INFLUENCE OF PRE-PARTUM FEEDING ON PERIPARTURIENT METABOLIC STATUS IN ESTONIAN HOLSTEIN COWS

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Summary. Increasing cows’ dry matter intake, or using more energy-dense diets prior to parturition, may prevent excessive lipid mobilization around parturition. On the other hand, feeding energy-dense diets for a prolonged time may lead to overconditioning at parturition followed by depressed appetite, reduced intake and more extensive lipid mobilization. The aim of the present study was to examine effects of pre-partum feeding on periparturient metabolic status in Estonian Holstein cows. Two weeks pre-partum (w-2, w-1) differing amounts of a one concentrate were fed to a Low (L) and a High (H) group while the same amount of another concentrate was fed during the first four weeks post-partum (w1, w2, w3, w4). Silage was available ad-libitum during the whole experimental period. Blood samples, obtained from the coccygeal vein on w-2, w-1, w1, w2, w3 and w4 were analyzed for aspartate aminotransferase (AST) activity and urea, glucose, ketone bodies, triglycerides, non-esterified fatty acids (NEFA), total cholesterol, insulin and glucagon concentrations. The repeated measures general linear model analyses with the SAS system MIXED procedure were performed to discover the influence of pre-partum feeding on blood metabolites. Blood urea concentration tended to be higher in group H on w-1 (P=0.06) and w2 (P=0.06); NEFA concentration was higher in group L on w-2 (P=0.01) and w3 (P=0.02), and tended to be higher on w-1 (P=0.08) and w2 (P=0.08); ketone bodies concentration was higher in group L on w1 (P=0.0001) and glucagon concentration was higher in group L on w1 (P=0.03) and w2 (P=0.02), and tended to be higher on w-1 (P=0.08) and w4 (P=0.06). There were no significant differences between the groups’ blood AST activity and glucose, triglycerides and insulin concentration. The present study suggests that increasing the proportion of concentrates in the pre-partum diet may improve cows’ energy status and reduce lipid mobilization around parturition.

Key words: metabolic status, periparturient, aspartate aminotransferase, non-esterified fatty acids, insulin, glucagons.