

MILK COAGULATION PROPERTIES OF DIFFERENT CATTLE AND BUFFALO BREEDS/TYPES IN THE DRY ZONE OF SRI LANKA

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Milk coagulation properties (MCPs) have a direct impact on the final quality of dairy products. Raw milk from various cattle and buffalo breeds has different coagulation properties, owing to differences in protein composition. The study aimed to compare the MCPs (coagulation time, yield, meltability, curd firmness, and cheese yield) of four cattle and two buffalo breeds found in the dry zone of Sri Lanka. Sixty (60) milk samples were collected from two indigenous types, Thamankaduwa White (TW) and Lankan cattle; two exotic breeds, Friesian and Jersey; and two buffalo breeds, Murrah and Niliravi; from each breed ten milk samples were collected. Milk samples collected from different chilling centres in the dry zone were pooled and used as a control. Data analyses included descriptive analysis and analysis of variance. Milk coagulation was undertaken by both enzymatic coagulation with commercial rennet -*Chymax*, and lactic acid coagulation with a commercial starter culture-*YFL 812*. The coagulum yield varied significantly ($p < 0.05$) between cattle breeds, but not between buffalo breeds. Only the buffalo breeds had significantly different coagulation times whilst the acidic coagulation time differed significantly between cattle breeds. The meltability of the coagulum differed significantly between cattle breeds, and the lowest and highest meltability were observed in Friesian and TW, respectively. When compared to cattle milk, buffalo milk produced significantly higher cheese yield. However, milk from the TW produced significantly ($p < 0.05$) more cheese than milk from other cattle breeds. All studied MCPs such as coagulation time, yield, meltability, curd firmness, and cheese yield were significantly different compared to the control, implying that the desired quality of the coagulated products could be achieved if the production process focused on milk obtained from individual breeds rather than the pooling milk from several breeds.

Keywords: Exotic breeds, Indigenous breeds, Lactic acid coagulation, Rennet enzymatic coagulation