A 5 ml dose PG-600® is detrimental to ovarian function and pregnancy rate in ewes during the breeding season

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PG-600® (Intervet/Merck Animal Health, Madison, NJ) is a single dose injectable product containing equine chorionic gonadotropin (80 IU/ml) and human chorionic gonadotropin (40 IU/ml), which is labeled for estrus induction in swine. This drug is also routinely used off-label for out-of-season estrus induction in sheep. However, at the most common dose administered to ewes (3-5 ml), PG-600® is likely to overstimulate the ovaries, resulting in reduced pregnancy rates. The aim of the current study was to determine if a lower dose of PG-600® would not reduce the pregnancy rate. We hypothesized that the pregnancy rates of ewes treated with a low dose of PG-600® during the breeding season would not be different from controls. Polypay ewes were treated with CIDR inserts (Eazi-Breed™ CIDR, Zoetis, Kalamazoo, MI) for 10 days. Two days prior to CIDR removal, cloprostenol (125 μg; Estrumate®, Intervet/Merck Animal Health) was given intramuscularly. On the day of CIDR removal (day 0), ewes were divided randomly into three groups (n=8) to receive 5 ml PG-600® (T1), 1.5 ml PG-600® (T2), and 5 ml saline (C). Jugular vein samples were collected prior to the PG-600® injection (0 hour) and at 2, 4, 8, 12, 24, 48, 72, 96, 120, 168 and 336 hours after injection. Serum estradiol-17β and progesterone were determined by chemilluminescence (Immulite 1000, Siemens Healthcare Diagnostics, Tarrytown, NY). Following PG-600® injection, ewes were rotated every eight hours between pens containing a new fertile ram for four days. Ewes were examined via transrectal ultrasonography from 9-11 days after PG-600® injection to count the number of corpora lutea (CLs) and via transabdominal ultrasonography 35 and 63 days after PG-600® for pregnancy diagnosis. An analysis of variance (ANOVA) was used to compare the average number of CLs and pregnancy rate between treatments. Repeated measures ANOVA was used to determine the effect of treatment on hormone concentrations. Significance was defined as p<0.05. Serum progesterone concentrations were increased during the ensuing 336 hours after injection in T1 compared to C and T2. Although there was a significant effect of time, there was no effect of treatment on serum estradiol-17β concentrations when compared over 336 hours after injection. The average number of CLs was greater in the T1 ewes (3.2) compared to C (2.2) and T2 ewes (2.3). Pregnancy rate was also lower in the T1 ewes (37%) compared to C (75%) and T2 (87.5%). These data suggest that the 5 ml dose of PG-600® administered to ewes during the breeding season alters ovarian function and either impairs fertilization or reduces embryo survival. This experiment will be repeated with the same ewes out of the breeding season to determine if the 1.5 ml dose of PG-600® will be as effective as the 5 ml dose in inducing estrus and if the lower dose will result in higher pregnancy rates.

Keywords: Corpus luteum, estradiol, estrus induction, progesterone, sheep

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