

Evaluation of the ketone bodies concentration and clinical parameters in dairy cows supplemented with rumen-protected choline during the transition period*

*Resumo publicado no Journal Animal Science, vol. 92, E-Suppl. 2/ Journal Animal Science, Vol. 97, E-Suppl. 1

Rafahel Carvalho de Souza¹, Rogério Carvalho Souza¹, Raquel Figueredo Cota¹, Juliana Mergh Leão², Isabella Bias Fortes¹ and Leandro Silva de Andrade¹

(1)PUC Minas, Betim, Brazil, (2)UFMG, Belo Horizonte, Brazil

The use of rumen-protected choline (RPC) is a strategy to improve fat metabolism in the liver and reduce the prejudicial effects of negative energy balance in dairy cows during the peripartum. The objective of this study was to evaluate serum levels of ketone bodies and clinical parameters of dairy cows and heifers supplemented with RPC during the transition period (from 21 days pre-partum until 21 days post-partum). Thirty two lactating F1 Holstein x Gir cows (16 multiparous and 16 primiparous) were blocked by parity and randomly assigned to one of two dietary treatments: Addition of 60g of RPC (AC) as Toplac Transition (Nutrifarma, Maripá, PR, Brazil) and no addition of RPC (NC). Diets contained 60% forage as corn silage and were isoproteic and isoenergetic according to the NRC (2001) model. Supplementation of RPC was done 21 days before expected parturition until 21 days post-partum. Blood samples, of coccygeal vein or artery, were collected two hours after feeding on the days -21,-14, and -7 pre-partum and on the days 7, 14, 21 post-partum to obtain ketone bodies concentration by the portable electronic method Optium Xceed™. The clinical parameters were evaluated using the methodology described by Rosenberg (1983). The experimental design used was completely randomized blocks with split plots. Ketone bodies concentration means were compared using Tukey test ($P < 0.05$) and clinical parameters (retained placenta) were evaluated by Chi-square test using the MIXED procedure for SAS. No effect of the use of RPC was observed on the ketone bodies concentration ($P=0.4262$). However, at times evaluated, the lowest ketone bodies concentration in heifers were at parturition, 0.28 and 0.32 $\mu\text{mol}/\text{dl}$, respectively for animals AC and NC ($P=0.0001$). No effect of time was observed on the concentration of ketone bodies in multiparous. On partum day, the ketone bodies concentration of AC group was lower in heifers (0.28 $\mu\text{mol} / \text{dl}$) than multiparous (0.57 $\mu\text{mol} / \text{dl}$) ($P=0.0062$). On clinical examination it was observed in the post-partum 16.66% of the AC group with retained

placenta and 66% of the NC animals with retained placenta ($P= 0.0360$). Rumen protected choline supplementation to F1 Holstein x Gir multiparous cows improved milk production and milk fat yield. Effect on primiparous cows was observed only on milk fat yield.