

**MILK IONIZED CALCIUM IN RELATION TO VARIATION OF
ETHANOL STABILITY IN DIFFERENT AGRO-ECOLOGICAL ZONES IN
KANDY DISTRICT DURING DRY SEASON**

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Milk collecting centres in Sri Lanka use the ethanol stability (ES) test to detect the quality of milk. ES at 68% was originally a test to detect microbial quality; but today, use of higher ethanol percentages (>74%) has become an indirect method of testing heat stability (HS). As a result, a considerable quantity of milk is being rejected from collecting centres. Ionized calcium (Ca_i) content is directly related to the HS; nevertheless, facility to determine Ca_i directly at milk collecting centres is unavailable. Thus, this study was designed to estimate Ca_i levels and the relationship to ES of raw cow milk, collected from three agro-ecological zones within Kandy district. Fifty-eight (58) milk samples were collected from areas representing mid-country intermediate zone (IM), mid-country wet zone and up-country intermediate zone. All samples were analysed for ES (68%, 74% and 80%) and Ca_i . Resazurine test was used to determine microbial quality. All samples were negative for mastitis while average values of temperature, pH, acidity and specific gravity were 24.7°C, 6.2, 0.18% and 29.81°L respectively and were within accepted range. The results were statistically analysed using one-way ANOVA and Chi-square test. The mean Ca_i (3.32 mMOLL⁻¹) of IM was significantly higher ($p < 0.05$) compared to other zones. A significant association ($p < 0.05$) was observed between ES and Ca_i level only at 74% ethanol concentration. Hence, the ethanol percentage that can be recommended to be used for HS is only 74%. The ES of non-acid milk was decreased with the increase of ethanol concentration. Thus, depending exclusively on ES might lead to reject a considerable amount of milk that can be pasteurized. Therefore, milk stable at 74% ethanol can be used for high heat treatments while resazurine negative, non-acid milk which is stable at 68% ethanol could be used for pasteurization.

Keywords: Ethanol stability, Heat stability, Milk quality, Non-acid milk, Pasteurization