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BLOOD SUGAR AND PROTEIN LEVELS IN THE MILK OF DAIRY CATTLE BASED ON THEIR PHYSIOLOGICAL STATE

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Abstract: *This study aimed to determine the correlations between blood glucose levels, milk protein levels, and the physiological status of cows in four categories. The results revealed blood glucose values ranging from 28.81 ± 7.15 mg/dl to 50.34 ± 10.31 mg/dl; the protein percentage ranged from 2.71% (subclinical mastitis) to 7.29% (colostrum period). The findings demonstrate that the studied parameters align with the physiological state of the analysed cows. Overall, the results underscore the importance of metabolic monitoring and the enhancement of housing conditions for dairy cows in this unit.*

• Introduction

Blood glucose levels represent the indicator used to determine the energy requirements and the level of proteins in milk can be used to assess the satisfaction of this aspect.

• Material and method

The analyzed material consisted of 43 cows from the Research and Development Unit for Cattle Farming in Dancu, Iași, Romania, divided as follows: 10 pregnant cows aged between 4 and 6 years (batch 1); 15 cows aged 3-5 years, in the 3rd and 5th month of gestation, and were clinically healthy (batch 2); 8 cows aged 5-6 years, at 48 hours postpartum, and were clinically healthy (batch 3); 10 cows aged 4-6 years, in the 3rd month of lactation, with subclinical mastitis (batch 4).

The working methods included: determining blood glucose levels, using the ortho-toluidine method, and the readings were taken with a spectrophotometer. The protein quantity in milk was determined from individual samples using the Kjeldahl method.

• Results and discussions

The results regarding the blood glucose indicated average values ranging between 50.34 ± 10.31 mg/dl (b1) and 28.81 ± 7.15 mg/dl (b3).

The protein percentage had average values between $2.71 \pm 0.39\%$ (b4) and $7.29 \pm 0.76\%$ (b3).

• Conclusions

- the blood glucose levels varied within normal limits, except for batch 3, where statistically significant hypoglycemia was observed.

- the highest value of protein milk registered in batch 3 was attributed to the colostrum's unique secretion characteristics. In batch 4, milk proteins experienced a statistically significant decrease ($P \leq 0.001$), which is specific to the conditions present in these animals.

- the overall results emphasize the importance of metabolic monitoring and the improvement of the housing conditions for dairy cows in the analyzed unit.