

# The influence of the conditioning technological operation of must and wine on the composition characteristics of distillate

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## Abstract

In the last years, was no about of obtaining distilled quality of different types of wine for higher valorification of exceeding wines production and also for the market demand for these beverages. The main way of recovery of quality distillates obtained from wine is aging them in oak vessels to obtain vinars, the Romanian spirits like French cognac.

In this paper are presentated some results on the production of the high quality wine distillate using traditional variety grapes in Drăgășani vineyard.

**Keywords:** distillate, wine, limpidity, volatile compounds

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## 1. Introduction

The wine distillate is production directions which realize the maximum economic efficiency the productive and quality potential of some grapes varieties and, also the pedo-climatic condition of the vineyards [1,2]

Achieve high quality distilled spirits is conditioned by the use of quality raw material wine. Physicochemical characteristics of a good wine for distillation can't be comparable to those for wine consumption [3]. The better wines – raw materials for distillation must have a good aroma, high acidity, low alcohol degree and be low in tannin. Those may be influenced by the variety grapes, conditioning operation of the must and the wine clearly. At this condition add the distillation moment and type, storage conditions and aging [4].

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## 2. Material and method

To achieve this study was used a wine made from that variety Crâmpoșie selecționată, grown in the Drăgășani vineyard. For study the influence of the conditioning operation of must on the composition characteristics of the distillate were fitted these experimental variants: V – Must obtained without pressing the grapes and V1 - must obtained without pressing the grapes + must from first pressing; V – Unclarified must, V<sub>1</sub> - must clarified by decanting 6 hours and V<sub>3</sub> – must clarified by bentonite 1g/L. For study the influence of the clearly wine – raw material at the distillation time on the distillate composition characteristics were fitted two experimental variants: V - wine without lees and V<sub>1</sub> – wine with lees.

Chemical determinations were made using methods recommended by national and international organisms and gas chromatography for volatile compounds

### 3. Results and discussions

The dates from Table 1 highlight the influence of differential assembly operation at the must fraction on the distillate composition.

Press fraction determine at the most compounds analyzed increase or decrease in contents from the must obtained without pressing the grapes, fraction of which gets the best distilled. The increase registered at aldehydes and methyl alcohol is significant and diminishes the quality of distillates. Instead, most compounds that give quality attributes of distillate (esters, ethyl acetate, isobutanol) registered diminished.

Another parameter that can influence the quality of distillate is limpidity degree before alcoholic fermentation of must grape (Table2).

At variant 1, unclarified must, at the volatile compounds level, finds very high content of higher alcohols (Isoamilic alcohol and Isobutanol) which are unfavorable for quality of distillate.

The other two variants, V<sub>1</sub> - must clarified by decanting 6 hours and V<sub>3</sub> - must clarified by bentonite 1g/L, finds that the values recorded by volatile compounds are close in value and smaller as unclarified variant.

Therefore one can say that musts decanting adds more quality attributes at the spirits obtained by those wines. Another important factor on distillate composition is the wine limpidity at the distillation date.

**Table 1.** The composition characteristics of the raw spirits depending on the origin of wine

No. crt.	Chemical compound	Must obtained without pressing the grapes	Must obtained without pressing the grapes + Must from first pressing
1	Alcohol, %vol.	66,2	66,5
2	Total acidity, mg/L acid acetic	506	401
3	Volatile acidity, mg/L acid acetic	267	176
4	Esters, mg/L	798	434
5	Total aldehydes, mg/L	79	105
6	Methyl alcohol, ml/L	0,56	0,67
7	Ethyl acetate, mg/L	290	189
8	Higher alcohols, mg/L	2289	1948
9	n-propanol	55	33
10	Isobutanol	282	251
11	2 methyl 1 butanol	201	259
12	3 methyl 1 butanol	1780	1536
13	Aromatic aldehydes (Do 275 nm)	0,63	0,64

**Table 2.** The influence of the must conditioning on the volatile compounds content of raw spirits

No. crt.	Chemical compound, mg/L	Variants		
		Unclarified musts	Decantation 8 h	Clarified with bentonite 1 g/L
1	Butyl alcohol	110	88	97
2	Isobutanol	1577	759	796
3	Isoamilic alcohol	1999	1190	1270
4	β-phenyl-ethyl alcohol	8,8	6,2	4,5
5	Ethyl capronat	5,3	3,0	3,3
6	Ethyl caprilat	5,9	3,8	4,56
7	Ethyl caprinat	7,0	1,5	1,9
8	Ethyl succinate	3,5	1,6	1,8
9	β-phenyl-ethanol acetate	0,6	0,3	0,3

**Table 3.** The influence of the wine limpidity on the composition characteristics of the raw spirits

No. crt.	Chemical compound	Variant	
		Wine without lees	Winw with lees
1	Alcohol, %vol.	61,6	62,5
2	Total acidity, mg/L acid acetic	191,0	227,0
3	Volatile acidity, mg/L acid acetic	105,0	192,0
4	Esters, mg/L	855,0	901,0
5	Aldehydes, mg/L	150,0	91,0
6	Methyl alcohol, ml/L	0,35	0,29
7	Higher alcohols, mg/L	2,30	2145
8	Isobutanol	338,0	356,0
9	Isoamilic alcohols	1160,0	1195,0
10	Ethyl laurat	7,8	42,0
11	Ethyl capronat	6,7	7,8
12	Ethyl caprilat	11,6	14,9
13	Ethyl caprinat	19,1	62,3
14	Ethyl succinate	1,4	1,4

Wines drawing on coarse deposit formed during alcoholic fermentation and distillation it together with the lees deposition in the range of storage give content contribution more or less significant for some volatile compounds (esters and higher alcohols).

The dates from Table 3 show a higher content in aldehydes in the spirit obtained by the wine without lees due to aeration caused the store separation.

Also, the ester content is influenced by these lees in wine. It finds that for distillation the wine with lees, ethyl laurat and ethyl caprilat (heavy esters) register important increases than ethyl capronat and ethyl caprilat- lightweight esters.

Higher amounts of volatile compounds are not conducive distillate for sensorial characteristics, negative influence of finesse and harmony.

#### 4. Conclusion

- For obtaining high quality distillate must use the must obtained without pressing the grapes which may be administered as appropriate must from first pressing;

- Decanting the musts for obtaining the wines – raw materials for spirits is required as mandatory technological operation;

- The clarified by decantation meet quality requirements to obtain a high quality raw materials;

- The distillate obtained by wines without lees shows a more qualitative in harmony and finesse than spirits obtained by wines with lees.

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