

# A Field Investigation of the Effect of 5 mg PGF2 $\alpha$ Given Intravenously to Cycling Beef Cows and Heifers

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Prostaglandin F2 $\alpha$  (PGF2 $\alpha$ ) has been proven to be an effective luteolytic agent in cattle when administered after day 5 of the cycle. While the recommended dose of PGF2 $\alpha$  in cattle has been established as 25 mg IM, there have been field reports that a dose as low as 5 mg PGF2 $\alpha$  IV was effective in obtaining luteolysis. It has been documented that 5 mg PGF2 $\alpha$  IM was luteolytic in hysterectomized heifers<sup>1</sup> and a dose of 5 mg PGF2 $\alpha$  IV has caused estrus and evacuation of purulent material in cows with pyometra.<sup>2</sup>

*The purpose of this field trial was to determine the efficacy of 5 mg PGF2 $\alpha$  IV in causing luteolysis and estrus in a group of cycling beef cows.*

## Material and Methods:

Thirty-one crossbred beef cows and heifers ranging in age from 2 to 11 years were examined by rectal palpation and divided into 2 groups based on presence of a corpus luteum (N=25) and absence of a palpable corpus luteum (N=6). Jugular blood was obtained at the time of palpation and at 12, 24, 48, and 72 hours. Serum progesterone concentrations were determined by radioimmunoassay. Animals with a palpable corpus luteum were given 5 mg PGF2 $\alpha$  IV, whereas those without a palpable corpus luteum were left untreated. The cows were observed for signs of estrus activity for 96 hours at 12 hour intervals.

## Results and Discussion:

Estrus activity was detected in five cows in the treatment group and two in the nontreatment group.

Mean progesterone concentrations of the treatment group are divided into those showing estrus during the observation period and those not showing estrus and are depicted in Table 1. Progesterone values of the treatment group that showed estrus declined to values < 1 ng/ml by 48 hours post treatment. This decline was significantly lower ( $P < .0005$ ) than values of the treated cows that did not show estrus. It is likely that several cows in the treatment group were in proestrus at the time of palpation and the subsequent decline of serum progesterone concentrations in these cows was not due to the PGF2 $\alpha$  injections.

In the treated cows, 22 of 25 had serum progesterone values > 1 ng/ml suggesting that the structures palpated

**Table 1**  
Mean Serum Progesterone Concentration  $\pm$  S. D. of Cows With a Palpable CL Treated with 5 mg PGF2 $\alpha$  IV.

Hours	In Estrus (N = 5)	Not in Estrus (N = 20)
0	2.2 $\pm$ 1.6	2.9 $\pm$ 1.7
12	1.7 $\pm$ 1.3	1.9 $\pm$ 1.6
24	1.5 $\pm$ 1.6	1.7 $\pm$ 1.6
48	0.4 $\pm$ 0.3***	1.9 $\pm$ 1.5
72	0.6 $\pm$ 1.1	1.6 $\pm$ 1.5

were functional CLs. In another of these cows, the serum progesterone concentration was 0.40 at the time of palpation. This cow also had a 1.5 cm follicle and a regressing CL and the palpator predicted that estrus would occur in two days.

Mean progesterone concentrations of the nontreatment group was 0.6 ng/ml and remained low during the subsequent bleedings suggesting that palpation findings were correct for this group. One cow had a pretreatment progesterone concentration of 1.6 ng/ml declining to 0.4 ng/ml over the sampling period indicating that the CL of this cow was undergoing luteolysis from endogenous PGF2 $\alpha$ . In another nontreatment cow, serum progesterone increased from 1.2 ng/ml to 2.5 ng/ml indicating development of the CL during the sampling period.

## Conclusion

**Five mg PGF2 $\alpha$  IV did not effectively cause luteolysis in the cows in this study. In most of the treated cows, the progesterone values decreased but in those not showing estrus (80 percent) the average concentrations remained above 1 ng/ml. Estrus activity was detected in only 20 percent of the treated cows.**

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## References

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