

EFFECTS OF ADULTERATION, KEEPING QUALITY AND PRESERVATION ON FREEZING POINT DEPRESSION OF MILK

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International standard specifies that the thermistor cryoscope method is the reference method for the determination of freezing point depression (FPD) and this is effectively used in dairy industry to detect the proportion of extraneous water in milk. Therefore, present study was carried out to evaluate the effects of adulteration, keeping quality and preservation on freezing point depression of milk and their bearing on detection of added water. Unadulterated milk samples were used as the control. Milk samples were adulterated with different levels of water and, water adulterated milk was further adulterated with different levels of sugar and salt separately to detect the effect of adulteration on FPD. Samples were stored at two different storage conditions with and without neutralizers and analyzed at every 2 hrs interval. Samples were preserved with approved levels of Potassium dichromate, Formaldehyde and Sodium azide and analyzed at every 2 hrs up to 12 hrs. Samples were prepared in triplicates. Experiments were carried out in Completely Randomized Design (CRD) with factorial arrangement and analyzed using SAS. FPD of water adulterated and water and salt adulterated milk was significantly different ($p < 0.05$) and addition of salt significantly masked the added water in milk. However, no significant differences ($p > 0.05$) was observed in sugar adulterated milk. FPD of milk stored at different conditions were significantly different ($p < 0.05$) and also for the storage time. Addition of neutralizers decreased effect of storage time on FPD in both storage conditions. Addition of preservatives significantly ($p < 0.05$) increased the FPD but no effect on added water. It can be concluded that addition of both sugar and salt masked the added water in milk but effect of salt is more prominent. Adulterants, storage condition and preservatives significantly influence the FPD of milk but only adulterants affect significantly the detection of added water.

Key words: Adulterants, Cryoscope, Freezing point, Preservatives