

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

## EFFECT OF PROTEIN LEVEL AND METHIONINE SUPPLEMENTATION ON DAIRY COWS DURING THE PERIPARTURIENT PERIOD

Fabiana F. CARDOSO\*<sup>1</sup>, Marina A. C. DANES<sup>1</sup>, Shawn S. DONKIN<sup>2</sup>, Marcos N. PEREIRA<sup>1</sup>, Renata A. N. PEREIRA<sup>3</sup>, Ana Paula PECONICK<sup>1</sup>, Josiane P. SANTOS<sup>1</sup>, Vitória R. CAPRONI<sup>1</sup>

\*corresponding author: [fabii\\_fcardoso@hotmail.com](mailto:fabii_fcardoso@hotmail.com)

<sup>1</sup>Universidade Federal de Lavras, Lavras, Minas Gerais, Brazil

<sup>2</sup>Department of Animal Sciences, Purdue University, West Lafayette, Indiana, USA

<sup>3</sup>Empresa de Pesquisa Agropecuária de Minas Gerais, Lavras, Minas Gerais, Brazil

Dairy cows around calving go through negative protein balance. We examined the effect of increasing the protein level of the periparturient diet with or without rumen-protected methionine (RPMet) on the performance and blood parameters of dairy cows. Thirty-nine Holstein cows were fed individually on one of three experimental diets from  $-18 \pm 5$  days pre-partum through 45 days post-partum. Pre-partum and post-partum diets were formulated to contain two levels of metabolizable protein (MP), referred as low (LP) and high (HP), as well as a HP diet with RPMet supplementation (HPM. Mepron, Evonik). The crude protein concentration in the pre-partum and post-partum diets were, respectively: LP 13.8% and 16.3%, HP 15.6% and 18.4%, and HPM 15.8% and 18.6%. High MP supply was achieved by replacing conventional with low rumen degradable soybean meal (SoypassBR, Cargill). Mepron was included in diet HPM to achieve a 3:1 ratio of lysine to methionine in MP, based on predictions of the NRC (2001) model. Pre-planned contrasts were: 1) Protein: LP vs. (HP + HPM) and 2) RPMet: HP vs. HPM. Pre-partum dry matter intake (DMI) was 2 kg/d higher on high protein ( $P < 0.01$  for 1) and tended to be increased by 1.6 kg/d by RPMet ( $P = 0.07$  for 2). High protein post-partum tended to increase DMI (17.9 vs 16.6 kg/d,  $P = 0.14$  for 1) and milk yield (33.0 vs 31.2,  $P = 0.11$  for 1), and tended to reduce milk/DMI ( $P = 0.08$  for 1). RPMet tended to reduce milk/DMI in early lactation ( $P = 0.08$  for 2). High protein increased the concentrations of urea-N in milk and plasma ( $P < 0.01$  for 1) and milk lactose ( $P = 0.03$  for 1). Body weight and condition score and udder edema did not differ ( $P > 0.32$ ). The concentrations in blood of insulin, glucose, creatinine, non-esterified fatty acids, and beta-hydroxybutyrate did not change ( $P > 0.43$ ). High protein reduced plasma inflammatory cytokine interleukin 1 at parturition ( $P = 0.03$  for 1) and blood lymphocytes 21 days post-partum ( $P < 0.01$  for 1). Interleukin 10 and tumor necrosis factor alpha at parturition did not change ( $P > 0.57$ ). High MP supply increased DMI pre-partum, tended to increase DMI and milk yield and to reduce milk/DMI in early lactation, and affected immune function at calving. The supplementation of diet HP with RPMet tended to increase DMI pre-partum and to reduce milk/DMI in early lactation.

**Keywords:** amino acids, immune function, intake, transition period

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