CHARACTERIZATION OF DIFFERENT ASSORTMENTS OF DISTILLED ALCOHOLIC BEVERAGES FROM BANAT REGION (ROMANIA)

Gabriel Bujancă, Călin Jianu*, Nicoleta Gabriela Hădărugă, Ioan David, Ducu Sandu Ștef, Corina Iuliana Megyesi

Faculty of Food Engineering, University of Life Sciences "King Mihai I" from Timisoara, Aradului Street no. 119, 300645 Timisoara, Romania

Corresponding author: calinjianu@usvt.ro

Abstract: The aim of this work was to give the analyzed products (different distilled alcoholic beverages from Banat region, Romania) a better appreciation because of the great organoleptic properties they possesses. The finished product specific to Banat, is palinca and is an alcoholic drink with at least 50% vol (alcohol levels), obtained through the specific process of fruit fermentation and double distillation, without the addition of sugar, other sweeteners or synthetic flavors, with natural coloring (from the barrel).

These drinks are highly competitive worldwide with other similar products such as whiskey or different American distilled spirits.

In order to obtain these distilled beverages we used different types of raw materials such as apricots, quince and peaches. In comparison we described other products well known and consumed in Romania like liqueur, cognac, whiskey, gin, maraschino.

After distillation, the palinca must undergo a maturation process at least for six months, in barrels and it is not allowed to touch metal or plastic surfaces, in order to preserve its specific aroma. A very big advantage of this product is that it is a "clean" product, without any additives.

In this paper, a case study was carried out regarding the determination of the alcohol concentration (using a densimeter, pycnometer and alcohol meter) as well as the determination of the heavy metal content: Zn, Cu, Pb, Cd from obtained distilled beverages, using the atomic absorption spectrometry method in air-acetylene flame.

• Introduction

The major goal of the food industry is to find an efficient methodology to add value to food, most of the time, during processing. Food processing should lead to minimal loss of nutrients and of course, the final product should have a value that covers the cost of processing, but also ensures a certain profit.

Many fruits are perishable and therefore processing to extend their shelf life or to prepare more secondary products is one of the most effective approaches and challenges. Moreover, the world population being in continuous growth, an increase in the global market of alcoholic beverages is also expected
• *Determination of alcohol concentration using a pycnometer.*
• *Determination of alcohol concentration using an alcohol meter.*
• *Determination of heavy metals from brandy samples.*
Alcoholic drinks are considered liquid food products that have a percentage of ethyl alcohol in their composition. In the category of natural alcoholic beverages, we can mention brandies, known by the locals as pălincă, țuică, horincă (traditional alcoholic beverages from Romania), alcoholic beverages based on wine, cognac or natural rum. Also, in the same category of natural alcoholic drinks we can include industrialized drinks, which represent a slightly modified version of the basic recipe (liqueurs or flavoured brandy).
Brandy can have magical health effects if it is prepared cleanly and consumed in small quantities. It is not recommended that brandy therapy become a habit, and increasing the therapeutic dose can lead to alcoholism. Thus, brandy must be regarded as a medicine towards which the necessary attitude must be taken.

• Material and method

A case study was made regarding the determination of the alcoholic concentration and the content of metals: Zn, Cu, Pb, Cd in different varieties of brandy (obtained from apricots, quinces and peaches). The brandy samples were purchased from local producers, from the Banat area of Romania.
The determination of the alcoholic concentration (strength) of brandy samples was carried out by density measurements of distillate, through several methods, namely: determination with a densimeter or thermodensimeter, determination with a pycnometer and determination with an alcohol meter.
Determination of alcohol concentration (strength) using a densimeter or thermodensimeter.

Conclusions

It can be concluded that the brandy varieties analyzed do not present a risk of contamination with heavy metals. This is due to the lack of polluting agents of anthropogenic and geogenic nature, but also to the normal fermentation-distillation process and the hygienic quality of the copper basins and barrels in which these natural distilled alcoholic beverages are prepared and stored.

• Results and discussions

• The experimental results obtained after determining the alcoholic concentration of brandy samples using the three determination methods are presented in table 1. These results were obtained after the temperature correction and the density/alcohol strength correlation.

Table 1. Alcohol concentration values (V, %) for brandy samples, determined by the three methods

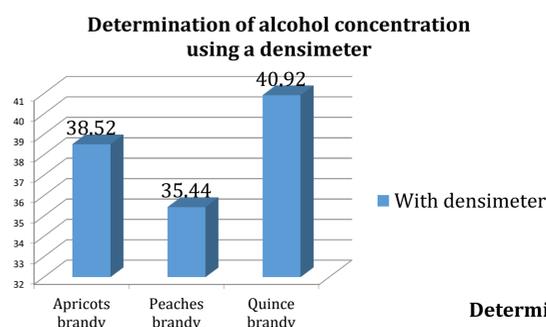| Analysed brandy sample	Method of determination			Average values
	With densimeter	With pycnometer	With alcohol meter	
Apricots brandy	38,52	39,15	39,02	38,89
Peaches brandy	35,44	35,85	35,75	35,68
Quince brandy	40,92	41,31	41,50	41,24

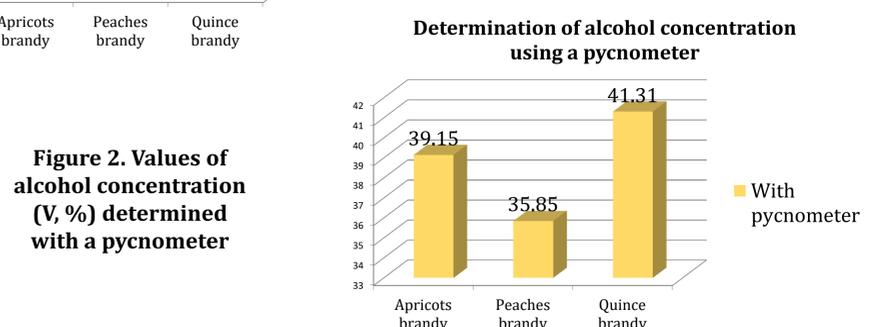Figure 1. Values of alcohol concentration (V, %) determined with a densimeter

Figure 2. Values of alcohol concentration (V, %) determined with a pycnometer
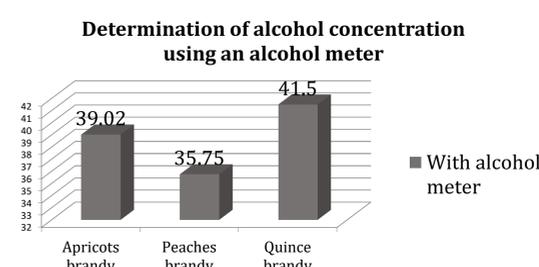

Figure 3. Values of alcohol concentration (V, %) determined with an alcohol meter