Nonsurgical embryo recovery in Lacaune ewes superovulated with different doses of FSH

Coleta transcervical de embriões em ovelhas da raça Lacaune superovuladas com diferentes doses de FSH

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Multiple ovulation and embryo transfer (MOET) is a reproductive biotechnique that allows accelerated genetic improvement of the species. In ruminants, the variability of the superovulatory response is a limiting factor for MOET programs. In addition, specifically in sheep, it is difficult to conduct embryo recovery by transcervical via, due to the anatomy of the cervical canal. Appropriate superovulation protocols that achieve satisfactory performance (ovulation rate, viable embryo production and recovery) reducing FSH doses have been recently tested (Rodriguez et al. 2018. Reprod Dom Anim, 1-8, in press). The aim of this study was to evaluate the effect of two doses of FSH on superovulatory response in Lacaune sheep. Ewes (n=25) received intravaginal devices containing 0,36 g progesterone (Primer PR®, Tecnopec, São Paulo, Brazil) for nine days plus 37.5 µg d-cloprostenol (Prolise®, Tecnopec, São Paulo, Brazil) i.m. 24 h before and 50 µg of GnRH (Gestran®, Tecnopec, São Paulo, Brazil) 24 h after device removal. Superovulation was performed with either 100 mg (G100) or 200 mg (G200) of pFSH (Folltropin-V®, Bioniche Animal Health, Belleville, Canada) in six decreasing doses (25, 25, 15, 15, 10 and 10%), every 12 h, starting 60 h prior to device removal. A cross-over design was applied, totaling 25 experimental units in each treatment. Estrus was monitored twice a day and ewes were mated with fertile rams (ratio=4:1). Five days after estrus onset, the number of corpora lutea (CL) was counted by transrectal ultrasonography in Doppler mode (Mindray M5VET®, Shenzen, China - 8.0 MHz). Ewes with CL count >2 received 37.5 µg of d-cloprostenol and 1 mg of estradiol benzoate (Sincrodiol®, OuroFino, Cravinhos, Brazil) i.m. 16 h and 50 IU oxytocin (Ocitocina Forte®, UBCVet, São Paulo, Brazil) i.v. 20 min prior to nonsurgical embryo recovery (NSER). Six to seven days after estrus onset, NSER attempt was done (Fonseca et al. 2019.Reprod Fertil Dev, 31:17-26). Qualitative data were analyzed by exact Fisher test and the quantitative data by generalized linear models using the SAS software (v 9.3, SAS Institute, Cary, USA). The percentage of ewes in estrus and responsive donors (≥3 CL) differed (P>0.01) between groups: 68% (17/25) and 44% (11/25) in G100 and 100% (24/24) and 91.7% (22/24) in G200, respectively. CL count was higher (P<0.05) in G200 (12.0 ± 0.1) compared to G100 (4.8 ± 0.8). Cervical transposition and uterine flushing were performed in a total of 82% (32/39) of the ewes and differed between the groups (P<0.05), being 64.7% (11/17) in G100 and 95.5% (21/22) in G200. The number of retrieved structures and viable embryos per ewe collected were higher (P<0.05) in G200 (7.1 ± 1.1 and 5.4 ± 1.1) than in G100 (0.9 ± 0.3 and 0.8 ± 0.3), respectively. The recovery rate of structures (total structures/CL count x 100) was 62% in G200 and 22% G100. The dose of 100 mg pFSH appeared to be not sufficient to reach a high superovulation response while 200 mg resulted in good superovulatory response.

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