



Effect of luteal blood flow and number of corpora lutea on the pregnancy rate after fixed-time embryo transfer of cryopreserved embryos in Lacaune recipients evaluated by Color Doppler ultrasonography

Efeito do fluxo sanguíneo luteal e número de corpos lúteos na taxa de gestação após transferência em tempo fixo de embriões criopreservados em receptoras Lacaune avaliadas por ultrassonografia com Doppler Colorido

Lucas Machado Figueira^{1,*}, Nadja Gomes Alves², Fernanda Alves Lucas³, Joanna Maria Gonçalves Souza-Fabjan⁴, Ribrio Ivan Tavares Pereira Batista⁵, Aline Mattos Arrais⁶, Gabriel Brun Vergani⁷, Jader Forquim Prates⁸, Jeferson Ferreira da Fonseca⁹

¹Doutorando do PPGZ/UFLA, Lavras, MG; ²Professora do DZO/UFLA, Lavras-MG; ³Graduanda em Medicina Veterinária/UFLA, Lavras-MG; ⁴Professora adjunta MCV/UFF, Niterói-RJ; ⁵Professor da UFVJM, Diamantina-MG; ⁶Doutoranda UFRRJ, Seropédica-RJ; ⁷Mestrando UNESP, Jaboticabal-SP; ⁸Graduando em Zootecnia, IFSUDESTEMG, Rio Pomba-MG; ⁹Pesquisador da Embrapa Caprinos e Ovinos, Coronel Pacheco-MG.

*E-mail: lucasmachadofigueira@hotmail.com

The Doppler ultrasonography allows the characterization of blood flow and estimation of the functionality of reproductive organs. Therefore, it shows a great potential for use in multiple ovulation and embryo transfer (MOET) programs in ruminants. This study aimed to assess the effect of luteal blood flow and number of corpora lutea (CL) at the moment of embryo transfer to recipient on the establishment of pregnancy in sheep. Sixty-three nulliparous (body weight of 46.7 ± 8.3 kg) received intravaginal sponges (60 mg MAP, Progespon[®], Syntex, Buenos Aires, Argentina) for six days, i.m. injections of 37.5 µg d-clospirostenol (Prolise[®], Tecnopec, São Paulo, Brazil) and 200 IU eCG (Folligon 5000IU[®], Intervet, São Paulo, Brazil) 24 h before sponge withdrawal (Day 0). Ovarian ultrasonography (Mindray M5VET[®], Shenzhen, China – 8.0 MHz) was performed on day 7 to check the number and position of CL, and the qualitative (subjective) evaluation of luteal blood flow (LBF) in scores 1 to 4 (quartiles: 0-25%, >25-50%, >50-75%, >75-100%, respectively). The recipients that presented CL (92%; 58/63) were subjected to embryo transfer by the semi-laparoscopic technique on day 8.5, with the embryo deposition on the *ipsilateral* uterine horn to CL (Fonseca et al., 2018. *Arq Bras. Med Vet Zootec*, 70:1489-1496). Each recipient received randomly one or two cryopreserved embryos (grade I and/or grade II). The pregnancy diagnosis was performed on day 31. In data analysis, number of CL and LBF were binarized in <2 or ≥2. Data were analyzed by generalized linear models (GLM), using PROC GLIMMIX, with binomial distribution and logit link function by the software SAS[®] (SAS Inst., Cary, NC, USA). Overall, the CL count was 1.3 ± 0.6 and the pregnancy rate did not differ ($P > 0.05$) regarding to the number of CL (26%, 24% and 37% for 1, 2 or 3 CL, respectively). The percentage of CL with LBF score 1, 2 and 3 was 67%, 31% and 2%, respectively. Pregnancy rate did not differ ($P > 0.05$) between LBF 1 (30%) compared to the scores >2 (2 and 3: 19%). Pregnancy rate in recipients that presented ≥2 CL and/or LBF ≥2 (which would suggest higher plasma progesterone concentrations) did not differ ($P > 0.05$) to those that had just one CL and LBF 1 (30% vs 21%, respectively). The future use of Doppler US to sheep recipient selection in MOET programs will depend of quantitative evaluation and definition of LBF classes that better represent the greater possibility of pregnancy establishment. In conclusion, both the subjective luteal blood flow and the number of CL did not influence the pregnancy rate in recipients of the Lacaune breed. Financial support: Embrapa (02.13.06.026.00.05) and Fapemig (CVZ-PPM 00201-17), CAPES.

Keywords: biotechnology of reproduction, MOET, ruminants.

Palavras-chave: biotecnologia da reprodução, MOTE, ruminantes.