

Determination of sodium carbonate, potassium nitrate and urea in fresh milk

Bohari MJ, Hazliana H, Kalaavathi M, Zameer HK, Azima LH

Veterinary Research Institute, 59, Jalan Sultan Azlan Shah, Ipoh, Perak, Malaysia

ABSTRACT

Introduction: Monitoring milk quality and adulteration is one of the responsibilities of Department of Veterinary Services Malaysia to ensure high quality milk is supplied to the consumers. There are several major adulterants in fresh milk such as sucrose, potassium nitrate, urea and sodium bicarbonate. These adulterants would be intentionally or unintentionally introduced into the milk throughout the milking process. **Objective:** This study aims to determine three types of adulterants, namely potassium nitrate, sodium bicarbonate and urea in fresh milk of dairy cattle. **Materials and methods:** Fresh milk samples were collected by Milk Collecting Centre (MCC) from cattle dairy farms in Perak and sent to VRI for testing. A total of 1524 fresh milk samples were received from 2019 to 2020 and tested using MilkoScan™ Mars. The results obtained were analyzed and referred to the Limit of Detection (LoD) for the true reading of detection for each adulterant. **Results and conclusion:** Overall, the highest adulterant detected is urea in 38 samples (2.5%) followed by sodium bicarbonate in 4 samples (0.3%) and potassium nitrate in 3 samples (0.2%). Fourteen fresh milk samples (2.59%) collected in 2019 were detected adulterated with urea but none for potassium nitrate and sodium bicarbonate. However, all three adulterants were detected in 2020 with urea in 14 samples (2.51%), sodium bicarbonate in 4 samples (0.70%) and potassium nitrate in 3 samples (0.53%). In conclusion, potassium nitrate, sodium bicarbonate and urea are detected over LOD in the fresh milk and urea is recorded as the highest percentage. As for the further study, a confirmation test using such as Liquid Chromatography-Mass Spectrometry should be performed. Although the number of samples detected is small, MCC should implement close monitoring to ensure there is no source of harmful adulterants that may enter the food chain.