Scientific Works. Series C. Veterinary Medicine. Vol. LXIII (1)
ISSN 2065-1295; ISSN 2343-9394 (CD-ROM); ISSN 2067-3663 (Online); ISSN-L 2065-1295

EVALUATION OF DIFFERENT TYPES OF BEER QUALITY AND CONSUMERS` SAFETY

Oana Mărgărita GHIMPEŢEANU, Florin FURNARIS

University of Agronomic Sciences and Veterinary Medicine of Bucharest,
59 Marasti Blvd, District 1, Bucharest, Romania

Corresponding author email: margaritaghimpeteanu@fmvb.ro

Abstract

In the context of high consumption of different types of beer and given the consumer demand regarding the food safety, the purpose of this study was represented by the quality control of these products using physicochemical methods. The data revealed information regarding pH value, alcohol content, carbon dioxide content, value of the original, real and present extract, energetic value and foam quality determination. The results showed an uniformity of data from lots of the same sort, which proved a core in applying of the quality management system. In conclusion, it can be said that products obtained in the studied unit meet quality requirements imposed by applicable standards and consumption of these products presents no risk of physicochemical nature.

Key words*: beer, food safety, quality, physicochemical analyse.*

INTRODUCTION

Beer was discovered thousands of years ago and became a very often consumed beverage for its refreshing and pleasant taste, but also as a reason to relax, meet with friend and social interaction (Walton, 2006).

A moderate beer consumption of around 330 millilitres per day for women and two beers for man brings a real benefit for health, reducing the risk of diabetes, osteoporosis and cardiovascular disease (Banu et al., 2011).

It is considered that consumption of beer and wine are more beneficial than drinking sparkling wine or distilled beverages (Tăpăloagă, 2012). In this context, this paper presents an analysis of 3 different types of beer and quality parameters and legislative requirements.

MATERIALS AND METHODS

The material was represented by 40 samples of two types of pale lager, divided into 2 groups for each type, depending on the time of sampling and 10 samples of flavoured beer who have undergone physical and chemical analyzes, respectively measuring of pH, alcohol content, carbon dioxide content, value of the original, real and present extract (Anton Paar method), energetic value and foam quality determination (Hartong method). The sampling scheme is shown in Table 1.

Table1. Sampling scheme

Type	Group 1	Group 1
Type 1 pale lager	10 samples	10 samples
Type 2 pale lager	10 samples	10 samples
Type flavored beer	10 samples	

RESULTS AND DISCUSSIONS

Taking into account the fact that for the 2 types of pale lager were obtained a large number of results, we presented the average for each type of analyse. For the flavoured type, the results were presented for each sample.

Regarding the quality of the type 1 pale lager for both groups (group 1.1 and 1.2), all results are within the limits imposed by the standard, the pH should be between 4.1 to 4.4, with average obtained 4.34 (figure 1), alcohol content had an average value of 4.94% compared to limits of 4.3 to 5.8% (figure 1) concentration of CO_2 varied between 5.1% and 5.5%, the average value being 5.5% (figure 1). The maximum value of original extract imposed by producer is 11,25˚P, which means that the analyzed beers were within the limits with an average of 11.04 ˚P, the real extract should be between 3.56 and 3.47˚P, the studied beers have an average of 3,46˚P, the present extract has a value of 1.65˚P, being the limits imposed by the manufacturer (figure 2).

The time of destruction of foam had an average value of 264 sec compared to 250 sec minimum value and the energy value was within the standard product, with an average of 165.5 kcal (figure 3).As regards quality assortment 2 for both groups of lager (group 2.1 and 2.2), all results were within the limits imposed by the standard, the pH had an with average of 4.32, alcohol an average value of 4.97% and CO_2 concentration was 5.5 (figure 1).

Original extract value should be maximum 11˚P which means that the analysed beers were within the limits set by legislation with an average of 10.95 ˚P, real extract should be between 3.56 and 3.47˚P, the studied beer fitted the standard with an average of 3.45, the present extract had a value of 1.67 ˚P, being the limits imposed by the producer (figure 2).

The time of destruction of foam had an average value of 265 sec reported to 250 sec minimum value, and energy value falled within the standard product, with an average of 166 kcal (figure 3).

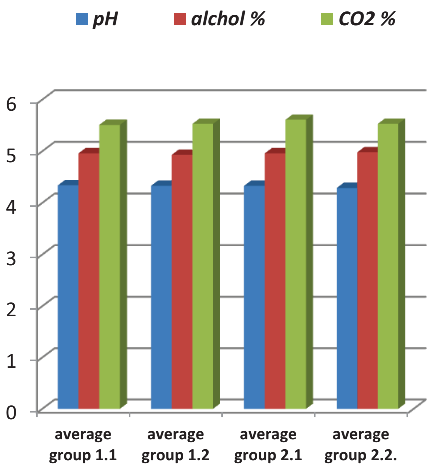

Figure 1. Average values for pH, alcohol and CO_2 concentration

For flavoured beer, all results are within the limits imposed by the standard, the pH should be between 2.85-3.15, with an obtained average value of 2.98, the alcohol concentration had an average of 4.97% between the limits of 4.3 to 5.8%, the concentration of CO_2 varied between 5.2 and 5.6%, with an average of 5.44% (figure 4).

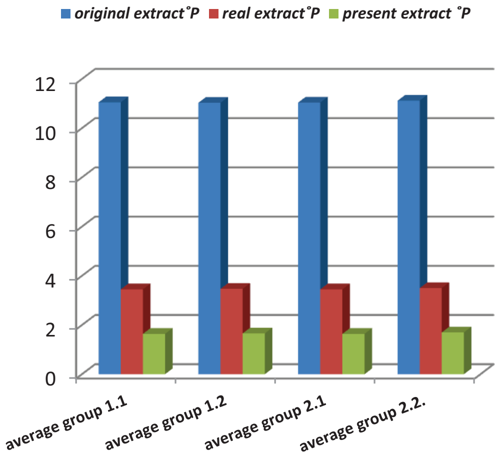

Figure 2. Average values for original extract, real extract, present extract

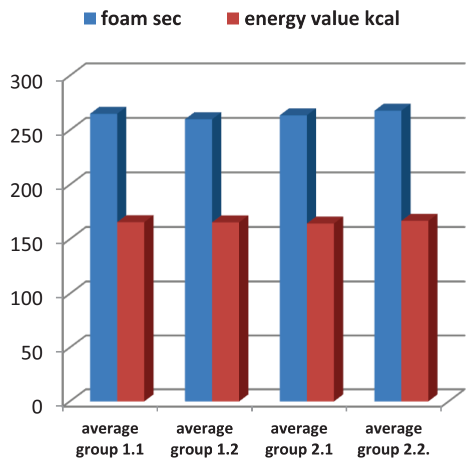

Figure 3. Average values for foam and energy value

The original extract value must be 1,75-12,05˚P which means that beers analysed within the limits set by an average of 11.38 ˚P, the real extract should be between 5.55 and 5.85˚P, the studied beer fitted the standard with an average of 5.59˚P, the present extract had a value of 4.25˚P, being within limits imposed by the producer (figure 5). The time of destruction of foam had an average value of 129 seconds compared to 125 seconds minimum value, and energy value was within the product standard, with an average of 155 kcal (figure 6).

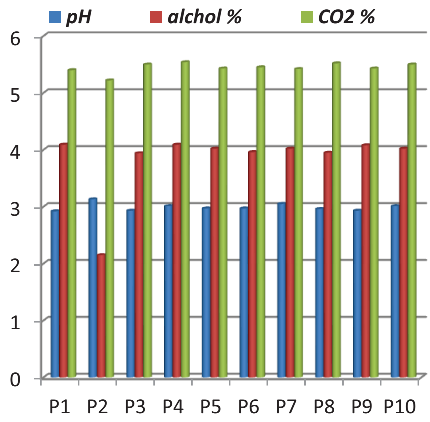

Figure 4. Average values for pH, alcohol and CO_2 concentration

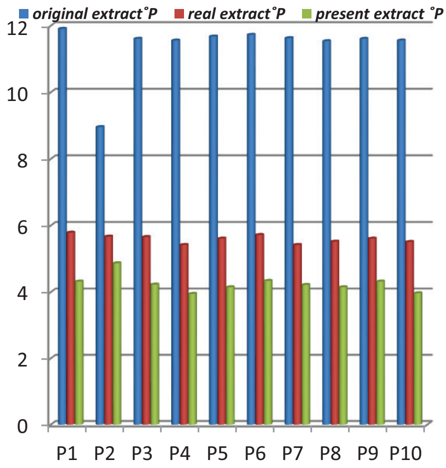

Figure 5. Average values for original extract, real extract, present extract

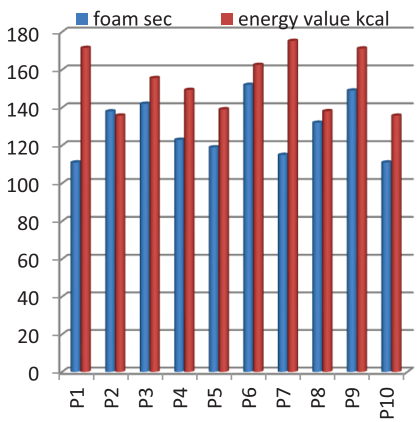

Figure 6. Average values for foam and energy value

CONCLUSIONS

The technological flow for pale lager and flavoured beer comply with the majority of the studied literature, with minor variations that give the originality of the products (Banu, 2001, Hlatkly, 2013, Kunze,1996).

There is a uniformity of data from lots of the same sort, which proves the applying accordingly of the quality management system.

From data analysis we can observe that there are not significant differences between the two types of pale lager.

Also, there are fairly significant differences between pale lager and flavoured beers with lower values for all parameters for the second category.

In conclusion, it can be said that the products obtained in the studied unit meet the quality requirements imposed by legislative standards and consumption of these products presents no risk of physicochemical nature.

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