EFFECTS OF BREED, AGE, NUTRITIONAL STATUS, LACTATION NUMBER AND STAGE ON FREEZING POINT DEPRESSION OF COW MILK

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Freezing point depression (FPD) is an indicator for adulteration of cow milk with water. It can be influenced by several factors of the cow such as breed, age, nutritional status, lactation number and stage, health condition and water intake. However, it is unknown how FPD is influenced by these factors. Therefore, it is unable to prove the milk adulterated with water and to get the correct amount of added water. This study was designed to determine the effect of breed, age, nutritional status, lactation number and stage of the cow on FPD of milk. Unadulterated individual milk samples (105) were collected and all the samples were tested for the FPD using Funke Gerber Cryostar-1-Cryoscope. Milk Urea Nitrogen (MUN) in the milk was measured by using DMAB (1, 4-Dimethyl aminobenzyaldehyde) test to determine the nutritional status of the cow. Data were statistically analyzed as factorial experiment, using Completely Randomized Design and significance was tested at p=0.05. Results revealed that with the breed, age, lactation number and the nutritional status of the cow, FPD has significantly differed *($p<0.05$)*. In contrast, FPD was not affected by the lactation stage and the possible interactions of those factors. Milk from cross breeds had higher FPD (-0.5165) compared to those from pure breed's milk. FPD increased with the age and the lactation number of the cow *($p<0.05$)*. The higher MUN significantly lowered the FPD *($p<0.05$)*. Thus, it can be concluded that, breed, age, nutritional status and lactation number of the cow affect the FPD of cow milk. Breed has most prominent influence on FPD, compared to other factors.

Keywords: Age, Breed, Freezing point depression, Lactation number, Milk urea nitrogen