Comparison of Monday-Friday 4-day versus 5-day Co-Synch + controlled internal drug release (CIDR) + timed artificial insemination (TAI) protocols in beef heifers

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Previous studies demonstrated that the gonadotropin releasing hormone (GnRH) dose at the day of controlled internal drug release (CIDR) insertion and the second injection of prostaglandin F2alpha (PGF) 8-12 h after CIDR removal are not essential to optimize pregnancy after timed artificial insemination (P/TAI) in heifers treated with a 5-day Co-Synch + CIDR protocol. A major factor limiting the success of TAI programs is failure to apply treatments at the prescribed day and time. A Monday-Friday 4-day Co-Synch + CIDR protocol would simplify reproductive management of heifers, as treatment administration is facilitated (Monday: CIDR insertion; Friday: CIDR withdrawal + PGF₂α; next Monday: GnRH + TAI). In a recent study conducted in dairy heifers, the application of a 4-day Co-Synch + CIDR protocol resulted in optimal P/TAI (55.0%), similar to that observed with the 5-day Co-Synch + CIDR protocol (63.3%). The objective of this study was to compare the P/TAI in beef heifers treated with 4-day or 5-day Co-Synch + CIDR protocols. We hypothesize that the use of a Monday-Friday 4 day Co-Synch + CIDR protocol will result in similar P/TAI to a 5 day Co-Synch + CIDR protocol. A total of 222 Angus heifers, 12-14 months old, were randomly assigned at each of two locations to one of two treatment groups. The heifers received an intravaginal CIDR insert (Eazi-Breed CIDR®, Zoetis Animal Health, Florham Park, NJ) containing 1.38 g of progesterone for 4 days (Monday-Friday 4-day Co-Synch + CIDR, n=113) or 5 days (5-day Co-Synch + CIDR, n=109). On the day of CIDR removal 25 mg of PGF (Lutalyse®, Zoetis Animal Health) was injected IM, and 72 h after CIDR removal heifers received 100 µg of GnRH (Factrel®, Zoetis Animal Health) IM and TAI. The heifers were artificially inseminated by an experienced technician using commercial frozen-thawed semen from a single sire. Pregnancy diagnosis was performed using ultrasonography per rectum at ≥36 days after TAI. Data were analyzed using proc logistic and Chi-square test of SAS®. Pregnancy rate did not statistically differ in heifers in the 4-day Co-Synch + CIDR group (46.0%; 52/113) or 5 days (5-day Co-Synch + CIDR, n=109). On the day of CIDR removal 25 mg of PGF (Lutalyse®, Zoetis Animal Health) was injected IM, and 72 h after CIDR removal heifers received 100 µg of GnRH (Factrel®, Zoetis Animal Health) IM and TAI. The heifers were artificially inseminated by an experienced technician using commercial frozen-thawed semen from a single sire. Pregnancy diagnosis was performed using ultrasonography per rectum at ≥36 days after TAI. Data were analyzed using proc logistic and Chi-square test of SAS®. Pregnancy rate did not statistically differ in heifers in the 4-day Co-Synch + CIDR group (46.0%; 52/113) compared with those in the 5-day Co-Synch + CIDR group (52.2%; 57/109) In conclusion, no difference in pregnancy rate was observed between the 4-day and 5-day Co-Synch + CIDR protocols, confirming the hypothesis. Both protocols resulted in acceptable P/TAI. As seen previously in dairy heifers, the Monday-Friday 4-day Co-Synch + CIDR protocol may also be a promising hormonal treatment for TAI in beef heifers, allowing for simple reproductive management, while preserving acceptable fertility.

Keywords: 4-day Co-Synch, CIDR, beef heifers, pregnancy, timed artificial insemination.

References