OBTAINING WINE COOLER PRODUCTS

Adriana Dabija, Iuliana Sion

University of Bacau, Calea Marasesti, 157, 600115 Bacau, Romania,
E-mail: adabija@ub.ro

Abstract: "Wine coolers" – drinks that can be easily prepared in short time and effortless, accessible and easily distributed, bought everywhere. This study is about the wine cooler obtainment on laboratory scale with red wine and orange juice. The achieved products have sensorial and physic-chemical properties that are specifically related, with two components of blend

Keywords: *wine coolers, fruit juices, color parameters*

INTRODUCTION

The last years, consumers have shown a preference for "low-calories" beverages, "low-alcohol" content, freshness beverages, considered more adequate than "prepares wines", as we talk about "rapid and light" meals. In the same time we must not forget the hygienic and nutritional performances and, also, a temperate (controlled) processing.
Concerning these aspects, since 1981, first in USA – a great success – and then in other vitiviniculture countries, a varied range of drinks made from wines and fruit juices, so called "wine cooler", appear.
The innovations need an exactly positioning, a profile, adequate packing, and a correct distribution and a properly moment, in a single word: concepts. Good ideas are not enough. Worldwide, a decreasing trend in wine consumption and global production has been taking place. The main causes may be the European consumers' tendencies towards beer and high alcohol content drinks. Especially at young generations in France, Spain, and Italy – there are countries with a high percentage in wine consuming.

Consumers' general knowledge these concerning bought drinks are more complex and must require new changes in this industry [2].
Having a general view on beverages consumption, it can be observed that:

- people want healthy products and a large variety of products' aspect;
- traditional beverages consuming is under international influence and new beverages are developed;
- youngsters have an increased refusal for traditional products;
- it has been observed an increased curiosity for "far off" culture drinks;
- a look for "short time preparing" products;
- curiosity for new products;
- recovering for old values.

Innovating beverages, fashionable in Romania too, are winning consumers by the variety of composition, by medicinal herbs, each of them having a role that improves health. All these aspects have radically improved beverage market structure, therefore, the traditional drinks such wine's position may became instable.
Wine cooler drinks have a small alcohol percentage, nutritional, strengthening prepared with wine, fruit-juice, vegetable-juice, and natural flavored extracts. Wine is regularly common-wine, usually from new harvest or maybe concentrated wort, partially fermented. Common wine is used 50% per total product. Concentrated wort partially fermented is used only 10%. Unquestionable quality and basic nutritional elements cooler-beverages are developed by wine: ethyl alcohol – 45-160 g/l; glycerol – 4-20 g/l; amino acids – 0.5-4 g/l; tannins – 0.1-3 g/l; vitamins [3].
Cooler wine means low content alcohol drinks (5 - 6%) made with wine and aromatic fruit juice. Usually there are used: common white wines, light pink and red wines, concentrated wort, aromatic herbs extracts, wines synthetic attar and synthesis flavors, citric acid for acidity amelioration, soft water.
Cooler wines may be also produced by secondary fermentation (conditioning). These have a better foaming developed by the achievement of conditioning after tirage cuvee, respective after processing dilution with soft water until 5-50% alcohol content and adding concentrated wort for 20 g/l tirage liqueur.
Acidity is corrected by adding citric acids at 4.5 - 4.8 g/l. Selected starters are used in $4 \cdot 10^7$ cells/ml quantities. Fermentation needs temperatures like 10-12^{0}C lasted about 30 days. After fermentation the bottles are staked and then disgorged. At disgorgements are added expedition liqueur and flavors (aromas).
This study is about the wine cooler obtainment on laboratory scale with red wine and orange juice.

MATERIALS AND METHODS

The tests used red wine, Merlot, harvest 1997, having following physic-chemical parameters: alcohol concentration: 11% vol.; carbohydrate content: 3.5 g/l; total acidity: 4.01 g H_2SO_4/l; pH: 3.30; total dry matter: 30 g/l.
We have used orange juice, obtained by fruit peeling, pulp chopping and squeezing and result following physic-chemical parameters: dry matter content: 13.6%; carbohydrate content: 123 g/l; total acidity: 4.5 g H_2SO_4/l; pH: 4.1.
The final product aroma improvement was achieved by introducing orange peel alcoholature in mating recipes. For getting this alcoholature (extract) it has been used

only colored part of orange peel – means "cedra"- that contains most of aromatic terpenic oils (albedo- skimmed part of peel it's not used because we getting bitter taste, unflavored trouble that alcoholature and it consuming much alcohol. Chopped "cedra" have introduced in alcoholature for 10 days in alcohol solution and before this it have been clarified by filtration.

The raw materials: red wine and orange juice and also the final products have been examined sensorial and physical-chemical by using following methods:

- sensorial properties – sensorial analysis – testing temperature: red wine – 15^0C wine cooler – 10^0C;
- color – spectrophotometer method – by measuring wine optical density extinction at 420 nm, 520 nm and 620 nm the resulting values estimating color intensity and nuance;
- total acidity – titrimetric method – titrating wine and wine and wine cooler acidity with NaOH solution with known titer, having phenol red as indication 1% alcohol solution as indicator;
- pH – electrometric method laboratory pH-meter;
- dry matter content – refractometric method;
- dry extract total content – refractometric method – it have been estimating by dry matter content of dealcoholizing wine;
- carbohydrate content: orange juice – refractometric method; wine and wine cooler – chemical method.

Coloring intensity is estimated by summing optical density at 420, 520 and 620 nm in under a 10mm layer comparing with distilled water (Glories indicator):

$$IC = d_{420} + d_{520} + d_{620}$$

Color tonality is represented by ratio of 420 nm optical density and 520 nm optical density, that means the proportion of yellow color compared with red color:

$$T = \frac{d_{420}}{d_{520}}$$

The proportion of each colour in total colour has been calculated by ratio of optical density and coloring intensity [1].

RESULTS AND DISCUSSIONS

Wine cooler products obtained from red wine and orange juice have been prepared in 4 variants (table 1).

Table 1. Experimental methods – making recipes / 1 l final product

Raw materials	Experimental variant			
	Variant A	Variant B	Variant C	Variant D
- red wine, [ml]	500	600	750	800
- orange juice, [ml]	500	400	250	200

In each of 4 variants it was added 5 ml orange peel alcoholature. Also, it has been added a certain quantity of sugar for correcting products carbohydrate content, so that sugar content in after products being the same, and also sensorial analysis haven't been affected.

The products have been treated with SO_2 at technological doses and bottled in 330 ml glass containers. The samples have been analyzed at moment "zero" and we proposed another analyze after three months storage. Seven members group has developed the sensorial analysis.
The physical-chemical results and color parameters for wine coolers are emphasized in tables 2 and 3.

Table 2. Physical-chemical parameters for wine coolers

Physical-chemical parameter	Experimental variant			
	A	B	C	D
Total acidity, [g H_2SO_4/l]	3.773	3.73	3.73	3.806
Dry matter content, [g/l]	72	71.3	75	76
Carbohydrate content, [g/l]	63.5	62.8	65.7	66.3
pH	3.64	3.60	3.52	3.48

Table 3. The color parameters for wine coolers

Color parameters of wines	Experimental variants				
	A	B	C	D	Wine
Coloring intensity	1.161	1.446	2.112	2.562	5.301
Color tonality	1.49	1.39	1.36	1.46	1.33
Color ratio:					
- yellow color	54.61	53.39	52.75	54.61	51.91
- red color	36.60	38.38	38.87	37.51	39.07
- violet color	8.79	8.23	8.38	7.88	9.02

CONCLUSIONS

After these experiments we may conclude:
- the achieved products have sensorial and physical-chemical properties that are specifically related, with two components of blend; variant 1 and 2 are noticed by specific characters of orange juice, having also a color diminution variant 3 and 4 are noticed by specific characteristics for red wine;
- sensorial qualities of products are: freshness, fructosity, pleasant and harmonious taste, these outlines the properties for new products that are agreed by consumers; besides, orange juice is characterized by high content of vitamin C (50-150 mg/100 g juice), mineral salts, acids, oligoelements.

REFERENCES

1. Ana, C.: *Manual de lucrari practice in oenologie,* Editura Fundatiei Universitare "Dunarea de Jos" Galati, **2002**
2. Dabija, A.: *Tehnologii si utilaje in industria alimentara fermentativa,* Editura Alma Mater, Bacau, **2002**
3. Leonte, M.: *Vinul – aliment, tonic, medicament*, Editura Pax Aura Mundi, Galati, **2000**