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STUDIES ON THE INFLUENCE OF SEASONAL AND COLLECTION FACTORS ON THE QUALITY OF RAW COW'S MILK AND HALLOUMI CHEESE

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Abstract: Milk and dairy products in the cheese category are an important source of subsidiary income for small farmers, respectively traditional producers. In this regard, it is very important to assess the effects of certain factors on milk quality at different stages of marketing channels and community participation in raising awareness of quality products manufactured according to standards. The aim of this work was to investigate the effect of seasonal changes and storage temperature of cow's milk, as raw material, on the composition of pasteurized milk and halloumi cheese, as well as the sensory characteristics of this cheese assortment. Halloumi is a semi-hard cheese, known for its firm texture, and its high melting point, making it ideal for grilling and frying.

• Introduction

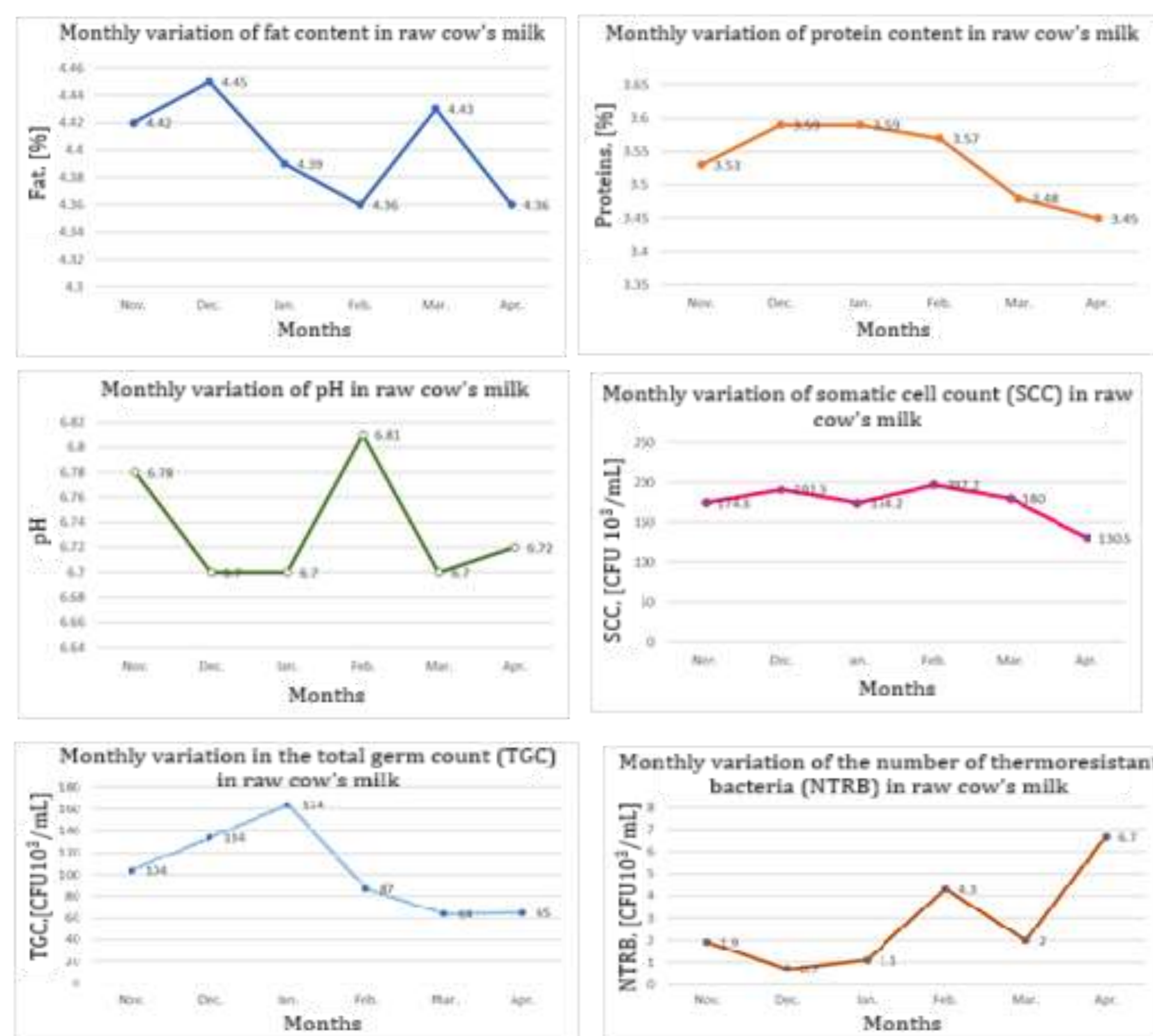
Food safety is one of the major issues of concern in the food industry. Some authors have considered cheese to be one of the safest food products (Little et al., 2008). But, according to some scientific reports, several outbreaks of food poisoning have been associated with the consumption of various types of cheese. In 2016, the consumption of contaminated cheese was responsible for 0.4% of all food outbreaks in Europe (EFSA, 2018). The composition and properties of raw milk are essential for cheese quality, affecting the functional properties of both milk and cheese (Kailasapathy, 2015; Skeie, 2007). Milk quality is influenced by on-farm and seasonal factors (Bittante et al., 2015), highlighting the importance of the dairy animal husbandry system in terms of raw milk and the quality of the resulting cheese. The composition and properties of milk depend also, on the milking system and the shelter system on the farm (Kunes et al., 2021; Tse et al., 2018).

• Material and method

The raw milk samples were taken from the milk cooling tanks belonging to a local producer of traditional cheeses in Bihor County (Marghita City area). The samples taken monthly for 6 months were analyzed from the point of view of chemical composition in the Milk Technologies laboratory belonging to the Faculty of Food Engineering within USV 'King Michael I' in Timisoara. The microbiological analyses were carried out by the producer within the microbiological analysis laboratory of the Bihor Veterinary Health and Food Safety Directorate based on the contract he has with the respective agency. The samples of Halloumi cheese were obtained in the milk processing section for cheeses belonging to the same producer. Halloumi cheese samples were obtained from milk samples selected on the same day for 6 months. For each type of sample, 10 L of whole milk was used. Each sample of milk and cheese was labeled and stored in the refrigerator at 4-6°C until the analyzes were performed.

• Results and discussions

1. Influence of the seasonal factor on the quality indicators of raw cow's milk intended for the manufacture of halloumi cheese



2. Influence of the seasonal factor on the physicochemical quality indicators of halloumi cheese

Analyzed parameter	HL1	HL2	HL3	HL4	HL5	HL6
Humidity(%)	47.75± 9.12	45.90± 7.42	46.50± 3.98	47.70± 2.57	50.45± 3.24	49.80± 2.96
SUN (%)	52.25± 9.12	54.10± 7.42	53.50± 3.98	52.30± 2.57	49.55± 3.24	50.20± 2.96
Fat(%)	23.50± 1.42	24.20± 4.44	24.00± 1.10	24.40± 1.83	20.90± 2.19	20.70± 1.12
Proteins (%)	20.97± 1.47	21.76± 1.61	22.76± 1.61	20.76± 0.83	20.56± 0.73	19.16± 1.88
Acidity (%)	1.48± 0.19	0.86± 0.26	1.26± 0.26	1.28± 0.07	2.30± 0.46	1.02± 0.06
Ash (%)	3.49± 0.17	5.02± 0.58	4.80± 0.32	4.79± 0.42	3.22± 0.23	3.50± 0.49
Salt (%)	1.88± 0.57	2.66± 0.42	2.80± 0.15	2.86± 0.17	2.43± 0.05	2.85± 0.14

• Conclusions

It was found that both the milk and the halloumi cheese produced during the period of time taken in the analysis were affected from a compositional and sensory point of view. In winter, when the total dry matter and fat content of milk was high, the sensory quality of halloumi cheeses had higher values.