ESTABILITY OF MILK TO CLOTTING EFFECT OF HEAT AND ALCOHOL IN COWS AND HEIFERS

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The aim of this study was to establish variations on milk composition and stability to heat and alcohol tests in the milk of dairy cows. The animals were divided into two groups of 20 cows each one: multiparous and heifers. A monthly monitoring was done during eight months of the lactational period. Milk samples were taken twice a day in the evening and morning milking. Milk composition was analyzed for proteins, fat and lactose by NIR method. Two tests of stability in adding alcohol 70% to milk was carried out, one in a 1:1 dilution and another in adding alcohol 2:1, clotting milk after addition of alcohol is a positive test. A test of heat stability in tube was performed using a bath of oil at 140º C and measuring the time to clotting, less than 20 min is considered unstable. The evaluated variables were: time of lactation, for which total lactation was divided into three periods, the parity of the animals: multiparous cows and heifers and composition of milk. Results were statistically analyzed.

No relationship was found between the period of lactation and the compositional variation concerning to thermal stability of milk (p< 0.01). The test of stability to alcohol was analyzed at three lactational periods, it was determined that milk is more unstable at the end of lactation, similar for the two dilutions used (p< 0.05).

There was a statistical effect (p < 0.05) of lactose in milk for alcohol test at dilution of 1:1. When analyzing the mean values of the concentration of lactose, it was determined that samples positives for alcohol test in the 1:1 dilution presented a mean of 4.90 %, being higher compared to the mean positive samples for dilution 2:1 (x = 4.69%). These results indicate that milk samples with higher concentrations of lactose behaved more unstable to alcohol test.

Parity had an effect on heat stability of milk, because samples of heifers had shorter clotting times (92% less than 20 min) compared with samples from multiparous cows (68% less than 20 min) (p< 0.01), meaning as increased instability of the milk of heifers.

In order to establish a relationship between the heat and alcohol tests, data were analyzed and showed that samples share 94% of results as positive/negative and 6% as positive/positive respectively. Heat stable milk presented 89% corresponding negative alcohol, all differences were no significant. The recommendation is do not use alcohol test as a predictor of the thermal stability of milk.