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pregnancy and the cycle. In contrast, ESR2 protein was only faintly localized to the nuclei of luminal and glandular epithelium at d 16 and 18 of pregnancy. These results suggest that ESR2 may play a role in mediating the response of the endometrium to embryonic estrogen, particularly during implantation. †USDA is an equal opportunity provider and employer.

Key Words: estrogen receptor, pig, pregnancy

O007 **Serum bovine pregnancy associated glycoproteins and progesterone in beef heifers that experienced late embryonic/fetal mortality.** L. K. Kill[1,*], K. G. Pohler[2], G. A. Perry[1], M. F. Smith[2], *[1]Department of Animal Science, South Dakota State University, Brookings, [2]Division of Animal Science, University of Missouri, Columbia.*

The incidence of late embryonic/fetal mortality in beef heifers is approximately 4 to 5% and most of the loss occurs around the time of embryo-uterine attachment (d 27 to 41; d 0 = insemination). Inadequate placental function and (or) a compromised maternal environment may be causes of late embryonic/fetal mortality. Bovine pregnancy associated glycoproteins (bPAGs) are secreted by fetal binucleate trophoblast cells into the maternal circulation and have been used as a marker of placental function. Progesterone is secreted by the corpus luteum and is required for preparation of the maternal environment and maintenance of pregnancy in mammals. Our hypothesis was that maternal serum concentrations of bPAGs and progesterone will be lower around d 30 in heifers that subsequently undergo late embryonic/fetal mortality compared to heifers that maintain pregnancy. Therefore, our objective was to examine the relationship between late embryonic/fetal mortality and maternal concentrations of bPAGs and progesterone in beef heifers. Ovulation was synchronized in 679 beef heifers on five ranches in South Dakota and insemination occurred at a predetermined time (d 0). Pregnancy was determined (d 30 to 35 and after d 65) and a single blood sample was collected on d 30 to 35 and circulating concentrations of bPAGs and progesterone were assayed utilizing an ELISA or RIA, respectively. The incidence of late embryonic/fetal mortality was 5% (n = 21; final pregnancy rate = 60%) and serum concentrations of bPAGs were higher ($P < 0.05$) in heifers that maintained pregnancy (n = 406) (2.43±0.06; mean ± SEM) compared to heifers that experienced embryonic/fetal loss (1.98 ± 0.05). There was no difference ($P = 0.14$) in serum concentrations of progesterone between heifers that did or did not maintain pregnancy. In summary, a decrease in bPAGs but not progesterone, in heifers that experienced late embryonic/fetal mortality, suggests that failure to maintain pregnancy may be initiated by the conceptus rather than due to inadequate luteal secretion of progesterone.

Key Words: beef heifers, bovine pregnancy associated glycoproteins, embryonic/fetal mortality

O008 **Utilization of an estrogen antagonist to develop a non-surgical model for delayed implantation in rats.** B. E. Abramovitz*, J. A. Green, K. G. Pohler, R. D. Geisert, *University of Missouri, Columbia.*

Delayed implantation is a term that describes how development of mammalian embryos can be put into seasonal or lactational diapause until a suitable time to give birth. In the rat, embryonic diapause can be induced during lactation through suckling inhibition of follicular estrogen secretion which is necessary for initiation of implantation on d 4 post-coitus (pc). Ovariectomy followed by daily administration of progesterone is one method of artificially inducing diapause in mate rats. Objective of the present study was to determine ability of an estrogen antagonist (ICI) to induce delayed implantation in mated rats and demonstrate if a single treatment with estrogen can trigger implantation following induced delay. Thirty-two Sprague Dolly rats (8 wks of age) were exposed to intact males and checked daily for mating. Females were assigned to one of three experimental groups: 1) Control group (CON) received no treatment (n=6); 2) ICI group (n=8) received a 100 µg s.c. injection of the estrogen antagonist ICI 182,780 (TOCRIS BioSciences) plus 2 mg progesterone daily from d 2 to 8 pc; and 3) ICI+E group (n=7) received 100 µg of ICI 182,780 plus 2 mg progesterone from d 2 to 8 pc and treated with 1µg of estradiol-17b on d 9 pc. All females treated with ICI continued to receive 2 mg progesterone until sacrificed on d 15 or 16 pc. Total number of implantation sites (IS), total uterine weight (UW), fetal + placental weight (FW), and crown-rump length (CR) were measured. No IS were detectable in uteri of ICI females. Number of IS were similar ($P < 0.08$) between CON and ICI+E females (15.5 vs 12.3). There was a day x trt effect ($P < 0.001$) for UW, FW and CR. UW (CON d15 16.8 g; d16 25.3 g vs ICI+E d15 1.8 g; d16 3.1 g), FW (CON d15 0.8 g; d16 1.5 g vs ICI+E d15 0.06 g; d16 0.1 g), and CR (CON d15 11.2 mm; d16 16.4 mm vs ICI+E d15 2.5 mm; d16 2.9 mm) decreased in ICI+E females. Implantation was delayed with ICI administration but treatment of females with estrogen was necessary to reinitiate implantation 5 days later.

Key Words: delayed implantation, ICI, rat

O009 **Blood glucose concentrations during the peripartum in insulin resistant dairy cattle at prepartum period.** F. Da Rosa[1,2,3,*], E. Schwegler[3,4], E. Schmitt[5], A. Schneider[3,6], P. Montagner[3,4], M. Weschenfelder[3,4], A. R. Krause[2,3], F. Del Pino[3,7], C. Brauner[2,3], M. N. Corrêa[3,4], *[1]Animal Sciences, University of Illinois, Urbana, [2]Animal Sciences, [3]Núcleo de Pesquisa, Ensino e Extensão em Pecuária (NUPEEC), [4]Department of Veterinary Clinics, Federal University of Pelotas, [5]Brazilian Agricultural Research Corporation, EMBRAPA - CPAFRO, Porto Velho, [6]Nutrition College, [7]Department of Biochemistry, Federal University of Pelotas, Brazil*

The aim of this study was to assess the serum glucose level during the peripartum period in pluriparous dairy cows diagnosed in three different levels of insulin resistance in the prepartum. Nineteen cows from a commercial herd kept in a semi-extensive system in southern Brazil were enrolled in this study. Glucose tolerance test (GTT)was conducted on 20 d prepartum and the cows were categorized into three groups according to the rate of glucose metabolism. Sensitive Group (GS): the higher rate of glucosemetabolism; Intermediate Group (GI) and Resistant Group (GR): lower rate of glucose metabolism. The level of insulin resistance was indirectly measured by the AUC (area under the curve) of glucose, where the GS was more sensitive (lower area), and the GR more resistant (greater area). The blood was collected on 23, 14, 7 and 3 d prepartum, on the day of partum and on 3, 6, 9, 16 and 23 d postpartum. Statistical analysis was performed using the SAS program. The GTT was compared between groups by analysis of variance using one-way ANOVA and glucose measurements were analyzed by repeated measures using the MIXED procedure with a value of $P<0.05$ considered significant. It was observed a similarity glucose concentrations between GS, GI and GR (66.47 mg/dl; 66.23 mg/dl; 70 mg/dl, respectively), in the prepartum, whereas, on the postpartum period the GR group (88.71 mg/dl) had higher concentrations of glucose than the GI (71.48 mg/