

1441 The effects of aspiration fluids containing different anticoagulants on the development capability of bovine oocytes. S. Wang, R.G. Holyoak and T.D. Bunch, Utah State University, Logan, Utah.

Anti-coagulants are often used to improve the recovery and quality of oocytes collected by ultrasonographic guided ovum pick-up (US-OPU). The purposes of this research was to investigate the developmental capability of bovine oocytes exposed to different anticoagulants (250 U/ml heparin, 26.9 mM EDTA, 26.3 mM EGTA and without anticoagulant) in two flushing medium (Dulbeccos-PBS and Hepes TALP) with varied exposure time (1, 2, and 4 hours) before in vitro maturation. As a time zero control, oocytes were aspirated and placed directly into in-vitro maturation media without exposure to anticoagulants. We used a 4x2x3 factorial design for data analysis. Bovine cumulus complete oocytes (N=2760) were aspirated from slaughter house ovaries at a vacuum pressure as that used in US-OPU (25 ml/min) and randomly assigned to the different treatments. The oocytes then went through in vitro maturation and in vitro fertilization. The resulting zygotes were co-cultured with oviduct epithelial cells. Cleavage rate was identified at 45 hours after fertilization. Embryo development was evaluated at day 8 of culture. Analysis of variance was used to determine significant differences. There were significant differences ($p < 0.05$) in cleavage rates of oocytes treated by different anticoagulants and the post-cleavage development of heparin group was significantly ($p < 0.05$) better than other groups. Cleavage rates were 73.03, 30.08, 35.64 and 62.39%; the cleaved oocytes that developed to morulae were 20.19, 9.66, 14.69 and 15.13%, and those developed to blastocyst were 18.51, 7.59, 7.11 and 12.89% for heparin, EDTA, EGTA and without anticoagulant, respectively. Cleavage rates were 59.80, 54.65 and 38.04% for 1, 2 and 4 hour treatment duration, respectively, indicating a significant ($p < 0.05$) decrease along with increase of exposure time. There was no significant difference ($p > 0.05$) in cleavage rates between the two flushing medium. However, oocytes maintained in Hepes TALP during treatment resulted in a better post-cleavage development than in Dulbeccos-PBS ($p < 0.05$), as shown by the percentages of oocytes that developed to morulae (20.07 vs 12.06) and to blastocysts (17.18 vs 8.92). There was no significant difference ($p > 0.05$) between the time zero control and the heparin group in cleavage rates (77.01 vs 73.03%), the cleaved oocytes developing to morulae (21.08 vs 20.19%), nor to blastocysts (13.86 vs 18.51%). We conclude that the use of heparin in an US-OPU system is significantly better than EDTA, EGTA, and no anticoagulant over short (1-2 hrs) exposure periods, also Hepes TALP flushing media aids in significantly better post-cleavage embryo development.

Key Words: Anticoagulant, In vitro fertilization, Oocyte aspiration.

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1442 Effect of feeder design on finishing pig growth performance. M.M. Rantanen, B.T. Richert, R.D. Goodband*, M.D. Tokach, J.L. Neissen, and R.H. Hines. Kansas State University, Manhattan.

A total of 300 pigs (initial weight 50.6 kg) was used in two identical 70-d growth trials to determine the effect of feeder design on finishing pig growth performance. Pigs were blocked by initial BW in a randomized complete block design with five replications conducted during the summer (July through September) and five replications during the winter (November through January). There were 10 pigs per pen (1.8-m x 4.9-m) with 50% solid and 50% slatted concrete flooring. All pigs were fed a common milo-soybean meal diet that was formulated to .65% lysine, .65% Ca, .55% P, and fed in a meal form. Three different feeder designs were evaluated. Feeder one (FD1: Aco®) was a dry, two-hole self-feeder with partitions to minimize pig interaction when feeding. The trough opening was 29.21 cm wide. Feeder two (FD2: Crystal Spring®) was a single hole, wet/dry shelf feeder with one nipple waterer located in the base of the feeder. This was the only source of water for pigs using this feeder. The feeder trough was 30.48 cm wide. The third feeder (FD3: Osborne®) was a dry, 8-hole round feeder. Each feeder hole was 24.13 cm wide. Pigs using either of the dry feeders had one nipple waterer per pen. Three water meters were installed to record total water usage of pigs on each experimental treatment, therefore, water disappearance was not statistically analyzed. Average daily gain and ADFI were unaffected by feeder design. Feed efficiency (G/F) was improved for pigs using the single-hole, wet/dry feeder (FD2) compared with pigs using either of the dry feeders (FD1 or FD3). Average daily feed intake was greater ($P < .01$) and G/F was poorer ($P < .01$) for pigs during the winter trial than during the summer trial. Water disappearance was numerically lower in the summer trial for pigs using the wet/dry feeder. In conclusion, the single hole, wet/dry feeder tested in this study resulted in improved feed efficiency compared with the dry feeders evaluated.

ITEM	SUMMER			WINTER			CV
	FD1	FD2	FD3	FD1	FD2	FD3	
Initial BW, kg ^a	49.60	49.60	49.60	51.70	51.60	51.70	1.1
ADG, kg	.78	.84	.78	.83	.83	.82	7.8
ADFI, kg ^b	2.97	3.04	3.04	3.52	3.21	3.40	4.4
G/F ^b	.26	.28	.26	.24	.26	.24	6.8
Final BW, kg ^c	104.30	108.30	104.10	109.90	109.80	108.60	4.1
Water use, L/d ^d	8.50	4.70	7.80	7.40	6.90	7.20	

^aSeason effect ($P < .01$) and ($P < .05$), respectively.

^bFD2 vs FD1 or FD3 ($P < .05$).

^dWater disappearance (L/pig/d) was not statistically analyzed.

KEY WORDS: Pigs, Feed dispensers, Growth

1443 A comparison of vitamin supplements on reproductive performances of weaned sows. R.A. Schoenbeck¹, J. Thompson² and B.A. Didion¹, DEKALB Swine Breeders, Inc.¹, Dekalb, IL and Schering-Plough Animal Health², Overland Park, KS

The objective of this study was to compare commercially available vitamin compounds on the reproductive performance of weaned sows. Treatments consisted of intramuscular injections of: 10cc Injacom 100 (vitamin A in propionate ester form, Hoffman-La Roche, Inc.); 5cc Ovatone (beta-carotene, BASF); 5cc Vital E (natural alpha-tocopherol, Schering-Plough); 5cc Vital E+A (natural alpha-tocopherol and vitamin A palmitate ester form, Schering-Plough); 5cc Retinol (vitamin A palmitate ester form, Sigma Chemical Co.); and 5cc corn oil control. Parity 2 to 10 weaned sows were used for the study. Of 750 sows injected mid-July through mid-October, 583 (78%) expressed estrus within 7 days post-weaning and were artificially inseminated three times. Statistical analysis was performed using SAS-GLM on the 583 sows. The results shown below represent an advantage or disadvantage relative to controls (control = 0).

	INJACOM	OVATONE	VITAL E	VITAL E&A	RETINOL	CONTROL
N	97	102	93	99	94	98
PARITY	4.24	4.06	4.38	4.00	3.87	4.03
% FARROW	-2.3	2.8	1.1	1.2	-3.0	0
TOTAL BORN/LITTER	0.0	-0.17	0.52*	0.1	0.73*	0
TOTAL BORN ALIVE/LITTER	-0.29	-0.43	0.33*	-0.11	0.26*	0
STILLBORN/LITTER	0.54**	0.34*	0.25*	0.26*	0.39**	0

* ($P < .1$)

** ($P < .05$)

These data indicate a trend towards enhanced total born/litter and total born alive/litter of weaned sows given injectable Retinol or Vital E supplement at weaning. Injacom 100 and Retinol had an increased incidence of stillborn per litter ($P < 0.05$).

Key Words: pigs, reproduction, vitamin