

Comparison of Pregnancy Outcome and Luteal Function in Mares Administered Periovarulatory Oxytocin or Cloprostenol

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Project Aims. The aim of this study was to determine if luteal function or pregnancy outcome differed among mares administered oxytocin or cloprostenol post-breeding in the periovarulatory period.

Methods. Reproductively healthy, light breed mares (n=37) were randomized into oxytocin or cloprostenol treatment groups. Treatments were administered starting 4 hours after insemination and continued through 2 days post-ovulation. Each ecboic was administered at a dose and frequency consistent with our standard post-breeding management of mares. The duration of treatment was meant to simulate the treatment approach for a mare highly susceptible to endometritis and requiring treatment throughout the post-breeding and periovarulatory period. Oxytocin was administered at 20 units, IM, every 6 hours and cloprostenol (Estrumate,[®] Bayer Corp.) at 250 mcg, IM, every 24 hours. All treatment administrations were standardized on the day after insemination to 12:00 pm for each subsequent 24-hour period. Mares were bred to a stallion (n=1) of proven fertility using standard AI breeding management. Ultrasound examinations were conducted each morning and the day of ovulation was considered Day 0. Mares were examined for pregnancy on Day 15 using ultrasonography. Blood was collected in the morning on Days 0-7, 9, 11, 13, and 15 from the mares. Plasma progesterone concentrations were assayed in batches using RIA. Proc Catmod was used to analyze the effect of treatment on pregnancy outcome. Repeated measures analysis of progesterone concentrations contrasting treatments, oxytocin vs. cloprostenol, was performed using PROC GLM (Statistical Analysis System, SAS Institute, Cary, NC).

Findings. Overall, 26/37 mares were diagnosed pregnant on Day 15. Pregnancy outcome was not different between the oxytocin (13/18) and cloprostenol (13/19) treatment groups (P = 0.80). When all mares were considered, mean progesterone concentrations were lower in the cloprostenol treated mares on Days 2, 3, 4, 5, 6, 7 and 9 (P < 0.01). When only the pregnant mares were considered, mean progesterone concentrations were lower in the cloprostenol treated mares on Days 2, 3, 4, 5, 6 and 7 (P < 0.05). When cloprostenol is administered through the second day following ovulation luteal function appears to be impaired by Day 2, but seems to rebound by Days 7-9. The impaired luteal function however, does not appear to negatively impact fertility, as mares were pregnant in similar proportions regardless of the ecboic administered. The results of this study indicate cloprostenol can be used to treat mares through the second day following ovulation without decreasing fertility. Luteal function however, is impaired for several days. Nevertheless, lower progesterone levels among cloprostenol treated mares in this study did not result in decreased fertility. It is unknown whether this same outcome would result in mares highly susceptible to endometritis.

Keywords. Periovarulatory, ecboic, oxytocin, cloprostenol, luteal function