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Development and Quality Evaluation of Mozzarella Cheese from a Goat and Cow Milk Blend Enriched with Sweet Potato (*Ipomoea batatas*)

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Rising consumer demand for healthier, nutrient-dense dairy products has intensified interest in developing low-fat, functional cheeses enriched with plant proteins. Traditionally, mozzarella cheese is primarily produced from buffalo' milk, which is high in fat. But compared to other cheese, mozzarella has less fat. However, there is interest in replacing a milk content with plant-based ingredients, representing a key research gap addressed in this study. The objective of the study was to develop low-fat, antioxidant-rich mozzarella cheese by blending skimmed cow and goat milk with sweet potato (*Ipomoea batatas*). Mozzarella cheese was produced from mixed skimmed milk in the ratio of cow milk: goat milk (6:4) (v/v). Sweet potato (*Ipomoea batatas*) syrup was incorporated at four levels: 0, 5, 10, and 15% (v/w). The cheese was evaluated for proximate, sensory, physicochemical, microbial, and antioxidant properties during storage at 4°C for 0, 10, 20, and 30 days. Results were analyzed using SAS (Tukey's test) ($P < 0.05$). Incorporation of sweet potato syrup significantly enhanced physicochemical and sensory properties, with 5% syrup yielding the highest sensory acceptance. Antioxidant content increased with higher syrup levels but declined during storage, likely due to the degradation of antioxidant compounds over time. Microbial counts (TPC) increased during storage but remained within safe limits under refrigeration. Moisture content decreased, leading to increased fat content. Titratable acidity of the cheese samples increased, accompanied by a corresponding decrease in pH, likely due to the fermentation of residual lactose. Further investigations, including assessments of stretchability and meltability, are recommended to determine the suitability of the product for use as pizza toppings. This innovative mozzarella cheese offers a healthier, functional alternative with enhanced nutritional properties.

Keywords: Antioxidant; cow milk; functional food; goat milk; mozzarella cheese; sweet potato