

Process Optimization, Microbiological and Sensory Quality Evaluation of Mozzarella Cheese from Different Milk Types for its End Use Application

J. Sameena, T. Sansiya*, and S. Piratheepan

*Department of Animal Science, Faculty of Agriculture,
University of Jaffna, Kilinochchi 44000, Sri Lanka*

**Email correspondence: sansiyathurai@gmail.com*

Abstract

Mozzarella is a soft, white, un-ripened cheese belonging to the *Pasta filata* family, widely valued in pizza production. Various types of mozzarella are produced from buffalo, cow, and goat milk. It is derived from the drainage of liquid following the coagulation of milk. In this study, the coagulation process was enhanced by calcium chloride (0.03% w/w). Skim milk powder was added at 3% (w/w) to improve texture and consistency. Rennet (0.003% w/w) and starter culture (0.031% w/v) were added as other ingredients. The curd was skillfully stretched in hot water to develop a smooth, elastic texture of Mozzarella cheese. Cow milk and goat milk were mixed 6:4 in ratio. The present study was focused on process optimization of premium cow milk mozzarella cheese (CMMC), goat milk mozzarella cheese (GMMC) and mixed milk mozzarella cheese (MMMC), and check the yield, microbial quality, and physicochemical properties. Meanwhile, the study aimed to identify the most suitable milk or combination type for subsequent product development. The cheeses were subjected to analysis throughout storage temperature of 4 °C and intervals of 07 days. MMMC exhibited the highest overall acceptance sensory score. MMMC (11.5%) and CMMC (13.5%) were demonstrated the highest yield than GMMC (10.4%). Fat level decreased with increasing storage days, with a significant difference ($p < 0.05$). Moisture content of MMMC (44.77%) was significantly lower from CMMC (46.75%) and GMMC (44.77%). Coliform count of MMMC was significantly ($p < 0.05$) lower than CMMC and GMMC. Mozzarella cheese preparation from goat milk is not recommended. Meanwhile, combining goat milk results in a high nutritional value and health benefits. Manufacture of MMMC is highly recommended for industrial scale. Meanwhile, skim milk powder improves consistency and reduces fat. This study addresses increasing the cow milk proportion in MMMC led to denser curd and lower moisture content compared to pure GMMC and CMMC, as notable encouragement in dairy industries.

Keywords: cow milk; goat milk; mixed cow and goat milk; mozzarella cheese; microbial analysis