

# IMPACT OF CLOPROSTENOL SODIUM TREATMENT DURING EARLY POST PARTUM PERIOD ON FERTILITY IN DAIRY CATTLE

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## ABSTRACT

Normally calved dairy cattle (n=8 in treatment and control group each) were evaluated for the impact of early post partum treatment (day 0, 5 and 10 post partum) with prostaglandin F<sub>2α</sub> analogue, cloprostenol sodium, on expulsion of placenta, uterine involution, exhibition of first post partum estrus and first service conception rate. Cloprostenol treated cattle had early expulsion of placenta and uterine involution (p<0.05), however, the outcome of remaining parameters was similar (p>0.05), thus, suggesting the beneficial impact of treatment to a certain extent in dairy cattle

**Keywords:** Cloprostenol sodium, Cattle, Estrus, Post partum, Uterus

Uterine involution is normally completed between day 26 to 52 post partum; however, the changes inside uterus after day 20 to 25 post partum are undetectable. Inadequate production of endogenous prostaglandin F<sub>2α</sub> (PGF<sub>2α</sub>) is associated with delay in uterine involution (Khatri *et al.*, 2013). The administration of PGF<sub>2α</sub> during early post partum period accelerates uterine involution, hastens ovarian activity, reduces time required to exhibit first post partum estrus and also reduces number of services per conception in dairy animals (Khatri *et al.*, 2013). The present study was planned to evaluate the impact of treatment with cloprostenol sodium, PGF<sub>2α</sub> analogue, during early post partum period on subsequent fertility in dairy cattle.

Sixteen normally calved dairy cattle (parity 2-7) maintained under ideal farm conditions and similar management practices were used in present study. Eight animals were administered Inj. cloprostenol sodium (500 mg, i.m.) immediately after calving as well as on day 5 and 10 post partum. Remaining cattle were treated with two ml normal saline solution at same time as in cloprostenol group. The time required for expulsion of placenta was recorded. Transrectal ultrasonographic examinations using 7.5 MHz probe was carried out on

day 21, 28 and 35 post partum to measure the diameters of uterine horns. Uterine involution was considered complete when diameter of both the horns was same. Time for uterine involution, exhibition of first post partum estrus and first service conception rate was recorded. The statistical analysis was carried out by paired t-test.

The time required for expulsion of placenta was less in cloprostenol group as compared to controls (2.53±0.28 vs. 5.45±0.50 h, p<0.05). Moreover, the average time required for uterine involution was less in cloprostenol group as compared to controls (29.75±1.0 vs. 33.25±1.43 days, p<0.05). These effects could be due to prolonged uterine contractions induced following PGF<sub>2α</sub> analogue administration as the spasmogenic effect of PGF<sub>2α</sub> on uterine musculature is well established (Eiler *et al.*, 1981 and Edquist *et al.*, 1978). Similar results regarding uterine involution following PGF<sub>2α</sub> administration in early postpartum were also reported earlier in cattle (Khatri *et al.*, 2013).

The average time required for the exhibition of first post partum estrus was 70.16±1.11 days in cloprostenol and 80±1.12 days in control group (p>0.05). Moreover, during the study period, about 75% (n=6/8) dairy cattle exhibited first post partum estrus compared to 25% (n=2/8) in control group (p>0.05). Out of animals

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exhibiting estrus, almost similar proportion of cattle became pregnant subsequently. The number of services required per conception was 1.70 and 1.72 in cloprostenol and control group, respectively. The cloprostenol sodium administered in early stage of post partum life may prepare the uterus well due to its myometrial activity and therefore, animal could be able to resume their normal physiological secretions (Lindell and Kindahl, 1983). In brief, administration of PGF<sub>2α</sub> analogue during early postpartum period is beneficial for post partum fertility in dairy cattle.

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