rather be metabolized to oxysterols which were suggested to have regulatory functions in adipocytes.

Key Words: adipose tissue, dairy cow, StAR
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1150 Effects of a dietary supplementation of rumen-protected B vitamins on reproduction of dairy cows by measuring nutrigenomic parameters.

F. Richard*[1], D. R. Khan[1], C. L. Girard[2], H. Leclerc[3], and E. Evans[4], *[1]Universite Laval, Quebec, Canada, [2]Agriculture & Agri-Food Canada, Sherbrooke, Canada, [3]Jefo Nutrition, St. Hyacinthe, Canada, [4]Technical Advisory Services, Bowmanville, Canada.*

It has been known that supplementary rumen-protected or injected B vitamins can improve dairy cow milk production and reproductive performance. Recently, it has been reported that B vitamins injections were having an impact on granulosa cells of the ovarian follicle when looking at gene expression profiling. Therefore, the aim of the present study was to assess whether rumen-protected B vitamins given as a dietary supplement can have an impact on gene expression in granulosa cells. The experimental design included 30 cows divided in three groups; 1) control, without any B vitamin supplementation, 2) injection, weekly intramuscular injections of 320 mg of folic acid and 10 mg of vitamin B12 starting from −21 to 60 d post calving, and 3) dietary supplementation of rumen-protected B vitamins as 50 g/cow/d of Transition VB™ (Jefo) from −21 to −1 calving, 100 g/cow/d of Transition VB™ from 1 to 21 d post-calving, 3 g/cow/d of Lactation VB™(Jefo) from calving to 60 d post calving. The follicles size was measured by laparoscopic transvaginal ultrasound from 40 d until OPU at 54 d post-calving. The cows were synchronized with two injections of PGF2α 12 d apart with first injection at 40 d. Granulosa cells were collected by OPU 53 h post second injection on the dominant follicle larger than 12 mm in diameter. Hybridization was done in dye swipe on EmbryoGENE microarray slides using three trios of animals. Differently expressed genes were analyzed through Ingenuity Pathway Analysis software. Selected genes were further assessed by RT-qPCR based on their functional significances. Based on estradiol and progesterone levels, the pattern of gene expression is supporting precocious granulosa cell differentiation toward an earlier response to LH (up-regulation of RGS2, NR3C1, OLR1, since significantly different ($p < 0.05$) from the control in both microarray analysis and RT-qPCR validation; downregulation of LHCGR, HSD3B1 and FST, since significantly different ($p < 0.05$) from the control) which may be the result of an increase in LH secretion. While comparing gene expression to superovulation conditions improving oocyte developmental competence, we observed genes commonly expressed with dietary supplementation of protected B vitamins (RGS2 and INHBA). The microarray data of granulosa cells from the dominant follicle are supporting the hypothesis that dietary supplementation of rumen-protected B vitamins is affecting granulosa cells differentiation toward an earlier LH response associated with genes expressed in conditions where oocyte developmental competence is improved.

Key Words: microarray, nutrigenomic, protected B vitamins, reproduction
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1151 Impact of dietary protein levels during late pregnancy on the number of binuclear cells in sheep.

H. H. Mansour*[1], A. Reyaz[1], S. T. Dorsam[1], L. A. Lekatz[2], and K. A. Vonnahme[1], *[1]North Dakota State University, Fargo, [2]Illinois State University, Normal.*

Angiogenic and vasoactive factors have been localized to binuclear cells (BNCs) located in the placenta of several species including sheep. During late gestation in the ewe, a low protein diet increased maternal blood pressure and uterine blood flow compared with a high dietary protein level. The objective of this study is to determine the effect of varying protein levels during late pregnancy in ewes on the number of BNCs. We hypothesized that low dietary protein during late gestation would increase the number of BNCs leading to the reported increase in uterine blood flow in ewes. At Day 100 of pregnancy, 18 ewes were randomly divided into three groups (6 each) and provided one of three diets containing different metabolizable protein (MP) levels: low protein level (L; 60% MP), control protein level (C; 100% MP), and high protein level (H; 140% MP). At Day 130 ± 1 of gestation dams were humanly euthanized and placentomes were removed for histology analysis. Histology sections were stained with biotinylated Dolichos biflurus (DBA) lectin, Texas red-avidin, and fluorescein (Fluorescien labeled Griffonia simplifolica lectin). There was no significant effect ($P = 0.90$) of maternal protein level on BNC number (180.0, 166.1, and 165.2 ± 28.41 for L, C, and H, respectively). Furthermore, there was no significant effect of maternal protein level on BNC size, proportion of the placentome occupied by cotyledon, nor number of BNCs per cotyledonary area. While we reject our hypothesis that BNC numbers are increased in protein deficient pregnant ewes, we will continue to evaluate if the ovine BNCs produce angiogenic or vasoactive factors that may influence placental function.

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