

STUDIES REGARDING THE PRODUCTION OF WINE AROMATIZED WITH *ARTEMISIA ABSINTHIUM*

CERCETĂRI PRIVIND PRODUCEREA VINULUI PELIN

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Abstract. *The present paper aims at studying aromatised wines, respectively wine aromatised with Artemisia absinthium, due to his rich history and use since the Greek and Roman era. Hypocrates from Kos (469-372 bCh), this wine was used as medicine. The Greeks named it Hypocrates' wine, while the Romans absinth wine. In Romania, this is considered a traditional wine. Unfortunately, at the present moment, wine aromatised with Artemisia absinthium sp. is considered having a lower quality than regular wines, as the raw matter used usually has health issues. That is why the present study aims at optimising the technological process for obtaining Artemisia absinthium wine as well as its structural and sensorial characteristics.*

Key words: aromatized wines, Romanian wines, *Artemisia absinthium*

Rezumat. *În lucrarea de față s-au studiat vinurile aromatizate, respectiv vinul pelin, datorită istoriei sale și a numeroaselor utilizări atribuite de greci și romani. Încă din vremea lui Hipocrate din Kos (469-375 î.Hr.), acesta era folosit ca medicament. Grecii îl numeau vin hipocratic, iar românii l-au botezat vinum absinthianum. În România, acest vin este considerat un vin tradițional. Din păcate, în momentul actual, vinul pelin este considerat inferior vinurilor stricto-sensu, fiind de obicei obținut din materii prime cu probleme de sănătate. De aceea, studiul actual se axează pe optimizarea procesului tehnologic de obținere a vinului pelin dar și pe calitățile structurale și senzoriale ale acestuia.*

Cuvinte cheie: vinuri aromatizate, vinuri românești, *Artemisia absinthium*

INTRODUCTION

Aromatized wines refer to those wines where plants, infusions or/and extracts of plants have been added in order to give them sensorial characteristics different from those of *stricto sensu* wines (Cotea and Cotea, 2010). The most popular aromatized wines are retsina, *Artemisia absinthium* wine, vermouth, bitter (Macici, 2008).

Artemisia absinthium wine is obtained from adding into must or wine fresh or dry plants of the *Artemisia absinthium* species, as such or as powder or as macerate. According to specific literature, *Artemisia absinthium* wine can be

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classified into three quality groups white *Artemisia absinthium* wine, red *Artemisia absinthium* wine, superior *Artemisia absinthium* wine, with the following characteristics:

Traditionally, in Romania, *Artemisia absinthium* wine is drunk starting with 1st of May, when village festivities begin.

Table 1

**Chemical composition of *Artemisia absinthium* wine
(STP 702-92)**

Compositional characteristics	Group		
	white <i>Artemisia absinthium</i> wine	red <i>Artemisia absinthium</i> wine	superior <i>Artemisia absinthium</i> wine
Alcohol, min. % vol.	10.0	10.5	11.5
Total acidity, min. g/L tartaric acid	4.5	4.5	4.5
Volatile acidity, max. g/L acetic acid	1.23	1.23	1.23
Reductive sugars, min. g/L	14	14	14
Nonreductive dry extract, min g/L	15	15	15

Unfortunately, *Artemisia absinthium* wine has gained a bad reputation because, in general, wines that have problems are used as base wine, hoping that the new taste and smell will cover the faults. Indeed, *Artemisia absinthium* has, as cited, lots of aromatic properties (Milică *et al.*, 2012).

This article wants to promote a traditional Romanian wine and to diversify the commercial offer, using proper technological processes and products.

MATERIAL AND METHOD

As base material, a red must obtained from a cuve of Novac, Fetească neagră, Negru de Drăgășani, Vulpe grape varieties was used and a white must obtained from a cuve of Fetească albă, Aligote, Muscat Ottonel, Riesling was used.

25 L of each must were divided in 5 samples, obtaining thus 10 final variants. After adding the aromatized whole plants, in a muslin bag, the musts fermented separately, at the same temperature of 20 °C. The used yeasts were Fermactiv AP® from Sodinal, France, 0.2 g/L. The general technological flux was in accordance with the processing technology for obtaining red and white wines (Cotea and Sauciuc, 1985)

The plant and fruits that were used to aromatize the wine were combined such as each sample was different, as can be seen in table 2.

V0, V5. Control samples for the red and the white wine

V1. Red wine with *Artemisia absinthium* sp.

V2. Red wine with *Artemisia absinthium* sp. and apple slices

V3. Red wine with *Artemisia absinthium* sp. and quince slices

V4. Red wine with *Artemisia absinthium* sp. and apple and quince slices

V6. White wine with *Artemisia absinthium* sp.

V7. White wine with *Artemisia absinthium* sp. and apple slices

V8. White wine with *Artemisia absinthium* sp. and quince slices

V9. White wine with *Artemisia absinthium* sp. and apple and quince slices

Table 2

Quantities of *Artemisia absinthium*, apple, quince for 5L wine

No.	Variant	<i>Artemisia absinthium</i> (g/L)	Apple (g/L)	Quince (g/L)
1	V0, V5	0	0	0
2	V1, V6	12	0	0
3	V2, V7	12	80	0
4	V3, V8	12	0	80
5	V4, V9	12	40	40

The basic analyses were conducted on the 10 samples, according to OIV methods, as well as conducting a sensorial evaluation with a panel.

RESULTS AND DISCUSSIONS

The values for the main parameters of the red wine samples (tab. 3) do not vary very much, the addition of apple and quince slices influence the density which varies between 0.9911 and 0.9923 g/cm³.

Table 3

Red wine samples analysis

Parameter	V0	V1	V2	V3	V4
Free SO ₂ (mg/L)	13.3	15.90	12.65	25.31	11.68
Total SO ₂ (mg/L)	60.36	69.45	56.46	70.42	64.25
Density (g/cm ³)	0.9918	0.9919	0.9918	0.9923	0.9911
Total acidity (g/L tartaric acid)	5.2	4.97	5.13	4.97	4.97
Volatile acidity (g/L acetic acid)	0.27	0.30	0.33	0.33	0.32
Alcoholic concentration (% vol.)	11.49	11.48	11.44	11.40	11.16
Remanent sugars (g/L)	1.44	1.44	1.39	1.45	1.41
Total dry extract (g/L)	18.3	18.5	18.3	19.3	20.1
Non-reductive extract (g/L)	16.86	17.06	16.91	17.85	18.69

The wines' total acidity ranges from 5.2 g/L tartaric acid (control sample) to 4.7 g/L tartaric acid, while the volatile acidity is inverse, the smallest value being found in the control sample, namely 0.27 g/L acetic acid.

The alcoholic concentration in all samples is over 11% vol., the highest being, again, in the control sample, namely 11.49% vol. The content of remanent sugars is low, all wines are dry. The highest total dry extract is found in the sample where *Artemisia absinthium*, apple and quince slices were added, while the lowest is found, naturally, in the control sample.

The values for the main parameters of the white wine samples (tab. 4) show some differences according to the addition they suffered. Therefore, the density of the control sample is, just like in the case of the red wines, the smallest.

White wine samples analysis

Parameter	V5	V6	V7	V8	V9
Free SO ₂ (mg/L)	18.49	19.62	17.96	22.5	24.66
Total SO ₂ (mg/L)	68.47	66.53	70.20	60.50	64.52
Density (g/cm ³)	0.9892	0.9895	0.9896	0.9896	0.9894
Total acidity (g/L tartaric acid)	2.75	2.70	2.54	2.65	2.56
Volatile acidity (g/L acetic acid)	0.45	0.42	0.44	0.40	0.50
Alcoholic concentration (% vol.)	11.78	11.780	11.74	11.82	11.80
Remanent sugars (g/L)	1.65	1.50	1.61	1.58	1.62
Total dry extract (g/L)	13.40	13.50	13.80	12.00	12.60
Non-reductive extract (g/L)	11.75	11.90	11.50	11.69	11.48

The total acidity, confirming the results from the above analyses, is the highest in the control sample, decreasing in the rest of the variants. As 2015 has been a very hot year, without much rainfall, the acidity of the must and respective wines has suffered a lot, reaching values that can prove dangerous for the conservation of the future wines and which, moreover, are in contradiction with the National Vine and Wine Laws. Volatile acidity is well under the legal limit in all samples. The alcoholic concentration is over 11.7% vol. Remanent sugars analysed in all samples, are, as before, in low quantities, all white wines are dry.

The resulted graphs concerning the sensorial profile of red *Artemisia absinthium* wine (fig. 1) and white *Artemisia absinthium* wine (fig. 2) are seen below.

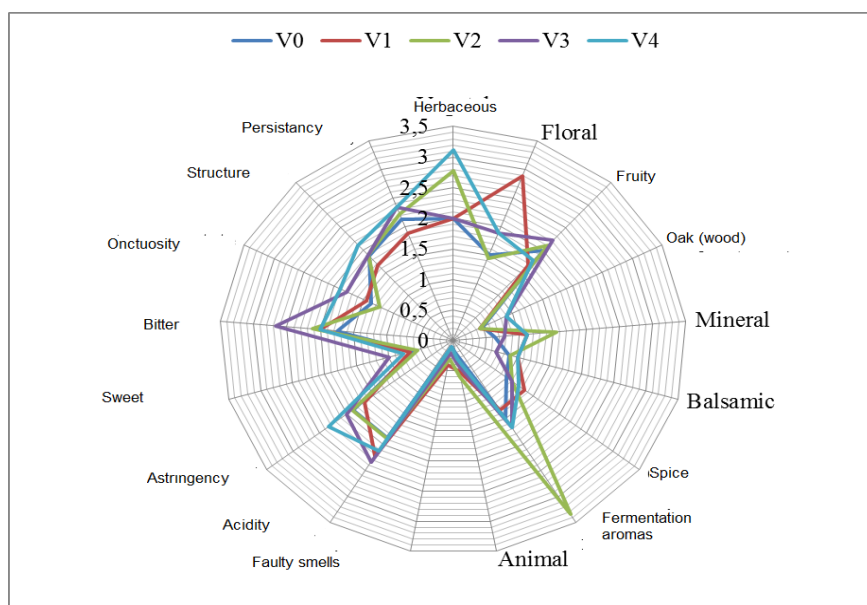


Fig. 1 Aromatic profile of red *Artemisia absinthium* wines

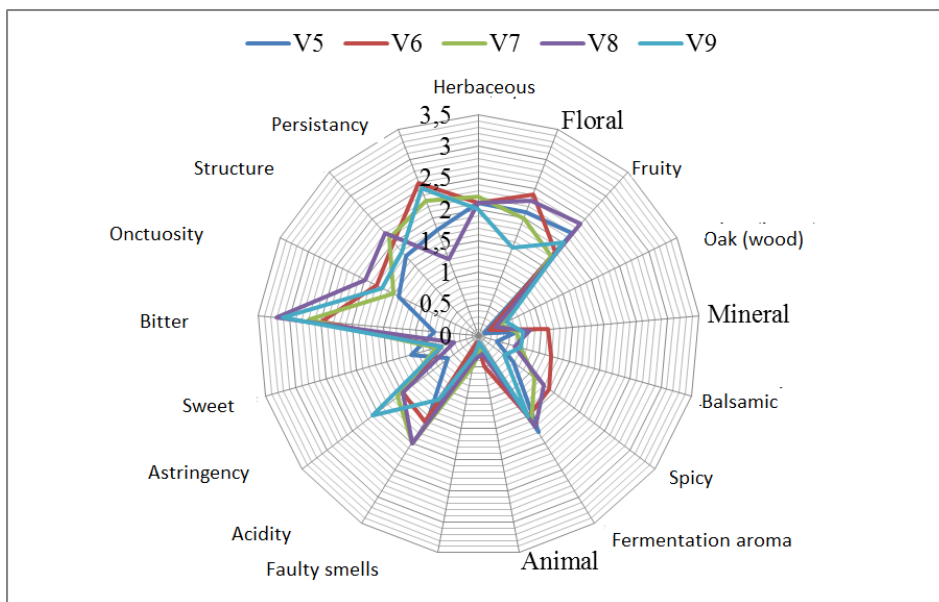


Fig. 2 Aromatic profile of white *Artemisia absinthium* wines

The red wine samples differ a lot regarding their sensorial properties. The most herbaceous one has been identified as V4, where *Artemisia absinthium*, apple and quince slices have been added. The floral index was evaluated as high in the sample where only *Artemisia absinthium* was added, decreasing in other samples. Fermentation aromas were felt very intensely in V3, where, beside the aromatic plant, quince slices were added, registering high values for the bitter taste as well.

For the white wine samples, the sensorial profile is more equilibrated. As before, the most bitter taste is identified in the sample where *Artemisia absinthium* was used in complex with quince slices, as well as the fruity index. The most herbaceous and floral sample was perceived to be the one where only *Artemisia absinthium* was added. The sample with the highest astringency was recored as the one where the aromatic plant, apple and quince slices were used.

CONCLUSIONS

In Romania, *Artemisia absinthium* wines, although considered traditional, was not the subject of proper scientific studies, as it has always been given a bad reputation. Taking into account the correct and proper way in which the analysed *Artemisia absinthium* wines have been obtained, the following conclusions can be drawn:

- The physical-chemical properties of the analysed samples are not modified extensively by the addition of plants and fruits.
- The samples where apple and quince slices were added, alongside with *Artemisia absinthium*, had the highest astringency, while the variants where only *Artemisia absinthium* was added, were evaluated as having the most intense floral notes.
- The white wines exhibited a much more intense bitter taste than the red samples, suggesting that, for white *Artemisia absinthium* wines, a bigger quantity of plants or a higher amount of time must be used.

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