Animal Reproduction

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OPU-IVF and ET

Time of ovulation after intrafollicular injection of cumulus-oocyte complex into dominant follicle of Girolando cows, using two different esters of estradiol as ovulation inducers

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Resumo

Previous studies have indicated that for the intrafollicular oocyte transfer (IFIOT) success, the cumulus-oocyte complexes (COCs) need to remain for 12 to 22h into pre-ovulatory follicle after injection, to complete their maturation process. Thus, the aim of this study was to determine the time of ovulation after IFIOT, using two different estradiol esters as ovulation inducers. 14 non-lactating Girolando cows were used in two replicates, in the cross-over model, previously synchronized (Ourofino®, Cravinhos-SP, Brazil). The ovulation synchronization protocol consisted by the insertion of an intravaginal device containing 1g of progesterone (P4, Sincrogest) and administration of 2mg of estradiol benzoate i.m. (EB, Sincrodiol). Eight days later (D8), the cows received PGF2α i.m. (0.150 mg Cloprostenol sodium, Sincrocio) and the P4 device was removed. At the time of P4 device removal, the animals were randomly assigned in two experimental groups: EC (n=13), received 1mg of estradiol cypionate concomitantly with P4 device removal (EC, SincroCP) and EB (n=10), received 1mg of BE 24h after P4 device removal (Sindrodiol). The intrafollicular injection was performed 48h or 54h after P4 device removal, for EC and EB groups, respectively. The intrafollicular injection was performed using a teflon suction line (WTA, Brazil) coupled to a 27G needle end a syringe (1mL) at the opposite end. The needle was filled with 60µL of the TCM199 supplemented with 10% fetal bovine serum (FBS) for the intrafollicular injection. On day of intrafollicular injection, the cows were examined and only those presenting a single preovulatory follicle ≥10mm in diameter were used. To evaluate the interval from injection to ovulation, ovarian ultrassonographic examinations were performed every 6 hours after intrafollicular injection until ovulation. In each examination, the largest follicles (LF) from ovary where the injection was performed was identified and measured. The time of ovulation was defined as the time of disappearance of a previously identified LF from one ultrassonographic examination to the next. Statistical analysis was performed using the t-test, with a comparison of independent means ($P<0.05$). The diameter (mm) of the LF of the EC (12.36±0.58mm) vs EB (12.33±0.66mm; P=0.98) groups did not differ. Similarly, the time of ovulation (h), in relation to P4 device removal on EC (74.77±1.61h) vs EB (70.20±2.37h; P=0.11) groups did not differ. However, the time of ovulation in relation to intrafollicular injection timing was higher in the EC (26.77±1.61h) vs EB (16.20±2.37h, P=0.001) group. Thus, the intrafollicular injection did not interfere at the time of ovulation, in relation to P4 device removal time. However, the results suggest that intrafollicular injection timing in the EC protocol will need to be delayed in order to prevent the exceeding oocyte ideal maturation time in the IFIOT.

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