STUDY ON FALSIFICATION AND THE TYPES OF FALSIFICATIONS DETECTED IN THE WINES IN DOLJ COMMERCIAL NETWORK

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ABSTRACT

The official control of wine products is done by the speciality inspector of the State Inspection for the Technical Wine Control.

The aim of the study is to analyse: the types of nonconformities existing in the wines displayed for marketing, the number of wine samples with detected additions that are not allowed, the geographic area that they come from and the evolution of nonconformities during the studied period.

The analysis of the wines existing in the commercial network of Dolj County during the period 2006-2012 highlights nonconformities and falsifications of the wines through the dilution of the wine with water, through hiding some faults or alterations of the wine, through additions and the use of any practices that are illegal according to the current wine law.

INTRODUCTION

Frauds in wine production are as old as the wine itself, and the means used by falsifiers have an impressive variety (Nămoloşanu Ion, Antoce Arina Oana, 2005).

Most of the cases, falsifications do not harm wine's innocuity, but it distorts its characteristics and affects consumer's image and trust in the naturalness of the product (Bulancea Mircea, Gabriela Râpeanu, 2009).

Wine should be cherished as it is in its natural state, with the content of substances harmoniously balanced, with the perfume and raciness preserving the memory of the place and time when it was produced (Popa Aurel, 2008).

Knowledge of wine's chemical composition in compliance with the standards admitted by wine-growing regulations is very important in order to detect the nonconformities and especially falsified, which made the object of detected additions that are not allowed.

Evaluation of wines' naturalness is made by analysis of physical and chemical parameters in agreement with the requirements of the legal standards of these products and the information on the product's label (Vicol Constanţa, 2011).

In order to obtain consumer's trust, authenticity, as a component part of the quality, it should be certain and certified (Stoian Viorel, 2001, Popa A, 2012).

MATERIAL AND METHOD

The study was carried out on a number of 190 wine samples taken during the period of 2008-2012 from different economic agents carrying out wine marketing activities – bulk and bottled- in Dolj County by the wine inspectors within the State Inspection for Dolj Technical Wine Control.

The study material was represented by table wine samples, by geographic area (IC) or Origin Designation (DOC) white and red, having different quality depending upon the

sugar content, obtained by wine producers, natural and legal persons in Romanian vineyards.

Also, in a lower percentage, import wines or from inter-community trade intended for marketing in Dolj County.

The official control of physical, chemical and organoleptic parameters in wines sampled by I.S.C.T.V. inspectors from different economic agents who carry out wine marketing – bulk and bottled- in Dolj County was carried out in one of the five approved laboratories of the Ministry of Agriculture and Rural Development, which meet the general criteria for operation of testing laboratories established by the ISO/CEI 17025 standard, nominated in Annex 1 of Order no. 272 of December 9th, 2010.

For every wine sample taken, a laboratory test report or a test report was issued, in which their most important chemical features were stated, so as to certify the authenticity, respectively: relative density, alcohol content acquired, total acidity, volatile acidity, total dry and non-reducing extract, total and reducing sugar content, citric acid, free and total carbon dioxide, identification of synthetic coloring agents, etc.

RESULTS AND DISCUSSIONS

From 190 samples of wine taken, 89 samples were of bulk wine, approved for sale in authorised stores which sell bulk wine according to H. G 1134 since 2002 and, from 2010, The 224 art fro 2010, the rest of the 101 samples were samples of bottled wine. Concerning the proportion of samples analysed depending on the color of the wine, it was about 50%, i.e. 96 samples of white wine and 94 samples of red wine.

Table 1

Analysed samples situation according to the year of sampling and analysis, marketing, form and sugar content

Year	Samples number	From which:		From which:		From which:			
		Bulk	Bottled	White	Red	Dry	Semi-dry	Semi-soft	Soft
2006	36	23	13	19	17	15	8	12	1
2007	33	20	13	17	16	12	11	9	1
2008	14	6	8	7	7	3	5	4	2
2009	42	19	23	23	19	13	14	12	3
2010	18	3	15	11	7	5	5	8	0
2011	31	16	15	14	17	7	11	11	2
2012	16	2	14	5	11	3	8	5	0
Total	190	89	101	96	94	58	62	61	9

Sample distribution according to the origin reveald that most of the wine analysed samples, bulk or bottled , were produced by the economic agents of the Vrancea County-55, Dolj county-37, County-25 samples, other counties: Mehedinti, Prahova, Constanta, Galaţi, Iaşi, Bacău, being less represented.

From 192 wine samples , bottled or bulk , there were submitted to analysis a number of 13 wine samples coming from intra-community trade or imported, their percentage was pretty small, 6,8%, but enough , taking into account their share on the Romanian market.

Table 2

The situation of the analysed samples depending on the county or country where they have been produced and/or imported

Year	BC	BZ	CT	DB	DJ	GL	IS	MH	PH	TL	TM	TR	VN	VS	Bulgaria	R. Moldova	Spania	Austria	Italia	Total national	Total internaţ.	Total grand
2006	1	4	1	1	4	0	0	5	0	3	1	0	13	1	0	2	0	0	0	34	2	**36**
2007	0	2	0	0	8	0	0	1	5	0	1	0	10	0	0	3	2	1	0	27	6	**33**
2008	0	3	0	0	4	0	0	0	2	0	0	0	3	0	0	1	0	0	1	12	2	**14**
2009	1	6	0	1	14	1	2	1	1	5	0	0	9	1	0	0	0	0	0	42	0	**42**
2010	0	5	1	0	2	1	1	0	0	0	0	0	8	0	0	0	0	0	0	18	0	**18**
2011	0	2	4	0	3	1	1	2	4	0	2	2	10	0	0	0	0	0	0	31	0	**31**
2012	0	3	0	0	2	4	1	0	0	1	0	0	2	0	3	0	0	0	0	13	3	**16**
Total	**2**	**25**	**6**	**2**	**37**	**7**	**5**	**9**	**12**	**9**	**4**	**2**	**55**	**2**	**3**	**6**	**2**	**1**	**1**	**177**	**13**	**190**

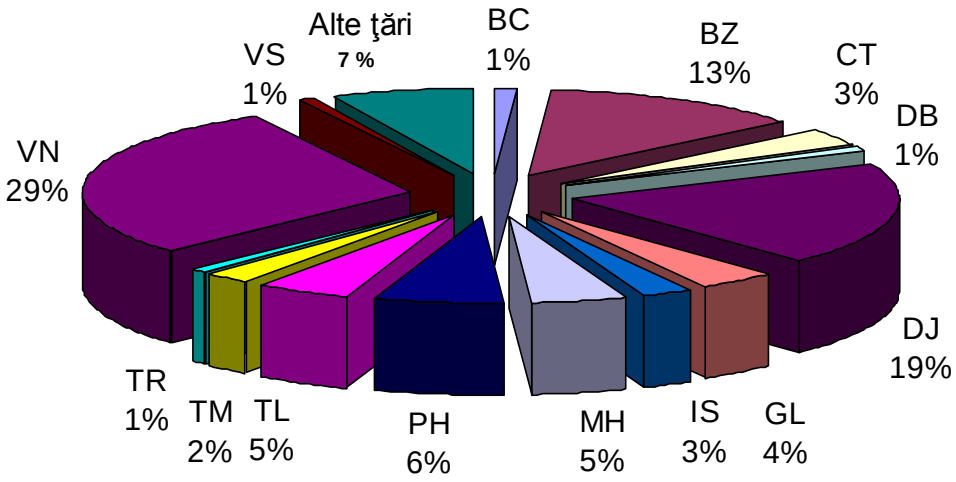

Fig 1 The situation of analysed sample distribution

Following the analysis of 190 wine samples in terms of organoleptic and physicochemical, in one of the five official control laboratories of the Ministry of Agriculture and Rural Development, there were discovered various nonconformities in a number of 71 samples, these representing a percentage of 37% of the total analyzed samples.

Organoleptic depreciations were recorded at 22 wine samples , consisting of the existence of strong oxidized wines with nonspecific aspect with protein deposits and tartaric, etc. Also, it was found that at a number of 8 wine samples were not followed legal provisions relating to the classification of wines in terms of sugar content.

Table 3

The situation of non-compliant samples collected in 2006-2012 from commercial network in Dolj county

Year	Total collected	From which		Non conf samples acc. to organoleptic analyses	Samples that not fit acc to sugar	No. of samples with detected additions that are not allowed				No. of nonconforming samples in terms of composition			
		Com. samples	Non-com. samples			Colorsants addition	Sugar addition	Citic acid addition	Water addtion	Val. ext. <	Val. conc alc. <	Val. ac. tot. <	Addtion wine hibrid
2006	36	15	21	3	2	4	1	7	2	1	-	-	1
2007	33	21	12	5	2	-	-	2	-	2	1	-	-
2008	14	8	6	3	1	-	-	-	-	-	2	-	-
2009	42	25	17	6	1	-	4	1	1	2	2	-	-
2010	18	13	5	2	1	-	-	1	-	-	-	1	-
2011	31	28	3	2	1	-	-	-	-	-	-	-	-
2012	16	9	7	1	-	-	-	2	-	3	-	1	-
Total	**190**	**119**	**71**	**22**	**8**	**4**	**5**	**13**	**3**	**8**	**5**	**2**	**1**

In terms of unpermitted additions, unfortunately, wine along with many other types of food, has been the target of forger acts.

From 190 wine samples taken,the results of laboratory tests showed that 25 of them were the target of fraud. The most common practices of fraud encountered at the wines from Romania, Dolj county in general and, in particular, are: the addition of citric acid, addition of natural or synthetic sweeteners, the addition of colorants and water addition.

Table 4

Wine samples situation discoverd with different unpermitted aditions

Year	Taken samples	Fraud samples	Forged samples			
			Colorants addition	Sugar addition	Citic acid addition	Water addition
2006	36	14	4	1	7	2
2007	33	2	-	-	2	-
2008	14	-	-	-	-	-
2009	42	6	-	4	1	1
2010	18	1	-	-	1	-
2011	31	-	-	-	-	-
2012	16	2	-	-	2	-
Total	**190**	**25**	**4**	**5**	**13**	**3**

Analising the forged wine samples according to their selling method,bulk or bottled, it was discovered that from the 25 samples, 13 samples of bulk wine and 12 samples of bottled wine were forged.

Table 5

Wine sample situations detected forged according to packing manner

Year	Taken samples	Forged samples	From which	
			Bulk	Bottled
2006	36	14	7	7
2007	33	2	2	-
2008	14	-	-	-
2009	42	6	4	2
2010	18	1	-	1
2011	31	-	-	-
2012	16	2	-	2
Total	**190**	**25**	**13**	**12**

The study showed that the forgeries were made almost as much to white wines and red/rose wines.

Table 6

Wine sample situation detected counterfeit depending on color

Year	Taken samples	Forged samples	From which	
			White wine	Red/rose wine
2006	36	14	7	7
2007	33	2	1	1
2008	14	-	-	-
2009	42	6	4	2
2010	18	1	1	
2011	31	-	-	-
2012	16	2	-	2
Total	**190**	**25**	**13**	**12**

From 25 samples of counterfeit/forged wine, it was found a greater number of fraud related to the dry wines,12 samples, followed by demi-dry wine 8 samples and 5 samples of semi-soft wine.

Table 7

Wine sample situation detected counterfeit depending on sugar content

Year	Samples no	Forged samples	From which		
			Dry wine	Semi-dry wine	Semi soft wine
2006	36	14	9	4	1
2007	33	2	-	-	2
2008	14	-	-	-	-
2009	42	6	2	2	2
2010	18	1	-	1	-
2011	31	-	-	-	-
2012	16	2	1	1	-
Total	**190**	**25**	**12**	**8**	**5**

The distribution of the 25 samples of counterfeit wine, in the seven years of study, according to the origin of county of the producer or bottler, it highlights Dolj county and Vrancea county with 8 and 7 samples wine, followed very close by Tulcea , 5 samples.

Counterfeit wine samples producted and/or bottled in one county are coming from one or several manufacturers.

Table 8

Wine samples distribution detected counterfeit according to the origin county

Year	Taken samples	Counterfeit samples	From which						
			Bacău County	Buzău County	Dolj County	Tulcea County	Vrancea County	Galaţi County	R. Moldova
2006	36	14	1	-	3	3	6	-	1
2007	33	2	-	-	1	-	1	-	-
2008	14	-	-	-	-	-	-	-	-
2009	42	6	-	-	4	2	-	-	-
2010	18	1	-	-	-	-	-	1	-
2011	31	-	-	-	-	-	-	-	-
2012	16	2	-	2	-	-	-	-	-
Total	**190**	**25**	**1**	**2**	**8**	**5**	**7**	**1**	**1**

For all nonconformities identified by wine inspectors from State Inspection for Technical Supervision of the wine, Dolj county applied sanctions or criminal proceedings provided by the current legislation .

Thus, the consumption and marketing of wines which do not meet the requirements for quality and composition, often cited as a violation was punished with a fine of 40 000 to

100 000 lei lei, and falsifying the wines, displaying for sale and/or selling them knowing that they are forged it is an offenceand it will be punished under the criminal code, through the drawing up of criminal cases.

CONCLUSIONS

Unhappily, wine, as almost all the products intended for commerce, was the target of actions of falsification and counterfeit.

After the analysis of the 190 wine samples from the organoleptic, physical and chemical points of view, we identified deviations from the current legal provisions with a number of 71 samples, these representing 37% of all the analysed samples.

Of the 190 wine samples 25 samples had forbidden additions, their percent being of about 13.

Among the most frequent fraudulent practices used in commercialized wines in Dolj County are: the addition of citric acid over the maximum limit – 13 samples, the addition of natural or artificial sweeteners – 5 samples, the addition of coloured substances – 4 samples and the addition of water 3 samples.

The counties with most falsified wines are: Dolj, Vrancea and Tulcea, which also have the widest areas of vineyard.

The analysis of the wines in the commercial network during the period of this study, that is 2006-2012, highlights a progressive reduction of the number of falsified wine samples, a fact due to the intense control by the wine inspectors of the State Inspection for the Technical Wine Control and to the establishment of five laboratories for the official wine control by the Ministry of Agriculture and Rural Development.

The economic agents who used fraudulent oenological practices received contravention fines, according to the wine law in effect that year or, depending on the gravity of the deed, they were punished according to art. 313 and 297 of the Penal Code. Considering that certain wine producers were detected and fined more.

BIBLIOGRAPHY

1. **Bulancea Mircea, Gabriela Râpeanu**, 2009 - *Authentication and identification of counterfeit foodstuffs*,Didactic and Pedagogic Publishing House, R.A, Bucharest.
2. **Năməloşanu I., Antoce Arina**, 2005 - *Oenology Fraud control and prevention*, Ceres, Bucharest.
3. **Popa Aurel**, 2008 - *The secret of a good wine. Contributions and refunds*, ALMA Publishing House, Craiova.
4. **Popa Aurel**, 2012 - *The Viticulture from Oltenia between reconstruction and development*, ALMA Publishing House Craiova;
5. **Stoian Viorel**, 2001 - *The great book of wine tasting*, Artprint, Bucharest
6. **Vicol Constanta** 2011 - *Researches on the wine authenticity and genuineness in the wineyards from Moldova*, Doctoral Thesis, Dunarea de Jos University "Galati.
* 2002, Law No. 244 of wineyard and wine in the common organisation of the market in wine of 27 April 2002, Official Gazette of Romania, part I, no. 333/20th May 2002.
* 2002, 769 decree from 28th of July 2010 approving the methodological Norms of the law on wineyard and wine. 244/02, Official Gazette of Romania, part I, no. 798/4th November 2002.
*** 2008, the Minister of Agriculture no. 224 of 7 April 2008 approving the Methodological Norms regarding the conditions of retail table bulk wine.
*** 2010, the Minister of Agriculture no. 272 of 16 December 2010 approving the list of laboratories approved for l analyzes in the wine sector.