

Assessing Cow Urine pH as an Indicator to Detect Unstable Non Acid Milk

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The economic return and the sustainability of a dairy farm significantly depends on the quality of the milk produced by the farm. Unstable Non Acid Milk (UNAM) is a common quality defect identified in cow milk, but not been studied adequately. In Sri Lanka, ethanol stability test is commonly being used as a measure of heat stability of raw milk. Ethanol instability occurs as a result of increased ionized calcium level due to various reasons, causing rejection of milk in considerable amounts. Considering the importance of early detection of UNAM, the present study was carried out to determine the suitability of cow urine pH as an indicator to detect UNAM. In this study, milk and urine samples were collected from 35 lactating cows three times, two weeks apart from 5 dairy farms around Kandy and transported at 4°C for further analyses. All milk samples were tested in duplicates for ethanol stability (68%, 70%, 72%, and 74%), acidity, resazurine, pH, fat, lactose, solid-non-fat and protein percentages while urine samples were tested for pH using a pH meter. Binary logistic regression between pH value of urine and response to ethanol stability test under series of percentages were evaluated. Separate models were developed for each ethanol percentage. The chi-square values for goodness fit test for the model fit for each ethanol concentrations were not significantly different ($p > 0.05$). Although, there was no strong correlation of statistical significance between cow urine pH and UNAM, correlation of urine pH with 70% alcohol stability was quite close to be significant. The present study did not find a strong positive correlation of any statistical significance between cow urine pH and UNAM. However, small sample size may have compromised statistics and therefore, it is suggested to carry out further studies with more samples from milking cows.

Keywords: Ethanol stability, Unstable non-acid milk, Urine pH

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