Animal Reproduction

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Folliculogenesis, oogenesis and superovulation

In vivo embryo production in donors with low and high antral follicle counts superovulated with low and high FSH doses

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Resumo

This study evaluated embryo production in Nelore donors with low and high antral follicle count (AFC) subjected to a MOET program using low and high FSH doses for SOV. On D-30, 16 donors cows were underwent a pre-synchronization protocol with an intravaginal P4 device (P4, 1g, ReproNeo®, Globalgen, Jaboticabal, Brazil), 2mg EB (Bioestrogen®, Biogénesis Bagó, Curitiba, Brazil) and 75µg PGF2α (Croniben®, Biogénesis Bagó). On D-22, P4 device was removed and was applied 75µg of PGF2α, 300IU of eCG (Ecegon®, Biogénesis Bagó) and 1mg EC (Croni-Cip®, Biogénesis Bagó). On D-26, the AFC (> 2 mm) of each donor was evaluated by ultrasound and divided in 2 groups, low AFC (n=8; ≤ 15 follicles; mean=10±0.91) and high AFC (n=8; ≥ 25 follicles; mean=36±6.05). They received two SOV programs using a dose of 150 and 300 IU of FSH (Pluset®, Biogénesis Bagó). The SOV protocol started with an intravaginal P4 device and 2mg EB on D0. On D4, all cows received FSH distributed in decreasing doses twice a day, D4 40%; D5 30% and D6 20% of FSH plus 150µg of PGF2α. On D7, P4 device was removed and 10% of FSH was divided in two applications. On the morning of D8, 10.5 mg of buserelin acetate (Gonaxal®, Biogénesis Bagó) was applied and the inseminations were performed 12h and 24h later. On D15, uterine flushing was performed and the embryos were recovered, identified, and classified with a stereomicroscope according to the IETS criteria. Embryos with grades of I and II were frozen and stored at -196°C. Data were analyzed by two models employing ANOVA and Tukey's test in a procedure for an adjusted mixed effect model (P≤0.05). The first model contemplated a split-plot scheme (AFC, FSH dose and interaction) and second model considered the treatment effect (low-150, low-300, high-150 and high-300). In the first model, AFC showed effect (P<0.05) for the number of CL (low 10.7±1.6a vs high 19.2±3.1b), but total structures, viable and freezable embryos were similar (P>0.1) between low and high AFC. The 300 IU of FSH resulted greater (P<0.01) numbers of CL (20.5±2.4b vs 9.4±2.3a), total structures (12.2±1.9b vs 6.2±1.7a) and viable (9.1±1.5b vs 4.9±1.4a) and freezable embryos (7.8±1.3b vs 3.0±0.9a) than the 150 IU dose. There was no interaction of AFC*FSH (P>0.05). In the second model, a treatment effect (P<0.05) generally showed better MOET performance for high-300 group in relation to low-150, high-150 and low-300 to numbers of CL (26.0±3.4b vs 6.4±1.5a, 12.4±4.1a and 15±1.9a), total structures (14.0±2.8c vs 4.6±2.1a, 7.9±2.7ab and 10.4±2.4b), viable (10.9±2.1b vs 4.2±2.2a, 5.6±1.9a and 7.2±2.2ab) and freezable embryos (9.2±1.7b vs 2.4±1.5a, 3.6±1.3ab and 6.4±1.9b), respective groups. In conclusion, the embryo yield was not influenced by the AFC category but was influenced by the FSH dose. Furthermore, high-AFC donors superovulated with the highest FSH dose presented the best performance in terms of embryo yield.