Animal Reproduction

Support biotechnologies: Cryopreservation and cryobiology, diagnosis through imaging, molecular biology, and "omics"

Effects of hCG administered 7.5 days after synchronous estrus induction during the non-breading season in Morada Nova ewes

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This study was designed to assess the effects of human chorionic gonadotropin (hCG) administration 7.5 days after the end of synchronous estrus induction protocol in Morada Nova ewes in the non-breeding season on biometrics and vascularization of the luteal tissue, progesterone (P4) concentrations and reproductive performance. Morada Nova ewes (n=113) were submitted to synchronous estrus induction, during October and November, with 60 mg medroxyprogesterone intravaginal sponge for sex days plus 200 IU of eCG i.m. and 30 µg of d-cloprostenol i.m. 36 h before sponge removal. Then submitted to natural mating for three days after the end of induction. Ewes were equally assigned to receive either 1 mL of saline solution (G-Control; n = 56) or 300 IU of hCG (G-hCG; n = 57) i.m. on Day 7.5 after sponge removal. Ovarian ultrasound evaluation and blood collection were performed on Days 7.5, 13.5, 17.5, 21.5 and 30.5 after sponge removal, to quantify and qualify the structures present in the ovary and the serum concentration of P4. The data was analyzed using Chi-Square for reproductive performance, ANOVA for follicular populations and repeated measures over time for biometric and vascularization of luteal tissue and P4 concentration. The number of small antral follicles (< 3.5 mm), large follicles (> 4.5 mm) and the total number of follicles (≥ 2 mm) was greater ($P < 0.05$) for G-Control, 3.9 ± 0.6; 0.6 ± 0.1; 5.7 ± 0.2 respectively, against 2.8 ± 0.2; 0.4 ± 0.1; 4.5 ± 0.2 for G-hCG. Accessory corpora lutea (aCL) was noted in 0.0% (0/56, G-Control) and 80.7% (46/57, G-hCG ewes) ($P = 0.0001$). Diameter, area and volume of luteal tissue were greater ($P < 0.05$) in G-hCG compared with G-Control ewes from Day 13.5 to 30.5. Concentrations of P4 were greater ($P < 0.05$) on Days 13.5, 21.5 and 30.5 for G-hCG against G-Control (5.33, 4.24 and 5.45 ng/ml x 2.7, 1.74, 2.35 ng/ml respectively). Pregnancy rate was similar ($P = 0.15$) between groups 46.4% (26/56, G-Control) and 61.4% (35/57, G-hCG), however, when considering only the ewes that had at least one aCL from G-hCG, the pregnancy rate was greater ($P < 0.017$) for G-hCG ewes 71.7% (33/46) x 46.4% (26/56) G-Control. In addition, the rate of total number of lambs born by the total number of synchronized ewes was greater ($P = 0.005$) in G-hCG 89.4% (51/57), compared with G-Control 66.1% (37/56). The G-hCG could have better results for aCL formation considering the disadvantage in the number of follicles against G-Control. In conclusion the use of hCG 7.5 days after sponge removal is efficient to induce aCL formation, improving luteal tissue biometry, P4 concentrations, pregnancy rate when successfully induce at least one aCL and improve the total number of born lambs.Financial support: Embrapa (Project 22.13.06.026.00.06)