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Factors Affecting Conception After Synchronization
With Lutalyse[®] and Timed Insemination

Mike King, G. H. Kiracofe, and R. M. McKee

Summary

With heifers given two injections of Lutalyse 11 days apart, and inseminated 80 hours after the second injection, only 20% in heat before 48 hours conceived compared with 65% that were in heat 48 to 80 hours after injection. Those showing heat early may have been inseminated too late. Heifers receiving their second injection on day 7, 8, or 9 of the cycle came into heat earlier than those injected on days 10 through 15.

Introduction

Two injections of Lutalyse 11 days apart, and insemination 80 hours after the second injection has become popular in synchronizing and breeding beef heifers but conception rates have varied.

We wanted to determine if inseminating at 80 hours after injection was optimum for conception.

Procedure

Heat was checked twice daily for 35 days in 87 yearling beef heifers. Then all were injected with Lutalyse and heat checks were continued another 11 days. All heifers observed in heat during the 46 day heat check were given a second Lutalyse injection. Day of the estrous cycle at second injection was determined from the last observed estrus.

After the second injection, heifers were checked for heat every 4 hours for 6 days, and time to heat was recorded.

All heifers were inseminated 80 hours after the second injection. Pregnancy was determined by rectal palpation 58 days after insemination.

Results and Discussion

Thirty-eight heifers were in heat during the twice daily heat checks and received the second Lutalyse injection. Thirty-two were detected in heat from 34 to 118 hours after the second injection; six failed to show estrus within 6 days.

[®]Lutalyse is a registered name of the hormone prostaglandin marketed by The Upjohn Co., Kalamazoo, MI for synchronization of heat in beef cattle.

Effect of interval to heat on conception rate is shown in Table .1. Ten heifers in heat by 48 hours after the second injection had a conception rate of 20 percent, compared with 65% for 20 heifers that showed heat between 48 and 80 hours. Neither of two heifers in heat after the 80 hour insemination conceived.

Our data suggest that conception rate would be improved in heifers that show heat before 48 hours by inseminating them earlier than the recommended 80 hours. Heifers coming in heat between 48 and 80 hours can be inseminated at 80 hours.

The day of the cycle at the second injection influenced the interval to heat. Heifers in days 7, 8, and 9 of their estrous cycle had an average interval to heat of 50 hours; those in days 10 to 15 of their cycle, 59 hours.

Table 10.1. Conception related to interval from second injection to estrus.

Interval to heat	No. of heifers (% of group)	Conceiving at 80 hours number (%)
Before 48 hours	10(26)	2(20)
48-80 hours	20(53)	13(65)
After 80 hours	2(5)	0(0)
No estrus	<u>6(16)</u>	<u>0(0)</u>
Total	38(100)	15(39)

What's Prostaglandin?

Prostaglandin, a complex chemical derived from fatty acids, is in every cell in the body, and performs a variety of functions. Prostaglandin produced in the non-pregnant uterus passes to the ovary, and signals the ovary to start a new cycle. Lutalase is a specific prostaglandin, (PGF_2) and can be used for heat synchronization.

In the 1960's, prostaglandin was rare. Its only source was the seminal vessels (accessory sex glands) of slaughtered male sheep. Then the "sea whip", a living coral was found to be rich in the compound. In the late 1960's, there was enough prostaglandin to do limited large animal research. Finally, the UpJohn Company found how to synthesize the compound, and discovered that PGF_2 could induce heat in cattle.

Various Prostaglandins are used to treat human diseases. Others are produced in injured tissue and cause pain and inflammation. Aspirin is a mild prostaglandin inhibitor.