COMPARATIVE STUDY OF SOME WHITE ROMANIAN AND CYPRIOT WINES

STUDII COMPARATIVE ALE UNOR VINURI ALBE CIPRIOTE SI ROMÂNEŞTI

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Abstract: *The Republic of Cyprus, a country well known to the Romanian consumers for its special sweet wines Commandaria, produces also still wines that are much appreciated. The specific climatic conditions of Cyprus, subtropical climate - Mediterranean and semi-arid type with very mild winters (on the coast) and warm to hot summers, have a colossal influence on the obtained wines. Snow is possible only in the Troodos Mountains in the central part of the island. Rain occurs mainly in winter, with summer being generally dry.The aim of this study is to analyze from a physical-chemical point of view some typical Cypriot wines and, in parallel, some Romanian wines. The wines are either commercial or authentic samples (produced in the laboratory by applying classical technologies).*
Keywords*: Cypriot wines, Romanian wines, structural analysis*

Rezumat: *Republica Cipru, o țară cunoscută consumatorilor de vinuri datorită vinului special Commandaria, produce de asemenea şi vinuri liniştite extrem de apreciate. Condițiile climatice specifice țării şi anume climatul subtropical, mediteranean şi semi-arid, cu ierni foarte blande şi veri foarte călduroase, joacă un rol foarte important în dezvoltarea structurii vinurilor. Precipitațiile apar rar, mai ales iarna, zăpada se găseşte doar în muntii Troodos. Scopul acestui studiu este analiza comparativă a unor vinuri albe din Cipru şi din România, pentru a determina structura acestora. Probele analizate sunt atât comerciale dar şi experimentale (obținute prin metode cunoscute, în laborator).*
Cuvinte cheie*: vinuri cipriote, vinuri româneşti, analize structurale*

INTRODUCTION

Climate is the most important factor in the success of all farming systems, with a major influence in determining the crop's quality for a given region as well as a measure of quality control of plant products and management of economic sustainability (Cotea and Sauciuc, 1985; Jones, 2008).

Cyprus has a subtropical climate – Mediterranean and semi-arid type (in the north-eastern part of the island) with very mild winters (on the coast) and

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warm to hot summers. Snow is possible only in the Troodos Mountains in the central part of island. Rain occurs mainly in winter, with summer being generally dry. Cyprus has one of the warmest climates in the Mediterranean part of the European Union – situated in C III b EU area. The average annual temperature on the coast is around 24 ^{o}C during the day and 14 ^{o}C at night. Generally, summers last about eight months, beginning in April with average temperatures of 21-23 ^{o}C during the day and 11-13 ^{o}C at night, and ending in November with average temperatures of 22-23 ^{o}C during the day and 12-14 ^{o}C at night, although in the remaining four months temperatures sometimes exceed 20 ^{o}C. Sunshine hours on the coast are around 3400 per year, from an average of 5-6 hours of sunshine per day in December to an average of 12-13 hours in July.

Up until 2004 all Cyprus wines were basically considered as table wines. Accession to the European Union, however, has necessitated new legislation that would classify the wines produced on the island. Four viticultural regions have been identified which are designated to produce wines of controlled appellation of origin:

1. Akamas Laona (north-west coast of Cyprus) - both red and white wines. In the case of red wines at least 85% of the blend should be derived from one of the two local varieties of Maratheftiko and Ofthalmo and for white wines 85% of the blend should come from the local variety Xynisteri.

2. Vouni Panayias – Ambelitis (western part of the island at an altitude of over 800 metres) both white and red wines may be produced. White wines must use Xynisteri as the basic constituent (at least 85%). Red wines may be produced in two ways: the basic constituent must be either one of the two indigenous varieties of Maratheftiko or Ofthalmo to a level of at least 85%, or the local Mavro variety (at least 60%) supplemented by over 30% of one of specified foreign varieties (Cabernet sauvignon, Cabernet franc, Syrah, Merlot etc.).

3. Pitsilia (32 villages all situated on the slopes of Madari, Papoutsa and Maheras mountains) - production of white wines, Xynisteri must constitute at least 85% of the blend and for red wines either Maratheftiko or Ofthalmo must constitute at least 85% of the blend, or the blend may be made up of 60% Mavro and 30% of one of the specified foreign varieties.

4. The wine villages of Limassol (southern slopes of the Troodos mountains - 20 villages aka wine villages). Prominent in the wine villages region are two subregions - Afames and Laona. The production of both white and red wine in the wine villages region is based on the same grape varieties as in the Pitsilia region.

Terroir is a highly important concept in viticulture because it relates the sensory attributes of wine to the environmental conditions in which the grapes are grown (Van Leeuwen *et al.,* 2004).

MATERIAL AND METHOD

The Cypriot wine varieties taken into study were represented by :

1. Xynisteri -the prevailing white grape variety of the Cypriot vineyard. It produces excellent light-coloured white wines, with low alcohol levels and acidity, especially when it is cultivated in such regions as Laona of Akamas, Ambelitis, Vouni Panayia, Pitsillia. Its grapes do not have an intense aroma. Xynisteri wines are not suitable for extended ageing. This is the only other variety apart from Mavro that is used for making Commandaria.
2. Spourtiko - The name Spourtiko means "bursting", a reference to its berries whose fragile skin splits easily. It is a variety with a short vegetative cycle with medium-sized, loosely-packed cluster with big berries of golden-yellow colour. Spourtiko is also the variety that can give a solution to the problematic pollination of Maratheftiko. Aromatically is a neutral variety, so the floral aromas of its wine seems to derive exclusively from the alcoholic fermentation.
3. Promara – White, very rare grape variety, with big and compact cluster and big berries. Resists very well to the drought and the calcareous soils that characterize the Cypriot vineyard. It has great resistance to the cryptogamic diseases and to the enemies of the vine because of its thick skin. Disposes aromatic precursors that can be expressed in the wine, by using the appropriate winemaking techniques giving wines characterized by aromas of watermelon and exotic aromas. Its wines present well-balanced acidity and the capacity to mature in oak barrels.

The Romanian wine varieties taken into study were represented by Grasă de Cotnari, Sauvignon blanc, Pinot gri, Riesling italian, Aligoté, Tămaioasă romanească, Fetească regală, Traminer roz, Francusă, Neuburger, Muscat Ottonel, all harvested from the Ampelographic Collection of USAMV Iasi.

The analytical methods used to determine these parameters were in accordance with the European standards and those imposed by the OIV (OIV, 2013).

RESULTS AND DISCUSSIONS

The results are presented in table 1 (Cypriot wine samples) and table 2 (Romanian wine samples). The Cypriot areas where the wines have been produced are also mentioned.

The white grape varieties of Cyprus produce wines with an alcoholic concentration that ranges from 5.3%vol. to 15.01% vol. The climatic conditions that influence a high accumulation of sugars stand at the base of this, as well as legislative and technological processes allow wines with a lower concentration of alcohol. The Romanian samples range between 10.08% vol. and 14.1%vol.

The acidity of the analysed samples is between 3.83 g/L tartaric acid (Cypriot Spourtiko variety – sample no. 11) and 9.14 g/L for Aligoté (sample no. 5) in Romania. The intense metabolisation of acids in grapes is also a results of extreme climatic conditions, especially heat. The pH is equilibrated in all wines, as well as the volatile acidity, showing no signs of future microbiological problems.

The remanent sugars show that the majority of analysed samples are dry, a small percentage surpassing the Romanian legislative benchmark of 4 g/L.

Table 1

Physical-chemical analysis of Cypriot wine samples

Cyprus wine samples	Free SO_2 (mg/L)	Total SO_2 (mg/L)	Vol. acidity (g/L)	Total acidity (g/L)	Density	Alcohol (vol.%)	Remanent sugars (g/L)	Total dry extract	Non-reductive extract	pH
Promara - Lemesos 2012	13.01	100.22	0.19	5.31	0.9962	10.23	2.62	25.3	22.68	3.6
Chardonnay – Pafos 2012	8.45	83.1	0.31	6.29	0.997	9.96	4.68	27.1	22.42	3.5
Morokanella – Lemesos 2012	5.71	47.71	0.17	4.72	0.9954	9.83	4.48	22.4	17.92	3.6
Spourtiko – Lemesos 2012	10.5	52.05	0.18	4.13	0.9958	8.06	2.47	17.7	15.23	3.68
Xynisteri – Pafos 2012	7.53	93.6	0.3	4.03	0.994	9.73	1.82	18.5	16.68	3.8
Sauvignon blanc – Lemesos 2013	9.82	107.3	0.44	6.09	0.9921	13.92	6.68	26.3	19.62	3.25
Promara – Lemesos 2013	11.19	95.88	0.18	5.01	0.9918	10.37	1.6	15	13.4	3.4
Promara – Lemesos 2013	7.99	82.18	0.19	5.26	0.9913	12.23	5.63	19	13.37	3.06
Morokanella – Lemesos 2013	15.52	139.7	0.29	4.86	0.9933	8.07	0.91	11.3	10.39	3.34
Chardonnay- Pafos 2013	5.94	117.5	0.22	5.21	0.9938	12.01	1.28	25	23.72	3.6
Spourtiko – Lemesos 2013	6.39	124.4	0.19	3.83	0.9973	5.3	0.9	12.6	11.7	3.4
Xynistery – Lemesos 2013	7.08	148.1	0.19	3.88	0.995	7.5	0.84	13.9	13.06	3.5
Xynisteri – Coumandaria 2013	7.31	39.49	0.63	4.81	0.9878	15.01	2.04	18.3	16.26	3.8
Xynisteri – Coumandaria 2013	8.9	79.22	0.37	4.91	0.9905	12.25	1.37	17.2	15.83	2.9

Table 2

Physical-chemical analysis of Romanian wine samples

Romanian wine samples – Ampelographic Collection USAMV Iasi	Free SO_2 (mg/L)	Total SO_2 (mg/L)	Vol. acidity (g/L)	Total acidity (g/L)	Density	Alcohol (vol.%)	Remanent sugars (g/L)	Total dry extract	Non-reductive extract	pH
Grasa de Cotnari 2014	62.09	147.25	0.25	8.55	0.9905	11.6	1.7	19.8	18.1	3.02
Sauvignon blanc 2014	160.94	259.79	0.29	8.94	0.9895	11.24	1.1	16.2	15.1	3.08
Pinot gri 2014	65.52	138.57	0.33	6.68	0.9879	14.49	4.81	21.6	16.79	3.24
Riesling italian 2014	103.41	159.35	0.29	7.07	0.9886	11.83	0.77	15.7	14.93	2.91
Aligoté 2014	105.24	145.73	0.33	9.14	0.9909	10.08	0.72	16.2	15.48	3.03
Tamaioasa romaneasca 2014	75.11	138.57	0.31	6.93	0.9943	11.63	15.47	29.4	13.93	3.12
Feteasca regala 2014	40.63	103.64	0.43	6.92	0.9911	13.94	6.63	23.7	17.07	3.21
Traminer roz 2014	33.79	82.87	0.25	6.73	0.9871	14.1	1.67	18.5	16.83	3.23
Francusa 2014	86.74	132.4	0.41	8.54	0.9886	11.87	0.63	15.7	15.07	2.98
Neuburger 2014	61.63	138.11	0.45	7.71	0.9922	12.44	10.63	26.8	16.17	2.9
Muscat Ottonel 2014	43.6	109.34	0.33	6.43	0.9895	12.2	1.34	19	17.66	3.21

The total dry extract and non-reductive extract have values specific for white wines, exception being the wine samples where a short maceration or *batonnage* was applied (Chardonnay).

The free sulphur dioxide varies a lot between the Romanian and the Cypriot samples, in the latter being in very small quantities (5.71 mg/L to 13.01 mg/L) while in the Romanian samples these are much higher.

The low quantities of free sulphur dioxide can also be explained by the *milléssime* of the wines (some are from 2012, some from 2013).

CONCLUSIONS

White Cypriot wines vs. Romanian wines show the huge influence the climatic conditions have on the wine-making sector. Therefore, the highest alcoholic concentration 15,1 %vol. (Cypriot sample) compared to 14,4 %vol. (Romanian sample).

The lowest total acidity is found in a Cypriot sample -3,83 g/L compared to 6,43 g/L (Romanian sample).

The highest non-reductive extract for white wines is 23,7 g/L (Cypriot sample) compared to 18,1 g/L (Romanian sample).

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