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Abstracts

**American Dairy Science Association
American Society of Animal Science**

July 12–16, 2009

Montreal, Quebec, Canada

<http://adsa.asas.org/meetings/2009/>

**J. of Dairy Sci., Volume 92, E-Supplement 1
J. of Anim. Sci., Volume 87, E-Supplement 2**

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Angus CL. It is concluded that PGE1 or PGE2 alone prevents luteolysis regardless of breed.

Key Words: prostaglandins, cows, corpus luteum

W198 The effect of a shortened dry period on follicular dynamic in early lactation Holstein cows. S. Safa¹, A. Heravi Moussavi^{*1}, M. Danesh Mesgaran¹, and A. Soleimani^{1,2}, ¹Department of Animal Science, Ferdowsi University of Mashhad, Iran, ²Islamic Azad University-Kashmar Branch, Iran.

The study was designed to test the effect of dry period length on follicular dynamics in early lactation cows. Cows were randomly assigned in 1 of 2 treatments: 1) traditional 60 d dry period (n=14) and 2) a shortened 20 d dry period (n= 13). Holstein cows were blocked in pairs based on their previous 305 d milk, parity and expected calving dates. All cows were fed by routine ration of farm (total mixed diet) twice a day at 0800 and 1400 h and had at all time free access to water. To monitor follicular parameters, ultrasound measurements of follicular activity were made on alternate days from 10-35 day postpartum (PP) to determine the characteristics and fate of the 1st follicular wave, using a 7.5 MHz rectal transducer. Dominant follicle development was characterized by follicular mapping of recorded ultrasound images. A dominant follicle was defined as a follicle that was >10 mm in diameter in the absence of other large (>9 mm) growing follicles. The data were analyzed using the GLM procedure of SAS for a completely randomized design. The number of follicles (5 to 10 mm) present on d 10 (p=0.12; 4.14±0.44 and 3.08±0.48, respectively) and 14 PP (p=0.11; 5.21±0.47 and 4.08±0.51, respectively), number of days until detection of a follicle ≥ 10mm in diameter (p=0.24; 11.43±0.82 and 12.85±0.85 d, respectively), diameter of the first dominant follicle on d 14 PP (p=0.25; 13.57±0.73 and 12.29±0.79 mm, respectively), maximum diameter of the first dominant follicle (p=0.38; 15.32±0.66 and 14.46±0.69 mm, respectively), and days to first ovulation (p=0.62; 29.31±2.89 and 27.18±3.14 d, respectively) were all similar among the groups. Results of this study showed that the reduced dry period length had no apparent effect on follicular parameters and days postpartum to first ovulation.

Key Words: dairy cows, dry period, follicular dynamic

W199 Characteristic of the largest follicle of the waves emerged after treatment with GnRH during estrous cycle of Iranian Holstein cows. E. Dirandeh and H. Kohram*, University of Tehran, Karaj, Tehran, Iran.

This study was done to consider the effect of GnRH on largest follicle of the waves in Iranian Holstein cows. The estrous cycles of 10 cows were synchronized with 2 im injections of Prostaglandin F_{2α} given 11 d apart. The cows were randomly assigned to 1 of 2 groups. In control group of animals no injection of GnRH was performed. GnRH administered on Day 6 of the estrous cycle (estrus = Day 0). The diameter of the largest follicle was also recorded. Ovarian follicular development was monitored daily by transrectal ultrasonography with a real-time linear scanning ultrasound diagnostic system. Ultrasonography was performed once daily from the day that second PGF_{2α} inject until the day of next estrous. The follicular wave during which growth phase the treatment was administered was designated as wave 1. Any follicular wave induced by treatment was designated as wave A. The follicular wave emerging after the induced wave (GnRH treated cows) or the follicular wave emerging after 7–8 days after the emergence of wave 1 (control

cows) was designated as wave 2 was designated as wave 2. Comparisons of waves 1, A, and 2 detected in GnRH-treated cows were made by one-way RM ANOVA. Results are reported as least square means ± SEM. There was no significant effect (P>0.05) of wave, group, or a wave*group interaction for the parameter of largest follicles of waves 1 in both GnRH-treated and control cows. There was no significant effect (P>0.05) of wave for the parameters above for waves 1 in GnRH-treated cows (Table 1). The ovulatory follicle in control group grew larger (14.0 ± 1.8 vs. 12.6 ± 1.1 mm, P<0.05), and maintained for a longer period of time (P<0.05) than in GnRH-treated cows (9.50 ± 0.6 vs. 5.8 ± 0.4). The results suggested that administration of GnRH on day 6 of estrous cycle induce ovulation and the ovulatory follicle in GnRH-treated cows was older than that in control cows.

Key Words: ultrasonography, GnRH, follicle

W200 Subclinical mastitis effects on steroid concentrations and gene expression in theca cells of preovulatory follicles in cows. Y. Lavon^{*1}, G. Leitner², R. Meidan¹, E. Klipper¹, and D. Wolfenson¹, ¹The Hebrew University, Rehovot, Israel, ²The Veterinary Institute, Bet-Dagan, Israel.

We have recently observed that subclinical mastitis (SCM) lowered steroid concentrations and gene expression in granulosa cells of preovulatory follicles in about 1/3 of the infected cows. To complement these studies, we examined the effect of SCM on follicular steroid levels and gene expression in the other follicular steroidogenic cell – the theca cells. Cyclic lactating Holstein cows (n=20) were diagnosed for mastitis by somatic cell counts and bacteriological examinations. On day 6 of the estrous cycle, synchronized cows were treated with PGF_{2α} and 42 h later, the cows were slaughtered and their ovaries were collected. Follicular fluids and theca cells were obtained from preovulatory follicles. Gene expression and steroids were determined by RT-PCR and RIA. Data were analyzed by ANOVA and means ± SE presented. One third of SCM cows (n=4) exhibited low estradiol concentrations in the follicular fluid, whereas the remaining 2/3 (n=8) cows, and uninfected cows (n=8), exhibited normal concentrations (269±71 vs. 815±127 and 870±62 ng/ml, respectively, P<0.01). The SCM cows with low estradiol also exhibited low follicular androstenedione concentrations (32±12 vs. 109±31 and 130±30, respectively, P<0.05), and estradiol to progesterone ratios (6.4±1.3 vs. 14.8±2.4 and 13.3±1.4, respectively, P<0.05). Accordingly, mRNA expression in theca cells, for LH receptor, cytochrome P450 side chain cleavage, and cytochrome P450 17α-hydroxylase were lower in SCM cows with low estradiol than in SCM cows with normal estradiol levels, and uninfected cows (P<0.05). However, 3βHSD and StAR mRNA were not affected by SCM. Results show that low gene expression in theca cells is associated with low preovulatory steroid concentrations. The resulting low estradiol level in 1/3 of the SCM cows could be associated with delayed preovulatory LH surge and ovulation, as documented in our earlier studies. These mechanisms may explain mastitis-induced low fertility in dairy cows.

Key Words: mastitis, estradiol, theca cells

W201 Effect of dry period lengths on complete blood count in early lactating Holstein cows. A. Soleimani^{*1,2}, A. Heravi Moussavi¹, M. Danesh Mesgaran¹, A. Golian¹, and S. Safa¹, ¹Department of Animal Science, Ferdowsi University of Mashhad, Iran, ²Islamic Azad

The study was designed to test the effect of reducing dry period length on complete blood count and differential white blood cell count in early lactating cows. Cows were randomly assigned in 1 of 2 treatments: 1) traditional 60 d dry period (n=14) and 2) a shortened 35 d dry period (n=15). Holstein cows were blocked in pairs based on their previous 305 d milk, parity and expected calving dates. All cows were fed by routine ration of farm (total mixed diet). Using vacutainer tubes, blood samples were collected weekly from -7 to 50 day relative to calving via venipuncture of coccygeal vessels before the morning feeding to monitor complete blood count (CBC). The blood samples were kept in room temperature until analyzing for CBC by a hematology analyzer. The data were analyzed using the Mixed procedure of SAS for a completely randomized design with repeated measures. The white blood cells (P=0.64; 12277 ± 1798 and 13468 ± 1733 / μ l, respectively), red blood cells (P=0.58; 5283037 ± 104596 and 5363237 ± 100280 / μ l, respectively), platelet (P=0.13; 250271 ± 16913 and 286354 ± 16122 / μ l, respectively), hemoglobin (P=0.91; 8.09 ± 0.15 and 8.11 ± 0.14 g/dl, respectively), hematocrit (P=0.70; 27.97 ± 0.5 and $28.24 \pm 0.5\%$, respectively), and also number of neutrophils (P=0.52; 3445.3 ± 198 and 3622.6 ± 188 , respectively), lymphocytes (P=0.59; 7703.9 ± 1609 and 8920.2 ± 1547 , respectively), monocytes (P=0.82; 685.6 ± 100 and 716.5 ± 96.4 , respectively) and eosinophils (P=0.52; 173.8 ± 23 and 152.8 ± 22 , respectively) were all similar among the groups. Red blood cell, hemoglobin and hematocrit were decreased and platelet were increased over the time (P<0.05). Result of this study showed that the reduced dry period length had no effect on cell blood count and differential white blood cell count.

Key Words: dairy cow, dry period, complete blood count

W202 Evaluation of sperm motility in stored semen collected from boars fed a diet supplemented with organic selenium. S. Speight, M. Estienne*, A. Harper, and R. Crawford, *Virginia Polytechnic Institute and State University, Blacksburg.*

The objective was to compare sperm motility during storage for semen from boars fed diets supplemented with organic or inorganic sources of selenium. At weaning, boars were assigned to one of three treatments: I. basal diets with no supplemental selenium (controls), II. basal diets supplemented with 0.3 ppm organic selenium (Sel-Plex; Alltech, Inc., Nicholasville, KY), and III. basal diets supplemented with 0.3 ppm sodium selenite (n = 10 boars/treatment). At sexual maturity, ejaculates were collected, processed and stored at 18° C in Beltsville Thawing Solution and Androhep-Lite (Minutube of America, Inc., Verona, WI) (3×10^9 sperm/85 mL semen and extender) and sperm motility assessed daily for 10 d using a computer-assisted sperm analysis system (Hamilton Thorne Research, Beverly, MA). Data were analyzed using repeated measures ANOVA and individual ejaculate was the experimental unit. There were no effects of day x extender or day x treatment x extender (P > 0.1), thus data were pooled between extenders. Effects of treatment x day were detected for percent motile spermatozoa (P < 0.01), path velocity (smoothed cell path; VAP) (P = 0.06), amplitude of lateral head displacement corresponding to the mean width of the head oscillation as the sperm swam (ALH; P = 0.02), frequency with which the sperm track crossed the sperm path (BCF; P = 0.04), straightness (P = 0.01) and percent static spermatozoa (P = 0.009). In general, values were indicative of an enhanced ability of sperm cells from Sel-Plex-fed boars to maintain good motion characteristics during storage. For example, VAP (μ m/s) was greater (P < 0.03; SE = 2.5) for sperm from boars fed Sel-Plex (77.5) after 3 d of storage compared to control (66.5) or selenite

(65.5) boars. After 10 d of storage, VAP was greater (P < 0.01; SE = 2.5) for sperm from boars fed Sel-Plex (77.2) compared to selenite-fed boars (57.2). Sperm VAP from control boars (65.2) was not different (P > 0.16) from either the Sel-Plex- or the selenite-fed boars. Results indicate that dietary organic selenium supplementation may help ameliorate the negative effects of semen storage on sperm motility.

Key Words: boar, selenium, semen

W203 Effect of melatonin on in vitro manipulated rat oocytes and embryos. S. Nandi*^{1,2}, V. Girish Kumar², and F. C. Gwazdauskas³, ¹*National Institute of Animal Nutrition and Physiology, Bangalore, India*, ²*Karnataka Veterinary Animal and Fisheries Sciences University, Bangalore, India*, ³*Department of Dairy Science, Virginia Polytechnic Institute and State University, Blacksburg.*

Melatonin, N-acetyl-5 methoxytryptamine, acts as a powerful agent against reactive oxygen species (ROS) and a potent apoptosis blocker. The aim of the present study was to investigate the effect of different concentrations of melatonin on the development of rat oocytes and embryos in vitro. In experiment 1, control (38.5°C) and heat stressed (39°C during maturation) and chemically stimulated (glycolytic stimulator dinitrophenol, DNP: 10 μ M and glycolytic inhibitor hexametaphosphate, HMP: 100 μ M) oocytes were matured in vitro in 9 different concentrations (0, 1, 5, 10, 25, 50, 100, 500 and 1,000 μ M) of melatonin. The maturation rates were recorded after 24 hrs of culture. The oocytes were fertilized in vitro and the resultant embryos were further cultured for the production of morulae/blastocysts. Supplementation of melatonin at 10 μ M concentration in the oocyte culture medium resulted in a significantly higher (P < 0.05) maturation rate (control: 90.3%, heat stressed: 84%, DNP: 86% and HMP: 78%) and morula/blastocyst yield (control: 25.3%, heat stressed: 16%, DNP: 20% and HMP: 18%) compared to control (without melatonin). Based on result of experiment 1, in vivo produced embryos were divided into 2 groups: control and heat stressed (39°C during first 2 d of culture). The heat stressed embryos were cultured in medium supplemented with 10 μ M melatonin. Supplementation of melatonin in the embryo culture medium resulted in comparable morula/blastocyst yield in control and heat stressed embryo groups. Melatonin also decreased the death (assessed by trypan blue staining) of oocytes and surrounding cumulus cells and also decreased the developmental block, asynchronous development and degeneration of embryos from 5 to 100 μ M concentrations. However, melatonin decreased the oocyte development at the 1,000 μ M concentration. In conclusion, enriching the culture medium with 10 μ M melatonin improved the development of in vitro manipulated rat oocytes.

Key Words: melatonin, oocyte, rat

W204 17 β -estradiol and spontaneous myometrial contractions in ovariectomized rats. O. Yildiz-Gulay*¹, A. Bulbul², M. S. Gulay¹, K. Altunbas³, and O. Ozden-Akkaya³, ¹*Mehmet Akif Ersoy University, Faculty of Veterinary Medicine, Department of Physiology, Burdur, Turkey*, ²*Afyonkarahisar Kocatepe University, Faculty of Veterinary Medicine, Department of Physiology, Afyonkarahisar, Turkey*, ³*Afyonkarahisar Kocatepe University, Faculty of Veterinary Medicine, Department of Histology and Embryology, Afyonkarahisar, Turkey*.

The aim of this study was to evaluate the effect of injecting different doses and time intervals of 17 β -estradiol on spontaneous myometrial contractions of ovariectomized rats. Three to 6 months old 71 female