A delayed fixed time artificial insemination 78 hours after CIDR removal does not affect pregnancy outcomes in dairy heifers treated with a 4 day CoSynch + CIDR protocol

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Use of 4 day CoSynch + CIDR + FTAI (fixed time artificial insemination) at 72 hour after CIDR removal in dairy heifers has resulted in adequate pregnancy per FTAI (55.0%), not significantly different from that in the 5 day CoSynch + CIDR (63.3%). A subsequent study demonstrated that heifers in the 4 day group had smaller follicular diameter after CIDR removal and before ovulation, and longer interval from CIDR removal to ovulation (90 - 96 hours) compared to heifers in the 5 day group (84 - 90 hours), which might affect pregnancy outcomes and influence the optimal timing for AI. Based on these results, we hypothesized that prolonging the interval from CIDR removal to FTAI by 6 hours (FTAI at 78 hour after CIDR removal) in heifers treated with the 4 day CoSynch + CIDR protocol does not affect FTAI and pregnancy loss (PL) compared to control heifers subjected to the modified 5 day CoSynch + CIDR + FTAI at 72 hour after CIDR removal. Objective was to compare P/TAI and PL in dairy heifers treated with - day CoSynch + CIDR + FTAI at 78 hours post CIDR removal versus 5 day CoSynch + CIDR + FTAI at 72 hours after CIDR removal. Twelve-month old Holstein heifers (n = 796) were randomly assigned to 1 of 2 groups. Heifers received an intravaginal CIDR insert containing 1.38 g of progesterone for 4 days (4 day CoSynch + CIDR; n = 401) or 5 days (5 day CoSynch + CIDR; n = 396). At the time of CIDR removal, 25 mg of $PGF_{2\alpha}$ was injected intramuscularly. Finally, heifers were artificially inseminated and received 100 µg of GnRH intramuscularly at either 78 or 72 hours after CIDR removal, for 4 and 5 day groups, respectively. Artificial insemination was performed by an experienced technician, using commercial frozen thawed semen from a single sire. Pregnancy diagnosis was performed by transrectal ultrasonography 32 days after FTAI. In addition, pregnancy was reconfirmed 60 days after FTAI to calculate PL. Categorical data (FTAI and PL) were analyzed using Proc Logistic and Chi square tests, using Statistical Analysis System (SAS®). Heifers in the 4 day CoSynch + CIDR group (Monday - Friday protocol) had an adequate pregnancy per FTAI (55.4%; 222/401), which was not different (p = 0.4) from that in the 5 day CoSynch + CIDR group (59.5%; 235/395). Pregnancy loss rate was not different between groups and was within reference ranges for dairy heifers (6.6 and 4.4% for 4 and 5 day groups, respectively). In conclusion, 4 day CoSynch + CIDR protocol with FTAI at 78 hours after CIDR withdrawal resulted in adequate pregnancy per FTAI and PL in dairy heifers. Pregnancy rate was similar to that with 5 day CoSynch + CIDR with FTAI at 72 hours after CIDR removal. These results supported our hypothesis that FTAI at 78 hours after CIDR removal within the 4 day CoSynch + CIDR protocol does not affect pregnancy per FTAI and recapitulated previous findings, suggesting that this protocol may represent a promising tool for ovulation synchronization of dairy heifers and would facilitate breeding programs by making it suitable for a Monday - Friday schedule.

Keywords: 4 day CoSynch, controlled internal drug release, dairy heifer, timed artificial insemination