Evaluation of a Monday-Friday 4-day CIDR + timed artificial insemination protocol in dairy heifers: a pilot study

Roberto A. Palomares, a,b Joseph Haslett, b Karissa Carpenter, b Juan Gutierrez, c Emmanuel Rollin, a Lee Jones, a Fernando Perea c

aDepartment of Population Health, College of Veterinary Medicine and bDepartment of Animal and Dairy Sciences, The University of Georgia. Athens, GA; cGrupo de Investigadores de la Reproducción Animal en la Región Zuliana GIRARZ, University of Zulia, Maracaibo, Venezuela

In dairy heifers, the application of a 5-day Co-Synch+controlled internal drug release (CIDR) protocol and timed artificial insemination (TAI) has resulted in acceptable pregnancy per TAI (P/TAI) ≥ 52.2 %). 1 Recent studies showed that the initial gonadotropin releasing hormone (GnRH) at CIDR insertion and the second prostaglandin F2α (PGF2α) 12 h after CIDR removal are not essential to optimize P/TAI in dairy heifers subjected to a 5-day CIDR TAI protocol. 2 A major factor limiting the establishment and continuity of these programs by dairy producers is to overlook the significance of applying the hormonal injections at the correct day and time according to the specific protocol. This situation becomes more critical when trying to avoid cattle management practices during weekends. The establishment of a 4-day CIDR+TAI protocol performed on a Monday-Friday schedule would simplify the routine reproductive management of heifers in dairy farms, since it would facilitate treatment administration (Monday: CIDR insertion; Friday: CIDR withdrawal+PGF2α; next Monday: GnRH+TAI). We hypothesize that shortening the length of a CIDR-based TAI synchronization protocol by one day (Monday-Friday 4-day CIDR+TAI) will result in adequate P/TAI similar to that of 5-day CIDR+TAI protocols in dairy heifers. The objective of this study was to evaluate the P/TAI in dairy heifers treated with a Monday-Friday 4-day CIDR+TAI protocol compared to that of heifers treated with a 5-day CIDR+TAI protocol or AI after PGF2α injection and heat detection. A total of 45 Holstein heifers, 12-14 mo of age were randomly assigned to one of the three treatment groups: 1) Monday-Friday 4-day CIDR+TAI (Short-Synch, n=15): Heifers received an intravaginal CIDR insert (Eazi-Breed CIDR®, Zoetis Animal Health, Florham Park, NJ) containing 1.38 g of progesterone for 4 days. At the day of CIDR removal 25 mg of PGF2α (Lutalyse®, Zoetis Animal Health) was injected intramuscularly (IM); 72 h after CIDR removal, heifers received 100 µg of GnRH (Cystorelin®, Merial Animal Health, Duluth, GA) IM and TAI. 2) 5-day CIDR+TAI (n=15): Heifers received the intravaginal CIDR insert for 5 days. On day 5, CIDR was removed and 25 mg of PGF2α was given IM; 72 h later, heifers received 100 µg of GnRH IM and TAI. 3) PGF2α-HD (n=15): Heifers were administered 25 mg of PGF2α IM and AI was performed 12 h after heat detection. Heifers were AI by an experienced technician, using conventional frozen-thawed semen from one of three sires (evenly distributed among groups). Animals were on pasture, with access to portable shades and trees, and fed a ration once daily that meets or exceeds the nutritional requirements of Holstein heifers. Pregnancy diagnosis was performed by transrectal ultrasound 36 days after AI. Data were analyzed using proc logistic and χ² test of the Statistical Analysis System (SAS®). Heifers in the 4-day CIDR+TAI group showed an optimal P/TAI (66.7%, 10/15) which was not significantly different from that observed in the 5-day CIDR+TAI (46.7%, 7/15) and PGF2α-HD (46.7%, 7/15) groups. In conclusion, the Monday-Friday 4-day CIDR+TAI ‘Short-Synch’ protocol resulted in adequate P/TAI in dairy heifers, similar to that of 5-day CIDR+TAI protocol or AI after PGF2α injection and heat detection. This protocol might represent a promising hormonal treatment for TAI in dairy heifers, facilitating their reproductive management routine, while maintaining an optimal fertility.

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

References