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Timed-insemination of beef heifers using Cosynch with or without MGA

Abstract

Our purpose was to determine if feeding melengesterol acetate (MGA) for 1 week in combination with gonadotropin-releasing hormone (GnRH) and prostaglandin-F₂" (PGF) would better synchronize heifers for timed artificial insemination. Sixty-nine yearling beef heifers received an injection of GnRH 7 days before receiving an injection of PGF. Half of the heifers were fed MGA between the GnRH and PGF injections (Cosynch+MGA), whereas the remaining heifers were not (Cosynch). All heifers were given a second GnRH injection 2 days after PGF and inseminated at that time. Pregnancy rate for the Cosynch group (43%) was greater ($P<0.05$) than that for the Cosynch+MGA group (15%). This experiment suggests that short-term feeding (7 days) of MGA in concert with a Cosynch protocol was detrimental to fertility in beef heifers.

Keywords

Cattlemen's Day, 2001; Kansas Agricultural Experiment Station contribution; no. 01-318-S; Report of progress (Kansas State University. Agricultural Experiment Station and Cooperative Extension Service); 873; Beef; Heifers; AI; Synchronization; MGA; GnRh; PGF2 α

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TIMED-INSEMINATION OF BEEF HEIFERS USING COSYNCH WITH OR WITHOUT MGA

D. M. Grieger, T. A. Wickersham and R. C. Cochran

Summary

Our purpose was to determine if feeding melengesterol acetate (MGA) for 1 week in combination with gonadotropin-releasing hormone (GnRH) and prostaglandin- $F_{2\alpha}$ (PGF) would better synchronize heifers for timed artificial insemination. Sixty-nine yearling beef heifers received an injection of GnRH 7 days before receiving an injection of PGF. Half of the heifers were fed MGA between the GnRH and PGF injections (Cosynch+MGA), whereas the remaining heifers were not (Cosynch). All heifers were given a second GnRH injection 2 days after PGF and inseminated at that time. Pregnancy rate for the Cosynch group (43%) was greater ($P<0.05$) than that for the Cosynch+MGA group (15%). This experiment suggests that short-term feeding (7 days) of MGA in concert with a Cosynch protocol was detrimental to fertility in beef heifers.

(Key Words: Heifers, AI, Synchronization, MGA, GnRH, PGF $_{2\alpha}$)

Introduction

Previous research at Kansas State and other locations has shown that using combinations of GnRH and PGF has resulted in pregnancy rates ranging from 40-60% with timed insemination of lactating mature beef cows. However, using these same protocols in heifers results in pregnancy rates at least 10% lower. In mature cows, the better pregnancy rates (>50%) have resulted from protocols using a progestin (e.g., ear implant of norgestomet or an intravaginal insert containing progesterone) between the initial GnRH injection and the PGF injection. Therefore, we conducted this experiment using an oral progestin (MGA) combined with

GnRH and PGF to see if timed insemination results for beef heifers could be improved.

Experimental Procedures

Sixty-nine crossbred yearling beef heifers (avg 735 lb) received an injection (i.m.) of GnRH (100 μ g Cystorelin[®]; Merial Ltd., Iselin, NJ), on day -7. One week later (day 0), all heifers received 25 mg of PGF (Lutalyse[®]; Pharmacia & Upjohn, Kalamazoo, MI) followed by a second injection of GnRH (100 μ g) on day 2. All heifers were inseminated at the time of the second GnRH injection. This ovulation synchronization protocol is referred to as Cosynch. Half of the heifers ($n=34$) were fed MGA (0.5 mg/head/day) for 7 days from day -6 until day 0 (see Figure 1). The remaining heifers ($n=35$) received the same supplement without MGA. Blood samples for later measurement of progesterone were collected at days -18, -7 and 0 to determine the number of pubertal animals prior to treatment. Pregnancy was determined in all heifers 30 days after insemination using ultrasonography.

Results and Discussion

Prior to the first GnRH injection (Day -7) there was no difference in the number of heifers cycling between the Cosynch (86%) and the Cosynch+MGA (91%) groups. The pregnancy rate for heifers in the Cosynch+ MGA treatment (15%) was lower ($P<0.05$) than that for the Cosynch treatment group (43%). Feeding MGA during the first week of the Cosynch treatment was detrimental to fertility in these heifers. This study indicates that MGA may not be a suitable progestin to use in combination with Cosynch. The timed insemination may have been too soon after MGA withdrawal. Long-term fertility was not affected

however, as overall pregnancy rates at the end of a 45-day pasture-breeding season were the same for the Cosynch+MGA group (88%) as

compared to the heifers that did not receive MGA (91%).

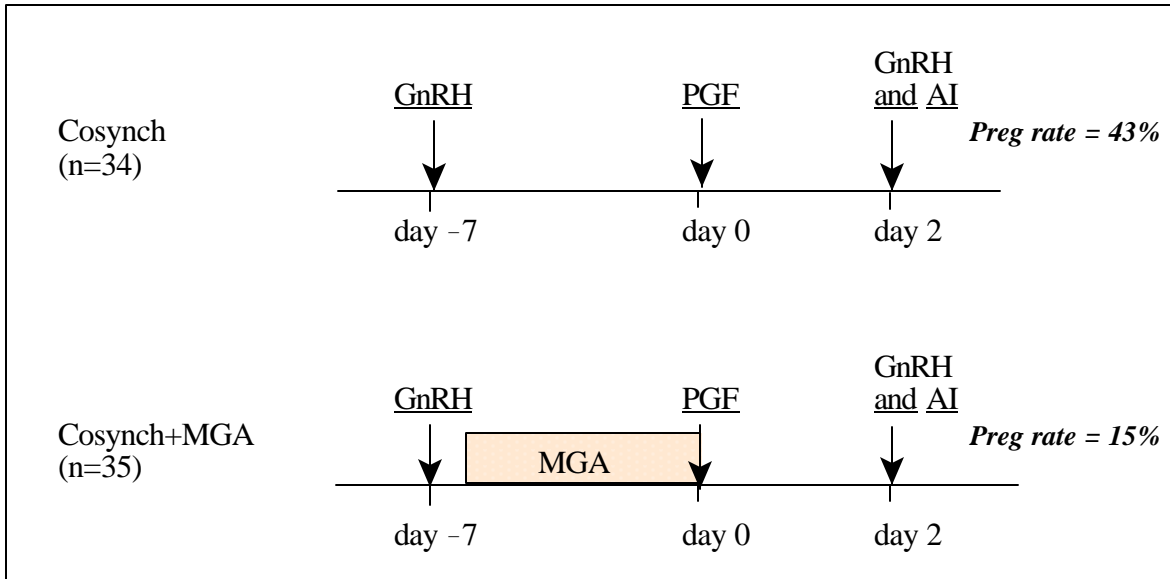


Figure 1. Synchronization Treatments and Pregnancy Rates for Cosynch vs. Cosynch+MGA.