Synchronization of follicular waves with progesterone/estrogen combination before superstimulation with pFSH in alpacas

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Ovarian response to superstimulation with pFSH depends on control of follicular waves before initiation of treatment. We hypothesized that a combination of progesterone and estrogen treatment would produce better synchronization of follicular waves in alpacas than progesterone alone. We tested this hypothesis in two experiments. In experiment one; adult females (five per group) were given no treatment (control), daily progesterone injection (25 mg in oil, IM) for 10 days (P4 group) or combination of progesterone (25 mg) and estrogen (5 mg) IM for 10 days (P/E group). Ovarian activity was monitored daily by transrectal ultrasonography (US) (Aloka 500, Wallingford, CT, USA, with 7.5 MHz linear transducer) until emergence of a dominant follicle (6 mm in diameter). Time between the end of treatment and dominant follicle emergence was compared by ANOVA. In experiment two, adult females (10 per group) were given either P/E for 10 days (group A) or GnRH (Cystorelin ®, Merial, Duluth, GA, USA, 50 mcg, IM) followed by P/E for six days and P4 alone for four days (Group B). After treatment, all females received five days of pFSH BID (20/20 mg, 15/15 mg, 10/10 mg, 10/10 mg and 10/10 mg). Follicular growth was monitored every 48 hours and ovulation induced with hCG (Chorulon®, Intervet/Schering-Plough Animal Health, Millsboro, DE, USA, 1000 IU, IV) when follicles were between 6 to 8 mm in diameter. Ovulation was verified by US seven days after hCG treatment.

In experiment one, follicular activity continued during the observation period in the control animals and in three alpacas in the P4 group. None of the alpacas in the P/E group had follicles greater than 2 mm in diameter on the 8th day of treatment. The mean interval in days and standard deviation (SD) to emergence of a dominant follicle was 5 (3.8), 4.2 (1.8) and 7 (0.7) for the control, P4 group and P/E group, respectively. In experiment two, all females responded to pFSH. However, Group A had a poor ovulation rate and a higher incidence of anovulatory follicles compared to Group B. Group B had a uniform follicular population one day after the end of the pFSH treatment. The number of follicles was difficult to ascertain in some females and ranged from five to greater than 12 per ovary. These preliminary results indicate that treatment with a combination of P/E may be an option for control of follicular activity in alpacas before initiation of superstimulation treatment with pFSH. Administration of GnRH before P/E treatment provides better synchronization of follicular waves probably through the elimination of dominant follicles. Studies are underway to determine the reason for ovulation failure in some of the stimulated females. Factors being studied include dosage of progesterone, estrogen, pFSH and follicle size at the time of ovulation induction.

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