

CHANGES OF PHYSIOLOGICAL INDICES AFTER RENEWAL OF BALANCED FEEDING OF STARVATING COWS IN THE MAXIMUM PERIOD OF LACTATION

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INTRODUCTION: The aim of our study was to investigate changes of biochemical indices of milk and serum of dairy cows in the middle period of lactation in association with extreme nutritional changes: in the second month (I) of lactation- at the 6 week underfeeding (UF) only with low quality alfa-alfa silage; and in the fourth month (II) – 30 days after renewal of sufficient and balanced feeding (RF).

MATERIALS AND METHODS: The experiment was carried out in one 200-cows herd with unified nutrition. The UF did not allow animals to reach the maximum milk yield. In I two groups were selected: 10 high productive (25.4 to 32.3 kg/day) and 10 low productive (11.2-18.8 kg/day) cows. Milk and blood samples were collected 2 times (in I and II) at the monthly milk quality control. Biochemical indices were statistically analyzed by SPSS 11.5.

RESULTS: In I cows reacted with lower body condition, coprophagia, reduction of milk protein (MP) and urea (MU), serum albumin (Alb) and urea (SU) concentration below physiological reference level (RL). There were higher serum triglyceride concentration and AST activity, but total bilirubin (TB) and glucosis concentration were in low RL. The direct bilirubin concentration (53% of TB) and high serum protein (TP) level is associated with dehydration and hyponatremia.

In II cows had significant ($p < 0.001$) reduction in milk production, but MP was higher and milk fat % was lower ($p > 0.05$) than in I. TP and Alb are significantly ($p < 0.001$) lower after renewed salt feeding. There were detected reduction of lipolysis and cholestasis and better liver functions ($p > 0.05$).

CONCLUSIONS: UF of cows in I reacted with lipolysis and subclinical extensive hepatocellular damage, without reduction of liver functions. There is high correlation ($r = 0.83$) between MU and SU concentrations and both are objective indices for detection of deficiency of rumen digestible protein in UF and RF conditions. TP is not an objective parameter for control of feeding quality at nutritional salt deficiency. In II there is a significant reduction of milk production (more for high productive cows) and increase in MP, MU and SU concentrations ($p < 0.01$). One month of RF is insufficient period for Alb to achieve RL. The more productive cows has higher serum cholesterol concentration in both UF and RF conditions.