

A Comparative Study on Quality Parameters of Milk; Based on Selected Milk Collection and Chilling Centers in Sri Lanka

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Abstract

Cow's milk is widely recognized as a vital source of nutrients and is consumed by millions of people globally in various forms. However, in Sri Lanka, there is a notable lack of comprehensive databases regarding milk quality at the grassroots level, particularly concerning regional variations. This study aimed to evaluate the quality parameters of raw milk collected from fifty selected chilling centres across the Uva, North Western, North Central, Eastern, and Central Provinces of Sri Lanka. Collected milk samples were analyzed for fat content, solid non-fat (SNF) content, lactose content, protein content, added water, freezing point, corrected lactometer reading, pH, keeping quality (KQ), solubility index, and alcohol precipitation test to determine the quality of incoming raw milk across different regions, which is essential for ensuring that the milk used in production meets established standards. Milk samples were analyzed by an Ultrasonic Milk Analyzer, pH meter, alcohol test, and Resazurin dye reduction test. The results were analyzed by mean comparison – T-test and process control charts were used to monitor the variations in milk quality parameters over time. The analytical results revealed that the mean values for the selected quality parameters across the sampled regions as follows: pH 6.294±0.28, fat content 4.031±0.24%, SNF content 8.089±0.48%, protein content 3.206±0.19%, lactose 4.732±0.30%, CLR value 26.35±1.71, added water 0.12±0.02%, freezing point -0.5555±0.04 °C, solubility index 0.688±0.04 mg/L, and KQ 2.45±0.01. 83%, 14%, and 3% of samples out of selected milk samples were identified as 77% (-), 72 %(-), and 68 %(-) respectively for the alcohol precipitation test. This indicates the high microbial activity in grass-root milk collection. Among the regions studied in this research, raw milk from the Pothuvil and Gokaralla areas exhibited superior quality, meeting or exceeding established standards.

Keywords: Chilling Centres, Comparative Study, Milk Collection, Quality Parameters, Ultrasonic Milk Analyzer