

## **Effect of feeding management on thyroid status and energy metabolites in periparturient dairy cows**

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The study revealed the effect of feeding management on basal metabolism rate. Examination included 64 multiparous high yielding Holstein cows from two dairy farms (A and B) with different feeding strategy. Combination of semi-intensive and pasture feeding management was applied on farm A, while intensive feeding management with concentrate prepared on the farm was applied on farm B. Concentrate composition was prepared in accordance with stage of productive cycle. Blood samples were taken from v. jugularis at days 30 and 7 before expected time of calving, as well as at days 14 and 60 after calving. Thyroid status (tT3, tT4, fT3 and fT4) and energy metabolites (glucose, BHBA and NEFA) were determined in blood serum samples. Obtained results showed significantly higher serum concentration of fT4 in cows from farm A compared to cows from farm B, during all examined period, except day 60 after calving. This result may be explained by influence of any possible existing alimentary thyroid-stimulating factor in the pasture. Those cows were probably exposed to stressful alimentary recourse. Additionally, high serum concentrations of fT4 could modified energy metabolic pathways, especially those related to glucose utilization in peripheral tissue and inappropriate oxidation of NEFA in the liver tissue. Those might be explanations why cows on farm A have significantly lower glucose and significantly higher BHBA concentrations, compared to cows from farm B. Serum concentration of NEFA did not show statistically significant difference between cows from different farms. In conclusion, physiological bioactivity of fT4 may play important role in metabolic rate of dairy cows during transition period, by increasing oxidation of glucose and enhancing hepatic ketogenesis. Due to importance of adequate transition of dairy cows from late pregnancy to early lactation period, this inappropriate adaptation provoked by inadequate feeding strategy may be significant risk factor that could result with metabolism disturbance and consequently decreased milk production and increased incidence of metabolic diseases in periparturient dairy cows.

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