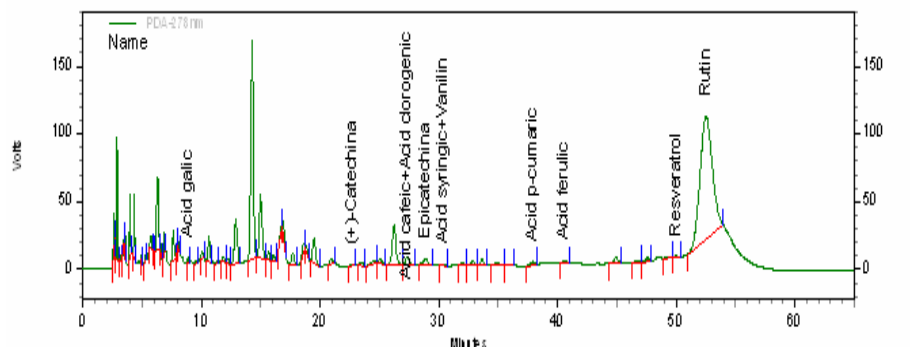


Figure 1. Chromatogram of the fenolic compounds identified in the Sauvignon blanc musts

Table 1. The fenolic compounds identified in the Sauvignon blanc musts

Pk #	Name	Retention Time	Area	Concentration
20	Acid galic	8.882	27550	1.893
39	(+)-Catechina	22.745	18910	5.567
44	Acid cafeic+ Acid clorogenic	27.322	124066	3.101
45	Epicatechina	28.893	102487	3.932
46	Acid syringic+ Vanilin	30.370	20307	0.216
52	Acid p-cumaric	37.920	46857	1.913
53	Acid ferulic	40.580	22468	0.203
58	Resveratrol	50.005	19118	0.451
59	Rutin	52.522	6601398	200.945
	Acid trans-cinamic			0.000 BDL
Totals			6983161	218.220

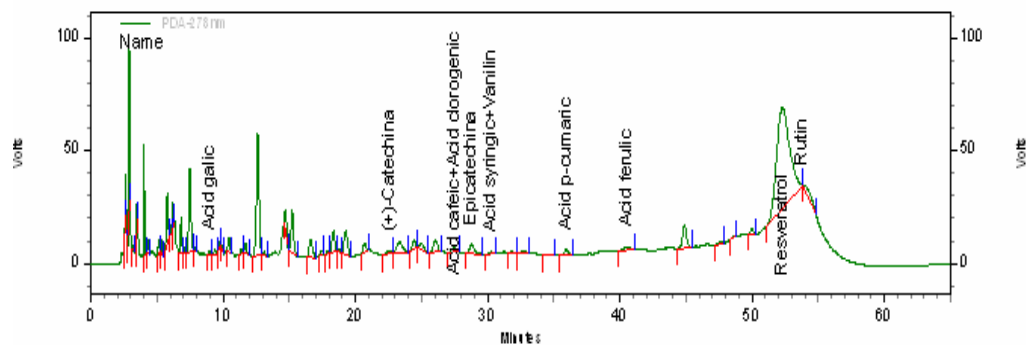


Figure 2. Chromatogram of the phenolic compounds identified in the Pinot noir musts

Table 2. The phenolic compounds identified in the Pinot noir musts

Pk #	Name	Retention Time	Area	Concentration
17	Acid galic	8.960	17596	1.784
35	(+)-Catechina	22.568	29816	5.931
40	Acid cafeic+ Acid clorogenic	27.468	62313	2.706
41	Epicatechina	28.797	102768	3.940
42	Acid syringic+ Vanilin	30.233	18665	0.212
46	Acid p-cumaric	35.967	57549	1.961
47	Acid ferulic	40.533	36147	0.326
52	Resveratrol	52.297	3071969	16.348
53	Rutin	53.847	124546	5.201
	Acid trans-cinamic			0.000 BDL
Totals			3521369	38.409

In the case of the Feteasca regala (Figure 3, Table 3), the rutin can be found in quantum of 1,828mg/L, a value representing 3.2% of the total phenolic compounds that have been identified.

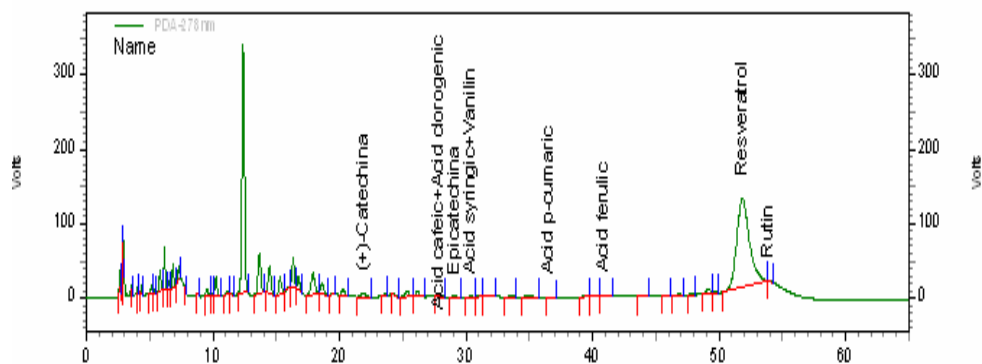


Figure 3. Chromatogram of the phenolic compounds identified in the Feteasca regala musts

Table 3. The phenolic compounds identified in the Feteasca regala musts

Pk #	Name	Retention Time	Area	Concentration
	Acid galic			0.000 BDL
33	(+)-Catechina	21.890	115931	8.805
38	Acid cafeic+ Acid clorogenic	27.818	69909	2.755
39	Epicatechina	29.057	22888	1.537
40	Acid syringic+ Vanilin	30.395	10297	0.189
45	Acid p-cumaric	36.545	11232	1.754
48	Acid ferulic	40.910	39417	0.356
55	Resveratrol	51.847	8236868	43.245
56	Rutin	53.883	12927	1.828
	Acid trans-cinamic			0.000 BDL
Totals			8519469	60.467

CONCLUSIONS

The rutin identification in grape musts leads to their recommendation in the natural treatment of different affections stated above. The quantification of the rutin in musts through chromatographic methods leads to the premises of some exact and secure determinations, the above presented methodology making the identification and detection of those so valuable components possible, even in small amounts. The detection of this compound leads to the

recommendation of the natural raw material extraction in view of establishing and usage on the naturist market.

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