

# THE APPRECIATION OF THE NATURALNESS OF GRAPE WINES OF AROMATIC VARIETIES

## APRECIEREA NATURALITĂȚII VINURILOR DE STRUGURI DIN SOIURILE AROMATE

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**Abstract.** *In order to develop the method of determination of the naturalness of aromatic varieties of grape wines, there was carried out an identification, using the method of masspectrometry of the chromatic mass of aroma compounds of natural wines and of synthetic aromatizers used by manufacturers in grape wine production.*

**Rezumat:** *În scopul elaborării metodei de determinare a naturalității vinurilor de struguri din soiuri aromate, s-a efectuat identificarea cu ajutorul masspectrometriei de masă cromatice a compuşilor de aromă a vinurilor naturale și a aromatizatorilor sintetici utilizați de producători la fabricarea vinurilor de struguri.*

**Keywords:** grape wines of aromatic varieties (Traminer, Muscat), synthetic aromatizers, masspectrometry of chromatic mass.

**Cuvinte cheie:** vinuri de struguri din soiuri aromate (Traminer, Muscat), aromatizatori sintetici, masspectrometrie de masă cromatică

### INTRODUCTION

Due to demands of wines of aromatic varieties, during the last years, the cases of wine manufacturing using synthetic aromatizers have become frequent.

The utilization of the organoleptic method of appreciation of the quality of the synthetic compounds added is subjective. This fact rises up the problem of development of an objective instrumental method of detection of wines containing synthetic aromatizers.

### MATERIAL AND METHOD

There have been investigated the aroma compounds in wines of Muscat and Traminer varieties and of the corresponding synthetic aromatizers.

The analyses have been carried out with extracts of diethyl ether of natural wines and synthetic aromatizers.

The determination and identification of volatile components have been carried out by means of masspectrometry of chromatic mass in conditions of ionization with electric shock and subsequent separation on the capillary column HP-5MS and registration of the characteristic connections in conditions of ionic current.

## RESULTS AND DISCUSSIONS

In the extracts of diethyl ether of the wines of Muscat and Traminer varieties there have been identified nearly 40 aroma compounds. In the tables 1 and 2 are included the aroma compounds that are in larger quantities in these wines. The identification of the volatile components by means of the method of massspectrometry of chromatic mass has proved that the content of the volatile components in the extract of diethyl ether of the studied wines is rather rich in aroma compounds. The surface of the peak of a certain component is directly proportional to the percentage concentration from the sum of all volatile substances. Having compared the content of the volatile components of the extract of diethyl ether of wines of Muscat and Traminer aromatic varieties, it has been noticed an important quantity of  $\beta$ -phenyl-ethanol, that constitutes nearly 40% of the amount of all extracted volatile compounds. So, the main role in Traminer and Muscat wines aroma formation is due to this compound. Aromatic compounds in small quantities are also present, with a small perception threshold and that in combination with the  $\beta$ - phenyl-ethanol give specific shades to Traminer and Muscat wines varieties. In the extract of diethyl ether of the Muscat dry white wine in comparison with that of Traminer, there have been detected compounds with strong aromatic features: Phenylethyl Alcohol., 1,1-dimethoxy dodecane., 3-methyl butanoic acid, 2- methyl butanoic acid, 3-tridecanol., 1-butanol-3-methylacetate., 2,3-pentylene oxide etc. (tables 1, 2). Phenylethyl Alcohol represents a strong floral aroma and may be considered as the main component in the formation of specific aromas of Muscat and Traminer wines. This fact is confirmed by the analysis of the content of the diethyl ether of the corresponding synthetic aromatizers (tables 3 and 4), where Phenylethyl Alcohol is present in both of the synthetic aromatizers.

Table 1.

**Volatile compounds content in the extract of diethyl ether  
of the dry white wine Traminer**

Nr. peak	Retention time, RT min	Peak area %	Name of chemical compound	CAS/Nist98
1	2,41	0,60	2,3-Butylene glycol	513-85-9
9	5,23	1,12	Succinic anhydride	108-30-5
11	5,76	1,46	Isobutyric acid, methyl ester	547-63-7
12	6,73	39,04	Phenylethyl Alcohol	60-12-8
14	7,60	11,56	diethyl succinate	123-25-1
30	11,00	12,07	p-Hydroxyphenethyl alcohol	501-94-0

Having analyzed the experimental results of the aromatic complex of the synthetic aromatizers, it has been proved that the main component of “Traminer” synthetic aromatizer is (R)-(+)- $\beta$ -citronelool (42% of the amount of all the volatile compounds), then  $\alpha$ -linalool, Phenylethyl Alcohol and geranyl butylate (table 3). The comparison of the volatile components from the extract of diethyl ether of the Traminer natural wines and of the “Traminer” synthetic aromatizers showed that in both cases it has been detected Phenylethyl Alcohol, but the Traminer natural wines do not contain (R)-(+)- $\beta$ -citronelool,  $\alpha$ -linalool and geranyl buterate.

Table 2.

**Volatile compounds content in the extract of diethyl ether  
of the dry white wine Muscat**

Nr. peak	Retention time, RT min	Peak area %	Name of chemical compound	CAS/Nist98
1	2,39	1,46	2,3-Butylene glycol	513-85-9
3	2,70	0,23	1,1-dimethoxy dodecane	14620-52-1
4	2,87	0,20	3-methyl butanoic acid	503-74-2
5	2,98	0,12	2-methyl butanoic acid	116-53-0
7	3,30	0,22	3-Tridecanol	10289-68-6
8	3,35	0,23	1-butanol, 3-methyl, acetate	123-92-2
10	4,08	0,20	2,3-pentylene oxide	5405-41-4
20	6,45	0,26	$\beta$ -Linalool	78-70-6
21	6,70	38,48	Phenylethyl Alcohol	60-12-8
22	7,53	13,84	diethyl succinate	123-25-1
36	10,8	13,02	Ethyl caprate	110-38-3

Table 3.

**Volatile compounds content in the extract of diethyl ether  
of the synthetic aromatizer „Traminer”**

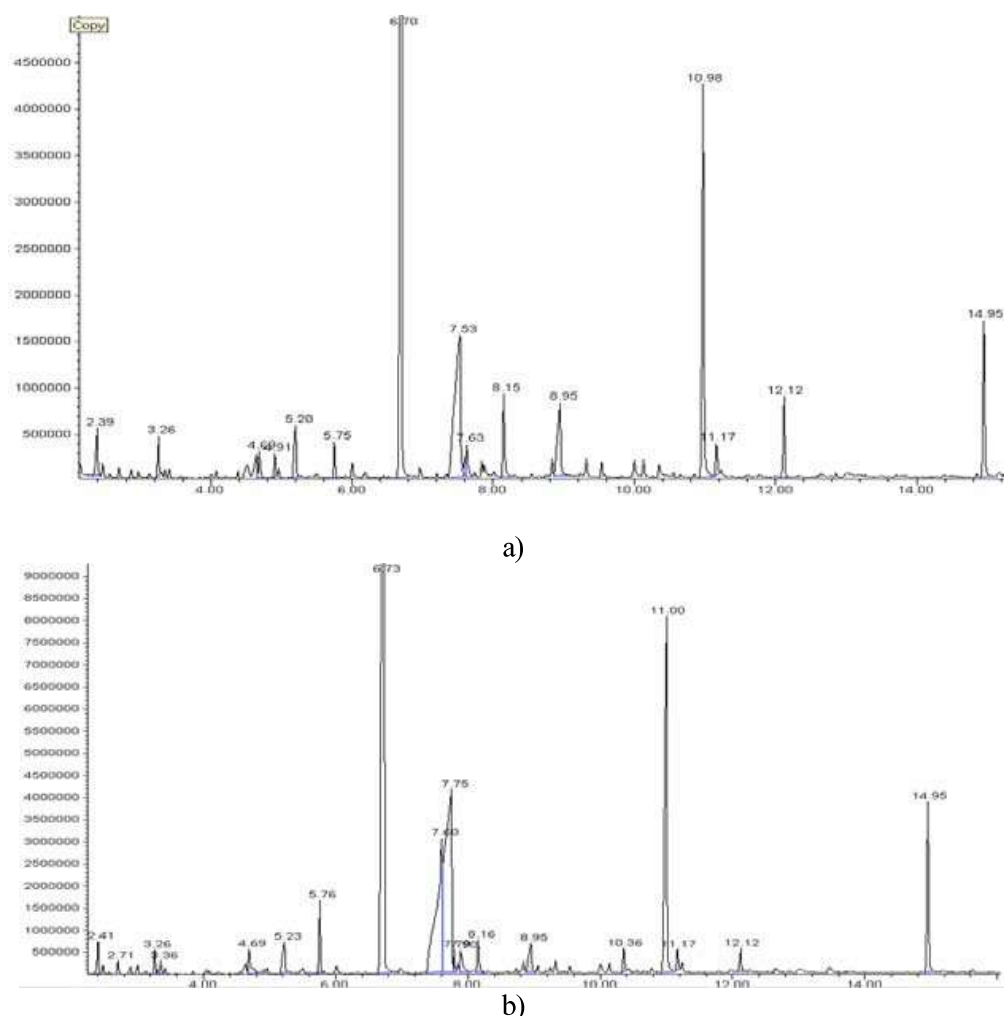
Nr. peak	Retention time, RT min	Peak area %	Name of chemical compound	CAS/Nist98
3	6,68	8,97	Phenylethyl Alcohol	60-12-8
8	8,30	42,05	(R)-(+)- $\beta$ -Citronellol	1117-61-9
9	8,69	12,18	$\alpha$ -linalool	22564-99-4
21	12,63	5,05	geranyl buterate	106-29-6

The main component of the “Muscat” synthetic aromatizer, researched by us, is the ethyl ether of the succinic acid (42% of the total amount of all the volatile compounds), then Phenylethyl Alcohol., Cis-linalooloxide,  $\alpha$ -linalool, acetic acid, 2-phenylethyl ester,  $\beta$ -terpinol (table 4). The comparison of the volatile components of the extract of ethyl ether of the Muscat natural wines and of the Muscat synthetic aromatizer, have shown that the Phenylethyl Alcohol and the diethyl succinate, but in the Muscat natural wine there have not been detected linalooloxid,  $\alpha$ -linalool and  $\beta$ -terpinol.

Table 4.

**Volatile compounds content in the extract of diethyl ether  
of the synthetic aromatizer „Muscat 4”**

Nr. peak	Retention time, RT min	Peak area %	Name of chemical compound	CAS/Nist98
8-9	6,33	5,13	Cis-linalooloxide	121-97-4
10	6,47	2,44	$\alpha$ -linalool	22564-99-4
11	6,80	9,78	Phenylethyl Alcohol	60-12-8
13	7,18	0,60	$\beta$ -terpinol	150-76-1
14	7,71	41,51	diethyl succinate	123-25-1
18	8,77	1,94	acetic acid, 2-phenylethyl ester	103-45-7



**Fig 1.** Aromogramme of volatile compounds in the extract of diethyl ether of dry white wines  
a) Muscat; b) Traminer

## CONCLUSIONS

The obtained results of the identification by means of the massspectrometry of chromatic mass may serve as a basis for the methodology of expertise carrying out, in view to determine the naturalness of the grape wines of aromatic varieties (Traminer and Muscat).

## REFERENCES

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