

DEVELOPMENT OF SPICE-FLAVOURED GOAT MILK MOZZARELLA CHEESE TO ELIMINATE THE MUSKY FLAVOUR OF GOAT MILK

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Goat milk, known for its low allergenicity, exceptional digestibility, and rich nutrient profile, faces declining demand due to its undesirable musky flavour and aroma. This study explores the development of spice-flavoured goat milk mozzarella cheese to enhance palatability while retaining nutritional benefits. Initially, the properties of goat milk (GM) were compared with cow milk (CM) using independent two-sample T-tests. Sensory evaluations, conducted with thirty untrained panellists using duo tests and the Friedman test, identified the most preferred spice-flavoured (3% pepper, 5% cinnamon, and 10% onion) goat milk mozzarella cheese compared to CM and GM mozzarella cheese. Nutritional and functional properties on the 7th day of storage, along with physicochemical and microbiological characteristics over 28 days, were analysed using ANOVA. Results indicated that GM had higher ($p<0.05$) levels of fat and protein and lower ($p<0.05$) coagulation time than CM. Fatty acid contents (FA) with carbons from 8 to 12, C14:0 FA, and Sensory evaluations revealed that 3% pepper-flavoured goat milk mozzarella cheese (PGMMC) was most preferred for flavour, odour, texture, appearance, and overall acceptability. Compared to cow milk mozzarella cheese (CMMC), PGMMC had higher ($p<0.05$) cheese yield ($12.36\pm0.01\%$) and protein content ($22.04\pm0.10\%$), with significantly lower fat content ($19.94\pm0.25\%$). PGMMC had a higher ($p<0.05$) antioxidant capacity (AOC) ($6.52\pm0.02\ \mu\text{mol Trolox eq/g}$) than GM mozzarella cheeses through the 4 weeks of storage time. PGMMC had the highest ($p<0.05$) titratable acidity and total phenolic content ($75.72\pm0.17\ \text{mg GAE/100g}$). PGMMC showed highest ($p<0.05$) adhesiveness, while the lowest in hardness, gumminess, and cohesiveness. In conclusion, PGMMC emerges as a promising product to enhance the flavour and acceptability of goat milk mozzarella cheese, potentially boosting consumer demand while preserving its nutritional quality.

Keywords: Adhesiveness, Cheese yield, Coagulation time, Fatty acids, Pepper-flavour