

# Characterization of Traditionally Obtained Buffalo Cheese

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## Abstract

In the past decades buffalo milk has attracted growing interest in most countries, especially due to its nutrition characteristics. In Romania, buffalo milk and milk products are mainly considered local and traditional resources, and play an important role in enhancing livestock biodiversity. Currently, the overall availability of milk from all dairy animal species, as well as the possibility of obtaining new products must be analysed. Buffalo milk composition is influenced by season. Milk fat level in autumn is 7.95%, and in the summer it is 7.29%. The highest mean values for the cheese were recorded in the spring season, with a fat and protein content of 41.02% and 21.34%, respectively. In autumn, the fat content is at 36.92%, and protein is at 19.81%.

**Keywords:** *buffalo, cheese, milk, physico-chemical parameters.*

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## INTRODUCTION

The quality of cheese is determined by its texture, which is influenced by milk composition and processing conditions. The technological process of cheese production and milk composition (in particular the content of fat and proteins), as well as the biochemical processes that occur during manufacturing affect the final quality of cheese (Coroian *et al.* 2011, 2012; Velea and Zanc, 2011). Buffalo milk is casein-rich, which is essential in obtaining fat cheeses, and lactose-rich (Sarfraz *et al.*, 2008). Sensorial characteristics of the cheese are influenced by the type of milk used, the curing temperature, the starter cultures used and the period of ripening (Murtaza *et al.*, 2013; Yazici *et al.*, 2010; Rosati *et al.*, 2002).

Telemea cheese made from buffalo milk, along with sheep and cow telemea cheeses, belongs to the category of cheeses ripened in brine. Quality requirements for good telemea cheese are directly influenced by the quality of raw milk (including sensory characteristics, physico-chemical and microbiological hygiene).

## AIMS AND OBJECTIVES

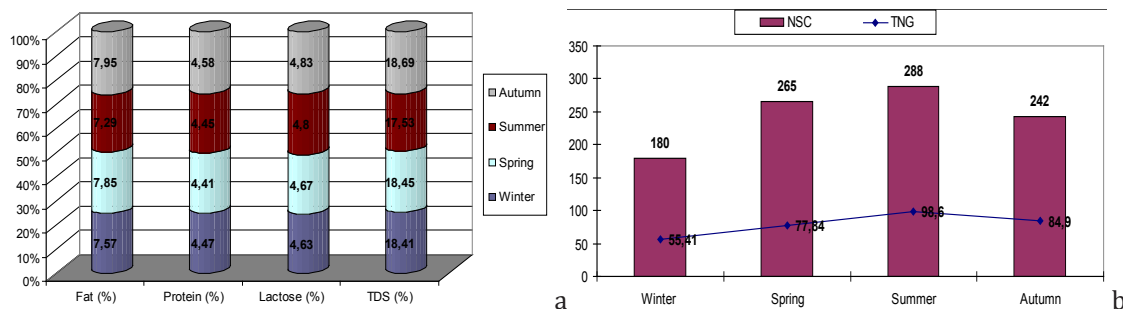
The purpose of this study was to characterise cheese traditionally made from buffalo milk.

## MATERIALS AND METHODS

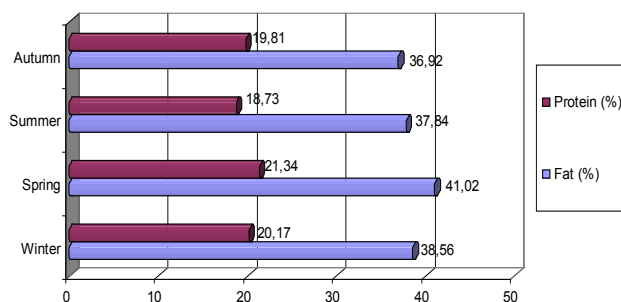
10 milk and 10 cheese samples were analysed in each season. Every sample was analysed considering three parameters: physico-chemical composition, microbiological status and effect of the season. The main physico-chemical parameters of buffalo milk were analysed: fat, protein, lactose and total dry matter. These parameters were analysed with Lactostar automatic analyzer. Total number of germs (TNG) and the somatic cell count (SCC) were determined by BactoScan FC and BRT screening test, respectively.

## RESULTS AND DISCUSSION

Total number of germs (TNG) in buffalo milk ranged within:  $55.41 \pm 0.6$  and  $98.6 \pm 0.7$ . The number of somatic cells (SCC) ranged as follows: the lowest average values were  $180 \pm 5.8$  and



**Fig. 1.** a) Physico-chemical composition of buffalo milk depending on the season; b) TNG and SCC buffalo milk used to make seasonal cottage cheese



**Fig. 2.** The seasonal mean values for fat and protein of buffalo cottage cheese

the highest were  $261 \pm 6.1$ . Raw milk must meet the following quality requirements set by the European Commission: the total number of germs lower than 100,000/ml and total number of somatic cells under 400,000 cells/ml (Council Directive 92/46/EEC). The milk used to prepare the cheese was appropriate in terms of microbial load (figure 1, b). The mean values for fat content of buffalo telemea ranged from  $38.56 \pm 3.21\%$  to  $41.02 \pm 2.17\%$ . Protein content ranged from  $20.17 \pm 1.36\%$  to  $21.34 \pm 2.81\%$  (figure 2). Velea *et al.* (2011) reported the following average values in buffalo milk: 8.3% fat, 4.6% protein, 4.8% lactose and total dry matter 18.8%. Chindriș V. (1998) also reported similar values for fat and protein in buffalo milk.

## CONCLUSION

Telemea is a product obtained from both cow's and buffalo milk taken separately, but also sometimes mixed, due to the insufficient quantity of buffalo milk. In these circumstances, local production of buffalo cheese can only be achieved by maintaining buffalo livestock. The importance

of obtaining dairy products from buffalo milk can be justified in terms of the contribution they have to the economic and cultural aspects of life. In Romania, there is a relatively constant amount of milk, mostly cow's milk, and the more accessible option for processors is to use buffalo milk mixed with cow's milk for obtaining certain products.

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