

MICROBIOLOGICAL ANALYSIS OF HOME-MADE CHEESE

I. VEHAPI & K. KURTESHI

Department of Biology, Faculty of Natural Science,
University of Prishtina, Prishtina, Kosovo

Summary

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Cheese as food, is an important integral part of consumed food in Kosovo. It is consumed almost two till three times per day in Kosovo. In Kosovo, production of cheese in domestic condition, has a long tradition. Aim of this study was to make the microbiological analysis. According to microbiological analysis the cheese has good quality. Number of bacteria it is low, while the coliform bacteria were not detected.

Key words: cheese, domestic, food, Kosovo

INTRODUCTION

Production of cheese at home has long tradition in Kosovo, but manufacturing conditions are not much safe.

The objective of this study was to introduce the production process of domestic cheese and reveal its microbiological quality, which are of national interest and to see possibilities for export.

Microbiological quality of cheese is a part of food safety field, due to the fact that a range of diseases could emerge to consumers by the presence of pathogens and opportunistic bacterial species, or by the degradation of nutrient substrates to toxic metabolites in alimentary products (Cakmakci, 1995). Based on this, in the recent years large-scale programmes of milk processing units modernisation were run, and high-quality equipment was purchased in order to ensure reduction of the contaminants number in the final product. For the same purpose new technologies and processing chains were imported and adapted, with regard to better efficiency and compliance to the up-to-date hygienic

requirements in processing (Hausler, 1972). First, the direct effect of these measures was a general improvement of milk products quality, as well as improvement of the microbiological parameters of the intermediary and final products, but no significant influence on the quality of the final products analysed in the selling points was noted. Especially the cheeses, even in supermarket selling points, are marketed in inadequate conditions: different types of cheese are presented (with or without moulds in the paste) without observing the minimum conditions of cross-contamination prevention, products not being prepackaged are presented, many products are displayed in open shop windows, product slicing is made without complying with minimum hygienic standards.

MATERIAL AND METHODS

The samples of cheese were taken from three sellers – private producers, from a

market in Prishtina. Each sample was homogenized (10 g cheese in 90 mL physiological saline solution of 0.75% NaCl) and diluted. Appropriate dilutions were transferred to Violet Red Bile Agar (VRBA) for coliform bacteria counts, Sulphite reducing agar for sulphite reducing bacteria, Potato Dextrose Agar of pH 3.5 adjusted with 10% tartaric acid (PDA) for yeast- mould counts, Nutrient Count Agar (PCA) for total aerobic mesophilic bacteria counts and MRS agar for lactic bacteria counts.

After incubation at 37 °C, 22 °C, 32 °C and 35 °C for 24 h, 5 d, 48 h and 72 h colonies with characteristic properties were counted for coliform, yeast-mould, total aerobic mesophilic and lactic bacteria counts, respectively.

RESULTS

The average number of aerobic heterotrophic mesophilic bacteria, at first seller was 9 cfu/g, higher compared with the second (5 cfu/g) and the third seller (7 cfu/g). Coliform bacteria were not found in any cheeses. The average number of lactic acid bacteria ranged from 4 cfu/g from second seller, 5 cfu/g – third seller, and 6 cfu/g – first seller. The number of

sulphite reducing bacteria was higher in cheese from first and third sellers (5 cfu/g) while for the second seller was 3 cfu/g. *Salmonella* bacteria were detected in all analysed samples – 6 cfu/g in first sampled cheese, 3 cfu/g in the second sampled cheese and 4 cfu/g in the third sampled cheese. Yeasts-moulds were also detected in all samples of cheese, where the higher number was for the first seller 4 cfu/g, while for the second and the third – 2 cfu/g. This result could account for the fact that yeasts and moulds could metabolise lactic acid and lower percentage of cheese acidity.

DISCUSSION

The results for lactic acid bacteria were well in accordance with those reported by Ozdemir *et al.* (1998).

The results for *Salmonella* bacteria agreed with those of Elowni *et al.* (2007), who found *Salmonella* in all collected cheese samples in Zalingi area.

The results of yeast-mould were in accordance with other reported Anonymous (1989).

The microbiological analysis for assessing the incidence of these groups of bacteria, yeasts and moulds, has proved the presence of these microbial species in

Table 1. Results of microbiological analysis of domestic cheese from three different sellers/ producers

Group of bacteria	Number of detected of bacteria (cfu/g)		
	First seller/ producer	Second seller/ producer	Third seller/ producer
Aerobic heterotrophic mesophilic bacteria	9	5	7
Total coliforms	0	0	0
Lactic acid bacteria	6	4	5
Sulphite reducing bacteria	5	3	5
<i>Salmonella</i> spp.	6	3	4
Yeasts and moulds	4	2	2

the studied samples. Although the above germs' numbers are not regulated, to our best knowledge, the samples showed higher values than the admitted limits in EU and were considered inadequate.

CONCLUSION

According of this investigation it can be concluded that the higher number of aerobic heterotrophic mesophilic bacteria was detected in cheese from the first seller (9 cfu/g), compared with second (5 cfu/g) and third (7 cfu/g). Higher number of lactic acid bacteria was detected from the first seller (6 cfu/g), compared with the second (4 cfu/g) and third one (5 cfu/g). Higher number of sulphite reducing bacteria were observed in samples from the first and the third seller-producer. The highest number of *Salmonella* was found from the first seller-producer. While the number of yeast and mould from the second and third sellers was same (2 cfu/g), it was lower compared with that from the first seller (6 cfu/g).

Comparing the quality of cheese between sellers/producers, it can be concluded that the produce of the second seller/producer, according to the microbiological analysis, was of better quality compared with both first and third sellers.

Coliform bacteria were not detected.

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Correspondence:

Idriz Vehapi
Department of Biology,
Faculty of Natural Science,
University of Prishtina,
10000 Prishtina, Kosovo
e-mail: vehapiidriz@yahoo.com