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Some Properties of Traditional Circassian Cheese Produced in Turkey

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Abstract: In this study, the basic composition and microbiological properties of traditional Circassian Cheese, produced with different methods (A: fresh, B: sun dried and C: dried in stoves) were investigated. While fresh cheeses had lower total solids, fat, protein, Water Soluble Nitrogen (WSN), salt and titratable acidity, the pH values were found to be close each other. Different results were found according to total mesophilic bacteria and yeast-mould counts.

Key words: Circassian cheese, dried in the sun, dried in the stove

Introduction

The Circassian cheese which named originally Adyghe Koaye, Mate is produced by Circassian people living in Turkey, Jordan, Syria, Israel and also the republics of Adygey, Kabardino-Balkaria and Karachi Cherkess in Russia Federation. Nowadays it is possible to find this cheese in the local markets of the cities where Circassians live. While not much known about its history, it has been produced for centuries in the Northern Caucasia; Circassians motherland (Yildirim, 1970; Berkok and Toygar 1994; Gusar, 1969).

The Circassian cheese contains all milk protein fractions and since it is produced with whole milk, it is quite rich terms of fat. It is also an important feature that the dried cheese can be kept for a long time (Yildirim, 1970; Akgun, 1988; Ozkan and Gonul, 1998).

The traditional Circassian cheese is mainly produced from cow and sheep milk in family farms. Small pots are used for heat treatment because the production is usually in family size. When the milk starts to boil, cheese or yoghurt whey is added with a spoon for coagulation and it is boils for a while. Following coagulation, the curd is transferred into a special cheese basket by perforated ladles. Whey is drained in these baskets. After the upper part is salted, cheese is turned over to salt the bottom. If it is not consumed fresh, it is hanged in the sun in the same basket and turned upset down frequently. The Circassian cheeses are also dried and smoked on a special place in stoves after wrapped with a small cloth.

There is very limited information available about Circassian cheese in the literature. Therefore, the aim of this study was to determine basic composition and some microbiological properties of Circassian cheese locally produced with different methods.

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Materials and Methods

Materials

Sixty Circassian cheese samples (20 fresh (A), 20 sun dried (B), 20 dried in stoves (C)) were collected from local markets of Marmara, Ege and Central Anatolia regions of Turkey.

Methods

The Circassian cheeses were analyses for pH (using a Hanna 210 pH-meter), titratable acidity (SH), fat, total solids, total protein, WSN and salt (Oysun, 1996). Total Mesophilic Bacteria (TMB) were counted on plate count agar (Anonymous, 1989) and Potato Dextrose Agar (PDA) was employed in the counting of total yeast and moulds (Anonymous, 1987). Statistically different groups were determined by the Least Significant Difference test (LSD) at $p<0.01$ (Anonymous, 1987).

Results and Discussion

As seen in the Table 1, total solids contents were found to be different in the Circassian cheeses produced by various methods. While the lowest total solids were obtained in the group A, C had the highest value. It is clear that the difference between samples is due to the drying process. The variation in fat contents was found to be significant but difference was not found between group B and C ($p>0.01$). The reason of the high fat contents in the groups B and C might be caused by the relative increase of the fat related to the increase in total solids during drying. Statistically significant differences were also found between groups according to protein contents ($p<0.01$). This finding is in harmony with the difference in the total solids and indicating that especially Circassian cheeses dried in stoves are an important protein source.

Proteolysis in cheese involves a complex and dynamic series of events and, in order to better understand the development of proteolysis in cheese, it is necessary to investigate the different nitrogen fraction levels and one of them is WSN level. While the lower WSN levels were found in Group A, Group B and C had higher levels and this result showed that the levels of WSN were significantly affected during drying process.

Although Group C had the highest total solids, fat and protein contents, Group B had the highest salt content among all. As seen in Table 1 titratable acidity values varied among the samples ($p<0.01$)

Table 1: Some properties of Circassian cheese

Samples	n	Total solids (%)	Fat (%)	Protein (%)	WSN (%)
A	20	44.06^{a}	21.17^{a}	16.74^{a}	0.38^{a}
B	20	66.96^{b}	28.30^{b}	30.24^{b}	1.86^{b}
C	20	69.82^{c}	29.25^{b}	32.42^{c}	1.52^{c}
Samples	Salt (%)	°SH	TMB pH	Yeast-mould (log cfu g^{-1})	(log cfu g^{-1})
A	4.81^{a}	29.30^{a}	5.64^{a}	7.8^{a}	4.7^{a}
B	6.27^{b}	48.20^{b}	5.60^{a}	7.2^{b}	4.5^{b}
C	5.78^{c}	43.43^{c}	5.50^{a}	6.6^{c}	4.3^{c}

A: fresh Circassian cheese, B: Circassian cheese dried under the sun, C: Circassian cheese dried in the stove
Mean values with different letter are not significantly different at $p<0.01$

and Group B cheeses had the highest SH values but why insignificant difference was found between pH values ($p>0.01$) is unclear.

Significantly different results were found between groups according to total mesophilic bacteria and yeast-mould counts ($p<0.01$). The difference determined between cheese groups can be explained by the bacteriological quality of raw milk processed, lack of hygiene during production and drying and, insufficient heat treatment.

As mentioned before there is very limited information available about Circassian cheese, however this traditional cheese variety has high nutritious value, a unique taste and aroma. Although little is known about this cheese kind, a standardized production process on industrial scale can improve especially the hygienic quality of final product.

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