



## **Induction of synchronous estrus in Morada Nova ewes: effects of distinct progestagen duration regimen and non-surgical embryo recovery as a tool to access efficiency measurements**

*Indução do estro sincrônico em ovelhas Morada Nova: efeitos do regime de duração distinto do progestágeno e recuperação não cirúrgica do embrião como uma ferramenta para acessar medidas de eficiência*

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The first step for applying superovulation is to know the responsiveness of the ewe to different estrous synchronous protocol duration and possible implications on embryo yield. On the other hand for non-surgical embryo recovery (NSER) a well consolidated protocol should be tested and, in Morada Nova ewes, successful non-surgical uterine access was reported (Fonseca et al., 2019. *Reprod Fertil Devel*, 31:17-26). In this context, the objective of this study was to evaluate the efficiency different synchronous estrus induction and NSER as additional tool to evaluate the results these protocols in pluriparous Morada Nova ewes. A total of 18 pluriparous sheep were divided into three treatment groups with 6 (T6, n=6), 9 (T9, n=6) and 12 (T12, n=6) days of 60 mg of medroxyprogesterone acetate (Progespon<sup>®</sup>, Zoetis, Campinas, São Paulo, Brazil). Sponges were inserted and removed at 7:00 p.m. Twelve hours before sponge removal, all the ewes received 200 IU of eCG (Folligon<sup>®</sup>, MSD animal health / Intervet, Cruzeiro-São Paulo, Brazil) and 37.5 µg of d-cloprostenol (Prolise<sup>®</sup>, ARSA SRL, Buenos Aires Aires, Argentina) i.m. Estrus was checked twice a day (every 12 h) for three days and mated during estrus with four proven fertility sheep. Corpora lutea were counted by B-mode and Doppler transrectal ultrasonography (7.5 MHz linear transducer, M5 Vet<sup>®</sup>, Mindray, Shenzhen, China) prior to NSER. The ewes still received a cervical relaxation protocol consisting of 37.5 µg of d-cloprostenol and 1 mg of estradiol benzoate (Sincrodiol<sup>®</sup>, OuroFino, Cravinhos, Brazil) i.m. 16 h and 50 IU oxytocin (Ocitocina Forte<sup>®</sup>, UBCVet, São Paulo, Brazil) i.v. 20 min before NSER (6.5 days after estrus onset). Qualitative data were analyzed by Fisher's exact test and quantitative data were sequenced by the Kruskal-Wallis test, with a mean of 5%. Seventeen sheep (17/18) responded to estrus, with an average onset of 40.23h ± 1.7 and duration of 23.29h±1.2. Successful NSER was done in 82.3% (14/17). The number of corpora lutea (1.8±0.1, 2.7±0.2 and 1.6±0.1), recovered structures (1.4±0.5, 1.2±0.9 and 1.0±0.1) and the viable embryos (1.0±0.3, 1.2±0.4 and 1±0.3) were similar (P>0.05) for T6, T9 and T12, respectively. The NSER mean duration was 27.6±1.4 min, with recovery of 99.8% of injected fluid and embryo recovery rate of 62.97% (17/27). These preliminary results indicated that all protocols provided similar results and that NSER can be successfully performed and used as additional toll in synchronous estrous induced Morada Nova ewes independently from the duration of progestogen regimen to assure that viable embryos can be produced by ewes subjected by these protocols.

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**Keywords:** superovulation, progesterone, embryo transfer, small ruminants.

**Palavra-chave:** superovulação, progesterona, transferência de embriões, pequenos ruminantes.