

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

DRY SEASON SUPPLEMENTATION OF PREGNANT COWS: EFFECTS ON PROGENY'S JEJUNAL GENE EXPRESSION AND HISTOLOGY

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Extensive systems and seasonality in forage allowance may affect cow-calf system due to maternal-fetal undernutrition. The aim of this study was to evaluate the effect of maternal nutrition on the development, histology and gene expression in the progeny's jejunum during dry season. Ninety-two multiparous Nelore cows, inseminated with semen from the same bull, initial BW of 387 ± 9.0 kg, were allocated in a completely randomized design with two treatments. *Brachiaria brizantha* cv Marandu (8.2% CP and 68.5% NDF) was used to graze the cows. From the 125th day of gestation until calving, 46 cows were fed only mineral premix (NSUPP) and 46 (SUPP) fed a protein supplement (36% CP, 0.2% BW) (SUPP). At calving, six calves from each treatment were slaughtered. Intestinal compartments were measured, and jejunum samples were collected for histological and gene expression analyzes. Lipid transporters (*SLC27A4* and *CD36*) and monosaccharides transporters (*SLC5A1* and *SLC2A2*) were evaluated through RT-qPCR. Gene expression was analyzed using Eppendorf Realplex and SYBR Green detection system. Relative expression levels were calculated according to Pfaffl (2001). Histological samples were analyzed under light microscope with 4x magnification. ImageJ® analyzer software was used to evaluate villus height (VH), crypt depth (CD) and VH/CD ratio. Least square means of all data were analyzed using the GLM procedure of SAS 9.4. There was no difference in the total digestive tract length or mass between treatments. Small intestine length in NSUPP calves was longer than the SUPP group ($P = 0.05$) with 17.2 m and 15.9 m, respectively. SUPP calves presented lower VH/CD ratio compared to NSUPP (0.73 and 1.01, respectively, $P = 0.01$). No difference in villus height ($P = 0.50$) was observed. SUPP calves presented lower expression of *SLC27A4* ($P = 0.04$) and there was a tendency of lower gene expression of *SLC5A1* ($P = 0.08$), with no difference in *CD36* ($P = 0.94$) and *SCL2A2* ($P = 0.49$). Fetal programming affected the development, histology and gene expression in progeny's jejunum and NSUPP calves showed adaptations to increase the efficiency on nutrients use.

Keywords: fetal programming, gene expression, small intestine

Acknowledgments: FAPEMIG, CNPq, CAPES, APTA, PPGZ – UFLA

Promoção e Realização:

Apoio Institucional:

Organização: