

EFFECT OF CIDR AND PGF_{2α} TO IMPROVE THE CONCEPTION RATE IN HOLSTEIN FRIESIAN CROSSBRED HEIFERS

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ABSTRACT

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The objective was to evaluate the efficacy of an intravaginal progesterone insert and injection of PGF_{2α} for synchronizing estrus in Holstein Friesian heifers under field condition. The heifers were divided into two groups each consisting of eighteen (n=18) animals. Group I animals served as control and Group II animals were treated with an intra vaginal P4 device (CIDR) for 9 days and PGF_{2α} was given intramuscularly 24 hrs prior to CIDR removal. Fixed time artificial insemination was carried out at 48 and 72 hrs after CIDR removal. The overall conception rates obtained was 33.33 % in group I animals and 77.77 % in group II animals treated with CIDR and PGF_{2α}.

KEY WORDS: CIDR, PGF_{2α}, Conception Rate, Holstein Friesian crossbred heifer.

Estrous synchronization has the potential tool to increase the proportion of heifers bred early in the breeding season and stimulate puberty in prepubertal heifers (Hall *et al.*, 1997). Several methods can be used to synchronize estrus in cattle (Larson and Ball, 1992). Most methods employ an injection of PGF_{2α} that regresses the corpus luteum (CL). Regression of the CL is followed by the development of a preovulatory follicle, behavioral estrus, and ovulation. Prostaglandin F_{2α}, however, will not regress developing CL that are present on the ovary during the first 5 days of the estrous cycle. Therefore, one method to improve synchrony of estrus after a single injection of PGF_{2α} is to treat cattle with progesterone for 9 days before PGF_{2α} (Macmillan and Peterson, 1993). Administration of the progesterone for 9 days before PGF_{2α} ensures that CL will regress in response to PGF_{2α} because all cattle will have a CL that has developed for at least 7 days. The Progesterone will also delay estrus in cattle that naturally undergo CL regression during the Progesterone treatment period before PGF_{2α} injection. Progesterone

offers an advantage in this regard because, in addition to improving estrus synchronization, Progesterone will initiate estrus and ovulation in a percentage of prepubertal heifers (Imwalle *et al.*, 1998). The objective of the present study was to evaluate the efficacy of an intravaginal insert and an injection of PGF_{2α} for synchronizing estrus in Holstein Friesian crossbred heifers to improve the conception rate.

Thirty six apparently healthy nulliparous Holstein Friesian crossbred heifers which failed to conceive in three or more consecutive inseminations with good quality semen were selected for this study. Animals in group I (n= 18) served as control and were inseminated during natural estrus. Heifers that failed to conceive in the first service were rebred in the subsequent estrus. Animals in group II (n = 18) were treated with an intra vaginal P4 device (CIDR) for 9 days and PGF_{2α} was given intramuscularly 24 hrs prior to CIDR removal. Fixed time Artificial insemination was carried out at 48 and 72 hrs after CIDR removal. Heifers that failed to conceive at the induced estrus were rebred in the subsequent estrus. The first service conception rate for control group was 27.78 per cent (5/ 18). One out of 18 cows conceived in the second service (5.5 per cent) leading to an overall conception rate of 33.33 per cent. The first service conception rate for treatment group was 55.55 per cent (10/ 18) and the second service conception rate was

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22.2 per cent. Conception rate obtained was significantly higher in Holstein Friesian crossbred heifers treated with CIDR and PGF_{2α} under field condition as compared to that of controlled group. Heifers received progesterone by CIDR and PGF_{2α} in the treatment group increases the overall conception rate to 77.77 % (14/18) when compared to the conception rate of 33.33 % (6/18) in control group. The synchronization rate for the dairy heifers was greater for the CIDR and PGF_{2α} treated heifers compared with control group. Similar findings were also reported by Lucy *et al.* (2001).

The percentage of heifers in estrus (14/18) within 48-72 hours was higher (77.77%) after removal of CIDR. This could be due to the peak activity of estradiol which prepare for subsequent ovulation. Similar results were also reported by Busch *et al.* (2008) who suggested that cows that exhibited estrus after removal of CIDR may have attained concentrations of estradiol necessary to effectively prepare follicular cells for luteinisation. Ando *et al.* (2005) reported that every cow showed estrus response 2 to 4 days after CIDR removal. Van Cleeff *et al.* (1996) reported dairy heifers were treated with a Controlled Internal Drug Release progesterone device for 9 days. On day 7 of CIDR treatment, all heifers were injected with PGF_{2α}. Over all trials, 85.1% of the heifers were detected in estrus and were inseminated at 48 or 72 hours after CIDR removal. The pregnancy rate with CIDR devices used in conjunction with PGF_{2α} effectively synchronize estrus in dairy heifers. Lucy *et al.* (2001) reported beef heifer cattle were administered PGF_{2α} or an intravaginal progesterone-releasing insert (CIDR) for 7 day and treated with PGF_{2α} on 6th day. The CIDR+PGF_{2α} treated heifers had a greater incidence of estrus (84%) during the first 3 d of the breeding period with 58% pregnancy rate. In the current study animals treated with intra vaginal P4 device for 9 days and PGF_{2α} 24 hrs prior to CIDR removal and fixed time Artificial insemination was carried out at 48 and 72 hrs after CIDR removal. The overall conception rates obtained was 33.33 % in group I animals and 77.77 % in group II animals treated with CIDR and PGF_{2α}.

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