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S.S. Plunkett

Jeffrey S. Stevenson

Edward P. Call

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## prostaglandin F2 $\alpha$ for lactating dairy cows with silent estrus

### Abstract

Two experiments were conducted in 17 dairy herds in NE Kansas to determine the effectiveness of prostaglandin F2 $\alpha$  (PGF) for reducing intervals to conception for cows with silent or unobserved estrus. Cows that failed to be seen in heat so they could be inseminated after calving (Exp. 1) and cows that did not return to estrus after AI and were not pregnant when presented to veterinarian for pregnancy examination (Exp. 2) were assigned alternately to be given PGF or to receive no treatment after detection of a palpable corpus luteum. Cows were inseminated at 72 and 96 hr after PGF treatment if not detected in heat. Intervals from treatment to conception were reduced after PGF treatment. Cows with unobserved estrus can be inseminated sooner and have shorter intervals to conception if PGF is used for reproductive management in association with a routine herd health program.; Dairy Day, 1984, Kansas State University, Manhattan, KS, 1984;

### Keywords

Kansas Agricultural Experiment Station contribution; no. 85-116-S; Report of progress (Kansas Agricultural Experiment Station); 460; Dairy; Prostaglandin F2- $\alpha$ ; Estrus; Artificial Insemination (AI)

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**K**PROSTAGLANDIN F<sub>2α</sub> FOR LACTATING DAIRY COWS**S**WITH SILENT ESTRUS<sup>1,2</sup>**U**

S. S. Plunkett, J. S. Stevenson, and E. P. Call

Summary

Two experiments were conducted in 17 dairy herds in NE Kansas to determine the effectiveness of prostaglandin F<sub>2α</sub> (PGF) for reducing intervals to conception for cows with silent or unobserved estrus. Cows that failed to be seen in heat so they could be inseminated after calving (Exp. 1) and cows that did not return to estrus after AI and were not pregnant when presented to veterinarian for pregnancy examination (Exp. 2) were assigned alternately to be given PGF or to receive no treatment after detection of a palpable corpus luteum. Cows were inseminated at 72 and 96 hr after PGF treatment if not detected in heat. Intervals from treatment to conception were reduced after PGF treatment. Cows with unobserved estrus can be inseminated sooner and have shorter intervals to conception if PGF is used for reproductive management in association with a routine herd health program.

Introduction

Intervals from calving to conception longer than 120 days are an economic liability to dairy producers. Failure to detect estrus is the primary reason for lengthy calving intervals rather than a cow's failure to conceive once inseminated. Missed heats occur in cows with delayed intervals to first service and in cows that do not conceive when bred and do not return to estrus approximately 3 wk after AI. Prostaglandin F<sub>2α</sub> (PGF) is a potential solution to dealing with dairy cows with silent or unobserved estrus.

<sup>1</sup>We acknowledge the donation of prostaglandin F<sub>2α</sub> (Lutalyse®) and partial financial support provided by The Upjohn Company, Kalamazoo, MI.

<sup>2</sup>The authors express appreciation to the following Kansas dairy producers (and their veterinarians) for cooperating in this project: David Alderman, Ottawa (Dr. Larry Mages); Fisher Dairy, Frankfort (Dr. Harry Steinfort); Phil Freidrichs, Bremen (Dr. Arnold Nagely); Funk Dairy, Nortonville (Dr. Joe Kobuszewski); Ron Funk, Valley Falls (Dr. Joe Kobuszewski); Bill Harries, Herkimer (Dr. Arnold Nagely); Joe Heinen, Valley Falls (Dr. Joe Kobuszewski); James Hermann, Oskaloosa (Dr. Don Hrenchir); Charles-Chip Hornberger, Baldwin (Dr. J. C. Breithaupt); Kenneth and Marilyn Hubbard, Baldwin (Dr. J. C. Breithaupt); Arlon Jones, Pomona (Drs. Tom Taul and David Nottingham); James Lobb, Oskaloosa (Drs. Allen Meyer and Mike Kobuszewski); Helmith Ludders, Herkimer (Dr. Arnold Nagely); Duane Meier, Palmer (Dr. Harry Steinfort); Bob Ohlde, Linn (Dr. Harry Steinfort); Harris Ramsour, Alta Vista (Dr. Kirkimide); Bob Russell, Baldwin (Drs. Tom Taul and David Nottingham), and Mary Schmidt and Michel Jamshedi, KSU Dairy (Drs. David Carnahan and Mark Spire).

### Procedures

Exp. 1. Dairy cows (n=223) that had not been observed in heat and bred by at least 6 wk postpartum were presented to herd veterinarians at a routine herd visit. Those cows with a palpable corpus luteum were assigned alternately to be an untreated control or to receive PGF (5 cc Lutalyse®). Cows were inseminated when observed in heat. If heat was not detected by 72 hr after PGF, cows were inseminated at 72 and 96 hr. If cows showed heat after 96 hr, they were reinseminated.

Exp. 2. Cows (n=85) with unobserved estrus after insemination and diagnosed open at pregnancy examination were assigned to a control or PGF treatment group as in Exp. 1 if a corpus luteum was palpated. Cows were inseminated as described for Exp. 1.

### Results and Discussion

Exp. 1. Intervals from treatment to heat, first service, and conception were shorter ( $P<.01$ ) for cows receiving PGF than for controls (Table 1). Conception occurred 22 days earlier ( $P<.01$ ) for treated cows than for controls. First service conception and cumulative pregnancy rate were similar for control and treated cows.

Table 1. Dairy cows not inseminated because of unobserved estrus (Exp. 1)

Item	Control	PGF
Treatment to heat, days	23.1	3.1 <sup>a</sup>
Treatment to AI, days	23.4	2.9 <sup>a</sup>
Treatment to conception, days	59.3	37.2 <sup>a</sup>
Conception at first AI, %	39 (27/69)	43 (57/133)
Cumulative pregnancy rate, %	88 (61/69)	86 (114/133)

<sup>a</sup>Less than control ( $P<.01$ ).

Exp. 2. Intervals from treatment to estrus and first service were shorter ( $P<.01$ ) for treated cows compared with controls (Table 2). Time from treatment to conception tended to shorter by 16.5 days for cows given PGF compared with controls. As in Exp. 1, first-service conception and cumulative pregnancy rates were similar between groups.

Table 2. Dairy cows open at pregnancy examination with unobserved estrus (Exp. 2)

Item	Control	PGF
Treatment to heat, days	19.6	3.3 <sup>a</sup>
Treatment to AI, days	20.5	3.0 <sup>a</sup>
Treatment to conception, days	45.6	29.1
Conception at first AI, %	52 (16/31)	44 (19/43)
Cumulative pregnancy rate, %	84 (26/31)	81 (35/43)

<sup>a</sup>Less than control (P<.01).

#### Recommendations

Treating unobserved or silent estrus with PGF will reduce conception intervals. If a corpus luteum is present, treat cows with 5 cc lutalyse® or 2 cc Estrumate®. Observe for estrus and AI when detected in heat. If no estrus is observed by 72 hr after treatment, AI cows at 72 hr and again at 96 hr. If cows show heat after 96 hr, rebreed. It is essential to breed cows at 72 and 96 hr in the absence of detected estrus for maximal results.