Effect of Starter Culture and Type of Milk on Textural and Functional Properties of Mozzarella Cheese

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Mozzarella is a pasta filata type cheese which has unique textural and functional properties but has less popularity in Sri Lanka. This study was conducted to investigate the effect of starter culture and type of milk on textural and functional properties of Mozzarella cheese. Cheeses were made with commercially available single strain culture of *Streptococcus thermophilus* or mixed strain culture of *Streptococcus thermophilus* and *Lactobacillus delbrueckii* ssp. *bulgaricus* using buffalo milk and cow milk as different milk types. Four cheeses were produced namely single strain-cow milk (SSCM), single strain-buffalo milk (SSBM), mixed strain-cow milk (MSCM) and mixed strain-buffalo milk (MSBM). All cheese samples were evaluated for meltability using the Schreiber test and hardness using the texture analyzer. Cheeses were analyzed for chemical composition (moisture, protein, fat, and ash content), color and yield. Organoleptic properties of cheeses were evaluated using sensory evaluation. Results revealed that, chemical composition of mozzarella cheese were significantly affected ($P < 0.05$) by both, starter culture and type of milk. SSBM cheese had highest fat (24.5%) and ash (5.5%) contents while MSCM cheese had highest moisture content (57.8%) and MSBM cheese had highest protein content (26.3%). Sensory evaluation results revealed that the MSBM cheese had received significantly higher ($P < 0.05$) score for all sensory attributes. The yield and color were significantly affected ($P < 0.05$) by the type of milk but not by type of culture. However meltability and hardness were significantly affected ($P < 0.05$) by starter culture and type of milk. Results indicated that MSBM cheeses had best textural and functional qualities compared to other cheeses. This is apparently due to unique chemical composition of buffalo milk and high proteolysis of mixed strain culture. In conclusion both, starter culture and type of milk had great effect on quality of mozzarella cheese.

Keywords: Mozzarella cheese, Buffalo milk, Cow milk, Starter culture, Meltability