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Effect of hCG administration on accessory corpus luteum formation and area in estrous induced nulliparous Santa Inês ewes

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The effects of hCG on accessory corpus luteum (CL) formation have been reported in cattle (Fonseca et al., 2001, Arq Bras Med Vet Zoo, 53:451-458) and goat (Fonseca et al., 2006, Anim Reprod, 3:410-414). In these studies, the main aim was to evaluate the effect of greater plasma progesterone concentrations (P4) on pregnancy rate. The luteotropic effect of hCG administration on cell populations in the ovine corpus luteum was also reported (Farin et al., 1988, Biol Reprod, 38:413-421). Nowadays, with the use of real time ultrasonography, it is possible to monitor CL development and the associated physiologic events like luteogenesis (increasing P4 production) and luteolisys (decreasing P4 production). The aim of this study was to evaluate the effect of hCG administration seven days after breeding on accessory CL formation and CL area in Santa Inês sheep. Estrus was synchronized in nulliparous ewes (n=14) using an intravaginal sponge with 60 mg of medroxyprogesterone acetate (Progespon®, Syntex S.A., Indústria Bioquímica e Farmacêutica, Buenos Aires, Argentina) for six days. One day before sponge withdrawal, all ewes received 300 IU eCG i.m. (Novormon® 5.000, Syntex S.A., Indústria Bioquímica e Farmacêutica, Buenos Aires, Argentina) and intra-vulvo-submucosal injection of 22.5 µg d-cloprostenol (Prolise®, ARSA S.R.L., Buenos Aires, Argentina). After removal, the females were monitored twice daily for detecting the onset of estrus and mated with fertile males. Seven days after breeding, the ewes were assigned into two groups according to body condition score (BCS; scale: 0 to 5) and treatment: hCG group received 250 IU of hCG (n=7; BCS of 3.14±0.20; Vetecor®, Hertape-Calier do Brasil Ltda, São Paulo, Brazil) and the control group received same volume of saline solution (n=7; BCS of 3.25±0.35). CL area was measured by transrectal ultrasonography exams (M5 Vet® equipped with a 6.5 MHz transducer, Mindray, São Paulo – SP, Brazil) performed once a day on days 7, 10, 13, 16, 19 and 22 after breeding. CL area was considered the sum of the area of all CL present in each animal. When present, luteal cavity areas were subtracted. Data were evaluated by one way analysis of variance with Tukey test and 5% minimum significance. The number of CL on day 7 was similar between hCG treated and control groups (1.28±0.46 and 1.28±0.48, respectively). The number of CL was greater ($P < 0.05$) in the hCG group than in the control group on days 13 and 16 (2.28 ± 0.48 vs. 1.28 ± 0.48, respectively). When pregnant ewes from the hCG group (n= 4) were compared with the control group (n= 7), a greater ($P < 0.05$) CL area (cm2) was detected in hCG-treated ewes on days 16 (1.99 ± 0.17 vs. 1.16 ± 0.18), 19 (1.65 ± 0.25 vs. 1.14 ± 0.18), and 22 (1.82 ± 0.19 vs. 1.26 ± 0.39) in hCG and control ewes. The treatment with hCG 7 days after natural breeding was efficient to induce the CL accessory formation, increasing the total luteal area in ovaries of pregnant ewes. The study of the associated repercussion of this phenomenon on P4 and pregnancy rate is encouraged in Santa Inês ewes.

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