

Effect of decreasing progesterone before initiation of a 5-day CIDR-Synch protocol with or without a progesterone insert on reproductive outcomes in nulliparous dairy heifers inseminated with sex-sorted semen

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ABSTRACT

Two experiments were conducted to evaluate the effects of decreasing progesterone (**P4**) before initiation of a 5-d CIDR-Synch protocol with or without a P4 insert on reproductive outcomes in nulliparous dairy heifers inseminated with sex-sorted semen. In experiment 1, nulliparous Holstein heifers (n = 236) were submitted to a 5-day CIDR-Synch Protocol using GnRH (**G**), PGF_{2α} (**PGF**), and controlled internal drug release (**CIDR**) inserts as follows: [d 0, G1 +CIDR; d 5, PGF1 –CIDR; d 6, PGF2; d 8 G2 + TAI]. Heifers were randomly assigned to serve as untreated controls (**5d**) or to be presynchronized with PGF 2 d before initiating the protocol (**PG5d**). All heifers were submitted to timed artificial insemination (**TAI**) with frozen/thawed sex-sorted semen. At G1, P4 concentrations were greater for 5d than for PG5d heifers (5.1 ± 0.3 vs. 1.6 ± 0.2 ng/mL), whereas ovulatory response was greater for PG5d than for 5d heifers (54 vs. 30%). Overall, P/AI did not differ at 32 (49 vs. 49%) or 60 (47 vs. 46%) d after TAI for 5d vs. PG5d heifers, respectively. In experiment 2, nulliparous dairy heifers (n = 1,603) were randomized to one of three treatments 1) **5dCIDR**, d 0, G1 +CIDR; d 5, PGF1 –CIDR; d 6, PGF2; d 8 G2 + TAI; 2) **PG5dCIDR**, presynchronization with PGF (**Pre-PGF**) 2 d before initiation of the 5dCIDR protocol; 3) **PGnoCIDR**, the PG5dCIDR protocol without inclusion of the CIDR insert. Heifers detected in estrus before TAI were inseminated with frozen/thawed sex-sorted semen from a single Holstein sire, whereas heifers receiving TAI were inseminated with fresh heterospermic sex-sorted semen. Blood samples were collected from a subset of heifers from each treatment to evaluate P4 concentrations. Overall, 5dCIDR heifers had greater P4 concentrations at G1 than heifers presynchronized with PGF (2.4 ± 0.3 vs. 0.9 ± 0.2 ng/mL). More PGnoCIDR heifers expressed estrus and were inseminated before TAI than PG5dCIDR or 5dCIDR heifers (36, 27, and 24%, respectively). Overall, 5dCIDR heifers had the most P/AI at 80 d, followed by PG5dCIDR heifers and PGnoCIDR heifers (54, 48, and 46%, respectively). In conclusion, although presynchronization with PGF 2 d before initiating a 5-d CIDR-Synch protocol decreased P4 and increased ovulatory response to G1, presynchronization with PGF_{2α} did not increase P/AI. Additionally, inclusion of a P4 insert in the 5-d CIDR-Synch protocol decreased early expression of estrus and increased P/AI to TAI.