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Abstract

Previous research has shown that the 7-11 Cosynch protocol using melengestrol acetate (MGA) is effective in synchronizing beef heifers. This study compared MGA and a vaginal insert containing progesterone (CIDR) in the 7-11 Cosynch protocol on beef heifers. Replacement beef heifers (n=179) from three herds were assigned to MGA or CIDR treatments. Beginning on day 1, heifers on the MGA treatment were fed to consume 0.5 mg daily of MGA for 7 days. On day 7, the last day of MGA feeding, the MGA heifers received an injection of Lutalyse (PGF). Heifers on the CIDR treatment received a CIDR on day 3; on day 9 the CIDR was removed, and heifers received an injection of Lutalyse. On day 11, all heifers received an injection of OvaCyst (gonadotrophin-releasing hormone; GnRH), followed by another injection of Lutalyse® 7 days later (day 18). At 48 hours after the final Lutalyse injection, all heifers were time inseminated and received an injection of OvaCyst. Pregnancy status was determined 33 days after breeding by ultrasonography. No difference in pregnancy rate was observed between the CIDR (46%) and MGA (47%) treatments.

Keywords

Cattlemen's Day, 2006; Kansas Agricultural Experiment Station contribution; no. 06-205-S; Report of progress (Kansas State University. Agricultural Experiment Station and Cooperative Extension Service); 959; Beef; CIDR; MGA; 7-11 cosynch; Heifers

COMPARISON OF CIDR TO MGA IN A 7-11 COSYNCH PROTOCOL WITH TIMED INSEMINATION OF BEEF HEIFERS

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Summary

Previous research has shown that the 7-11 Cosynch protocol using melengestrol acetate (MGA) is effective in synchronizing beef heifers. This study compared MGA and a vaginal insert containing progesterone (CIDR) in the 7-11 Cosynch protocol on beef heifers. Replacement beef heifers (n=179) from three herds were assigned to MGA or CIDR treatments. Beginning on day 1, heifers on the MGA treatment were fed to consume 0.5 mg daily of MGA for 7 days. On day 7, the last day of MGA feeding, the MGA heifers received an injection of Lutalyse[1] ($PGF_{2\alpha}$). Heifers on the CIDR treatment received a CIDR on day 3; on day 9 the CIDR was removed, and heifers received an injection of Lutalyse. On day 11, all heifers received an injection of OvaCyst[2] (gonadotrophin-releasing hormone; GnRH), followed by another injection of Lutalyse® 7 days later (day 18). At 48 hours after the final Lutalyse injection, all heifers were time inseminated and received an injection of OvaCyst. Pregnancy status was determined 33 days after breeding by ultrasonography. No difference in pregnancy rate was observed between the CIDR (46%) and MGA (47%) treatments.

Introduction

Artificial insemination offers several advantages, including improving genetics, shortening the calving season, and creating a more uniform calf crop, yet many beef producers have yet to embrace this technology. One possible explanation is that conception rates are not yet acceptable, given the time and cost involved. Time could be reduced by shortening the synchronization time and by more effectively synchronizing the estrous cycle and time of ovulation to yield greater conception rates to a timed artificial insemination.

Use of a progestin in synchronization protocols is desirable because it synchronizes the estrous cycle by extending the luteal phase and also induces cyclicity in anestrus or prepubertal females. The progestins most commonly used by beef producers are melengestrol acetate (MGA), given orally, and the Eazi-Breed CIDR[1], a vaginal insert containing progesterone. Gonadotrophin-releasing hormone (GnRH) is also regularly included in estrous synchronization to control timing of follicular waves and ovulation.

The most commonly used synchronization protocol for beef heifers consists of feeding MGA for 14 days, followed by heat detection and breeding 17 to 19 days later. More recently, protocols have been tested that shorten the time of progestin administration (7 vs. 14 days) and overall time to breeding (11 vs. 33 days). One example is the 7-11 Cosynch, which is composed of 7 days of MGA feeding,

[1]Lutalyse and Eazi-Breed CIDR are registered trademarks of Pharmacia Animal Health.
[2]OvaCyst is a registered trademark of Phoenix Scientific.

followed by the Cosynch protocol starting on day 11 (Figure 1).

We previously have reported acceptable conception rates from using MGA with the 7-11 Cosynch protocol. Here, we compare MGA and the CIDR as progestin sources in the 7-11 Cosynch protocol.

Experimental Procedures

Three groups of yearling heifers (n=179) from the Kansas State University Purebred Unit and the Cow-Calf Unit were used in this study. Heifers were blocked by weight (and breed for the purebred heifers) and assigned to one of two treatments: MGA or CIDR. Heifers in the MGA treatment (Figure 1) were group-fed 0.5 mg/heifer daily of MGA (Pharmacia Animal Health, Kalamazoo, MI) in a grain sorghum carrier, beginning on day 1. On the last day of MGA feeding (day 7), heifers were injected with Lutalyse (5 mL intramuscular). Heifers in the CIDR treatment (Figure 1) received an Eazi-Breed CIDR on day 3. On day 9, the CIDR was removed and heifers received an injection of Lutalyse. On day 11, heifers from both treatment groups received 2 mL (intramuscular) of OvaCyst. On day 18, all heifers received an injection of Lutalyse. Timed insemination followed 48 hours later, at which time heifers were injected with OvaCyst. Pregnancy status was determined by ultrasonography 33 days after insemination.

Results and Discussion

Overall, 84 of 179 (47%) heifers were pregnant. There were no treatment differences between MGA and CIDR in pregnancy rate; 42 of 89 (47%) for MGA and 42 of 90 (46%) for CIDR. These pregnancy rates were as much as 15 to 20% lower than in previous trials using the 7-11 Cosynch timed artificial insemination treatment with MGA. In this direct comparison of MGA and CIDR, however, there was no advantage of using a CIDR in place of MGA.

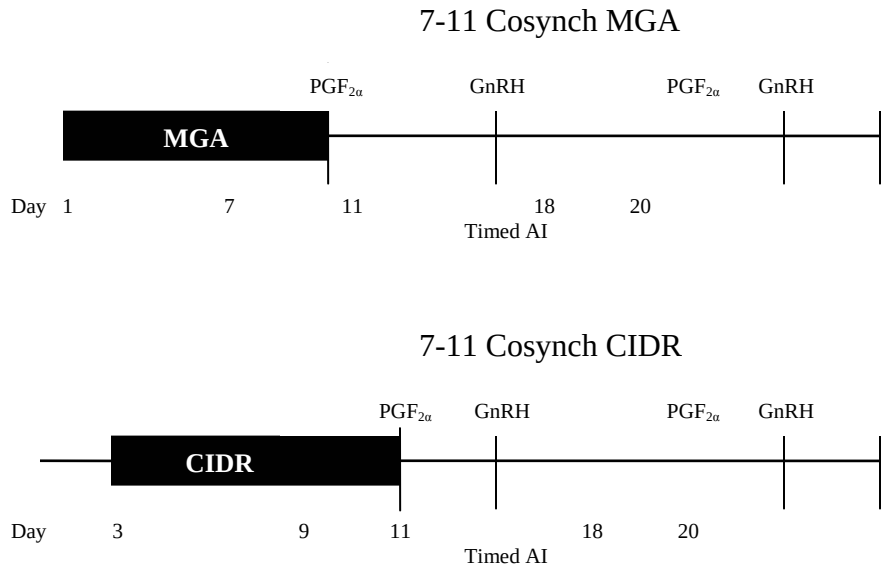

Figure 1. The 7-11 Cosynch protocols using either melengestrol acetate (MGA) or a vaginal insert containing progesterone CIDR as the progestin source. Prostaglandin $F_{2\alpha}$ ($PGF_{2\alpha}$) was provided as Lutalyse (5 mL, intramuscular). OvaCyst (2 mL, intramuscular) served as the source of gonadotrophin-releasing hormone (GnRH).