

**EFFECT OF THE PRESENCE OF A CL IN THE OVARY ON OOCYTE NUMBER, CLEAVAGE RATE AND BLASTOCYST PRODUCTION IN VITRO IN CATTLE**

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High progesterone concentration has been shown to cause regression of the dominant follicle and follicle wave turnover in cattle (Taylor and Rajamahendran, *Can J Anim Sci* 74:281,1994). Pregnant cows also produced a higher number of high quality oocytes (Moreno et al., *Theriogenology* 39:271,1993) probably due to higher progesterone level in the circulation and constant follicular turnover. The purpose of this study was to test the hypothesis that higher quality oocytes and a higher blastocyst production rate could be obtained from a) ovaries of luteal phase cows compared to follicular phase cows, and b) the ovary bearing the CL compared to ovary not bearing a CL. In experiment 1, at the time of collection from the slaughterhouse, both ovaries from individual cows were separated into either luteal phase group or follicular phase group depending on the presence of an active or regressing CL. In experiment 2, at the time of aspiration of follicles, ovaries were divided into CL bearing and CL nonbearing groups. In both experiments, immature oocytes aspirated from each ovary were counted, pooled by treatment group, and cultured in TCM-199 supplemented with 0.01 mg/ml FSH and 5% superovulated cow serum (SCS). Frozen-thawed semen was used for IVF. The fertilization medium (BO medium) contained 5 mM caffeine and 20 mg/ml heparin. Fertilized oocytes were then cultured in TCM-199 supplemented with 5 mg/ml insulin and 5% SCS for further development. The development of embryos was observed until Day 9 after fertilization. Mean number of the oocytes per ovary (12 vs 10) and cleavage rate (312/373, 84% vs 113/127, 89%) were not significantly ( $P>0.05$ ) different between the luteal and follicular phase groups. However, the blastocyst production rate was significantly ( $P<0.05$ ) higher in luteal phase group (110/373, 29% vs 26/127, 20%). Mean number of the oocytes per ovary (15 vs 15) was not different ( $P>0.05$ ) between CL bearing and CL nonbearing groups. Cleavage rate was significantly ( $P<0.01$ ) higher in the CL nonbearing (249/284, 88% vs 175/232, 75%). On the contrary, blastocyst production rate was significantly ( $P<0.01$ ) higher in the CL bearing group (55/232, 24% vs 37/284, 13%). The results of this study show that higher blastocyst production in vitro could be achieved from oocytes obtained from luteal phase cows and from ovaries bearing an active CL.