

Use of FSH or hCG to enhance follicular growth and pregnancy per artificial insemination during a split-AI program in crossbred heifers

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INTRODUCTION

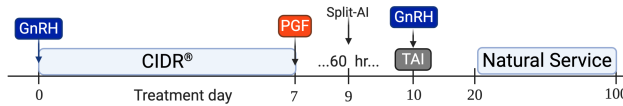
- There is high variability in the results of current TAI estrous synchronization protocols, due to the lack of control of follicular waves in cyclic animals, and the absence of estradiol.
- It has been shown that exogenous follicle-stimulating hormone (FSH) shortens the time from treatment to the emergence of the subsequent follicular wave in heifers, and the administration of human chorionic gonadotropin (hCG) helps with the ovulation of mature follicles, thus increasing the pregnancy rates per AI
- The objective of the study was to compare follicle growth and pregnancy per artificial insemination (P/AI) in crossbred heifers receiving either a low dose of hCG (150 IU) or a dose of FSH (20 mg) vs. a control group during the final stage of a split-AI protocol.

MATERIALS AND METHODS

- 387 yearling (14-16 months) crossbred heifers were enrolled and randomly assigned in three treatments within reproductive tract score (RTS; 1 to 5 scale), body condition score (BCS; 1 to 9 scale) and pubertal status.
- All groups were synchronized with a 7-day CO-Synch + CIDR protocol, at CIDR removal the two treatments were injected, an Estrotest patch was placed and the diameter of the dominant follicle was assessed through transrectal ultrasonography.
- At day 9 heifers that presented estrus (>50% of the Estrotest patch rubbed off) were AI ~12 hr later, and those that did not were TAI approx 60 hours after the PGF injection. An ultrasound was carried out along with the AI to measure the diameter of the preovulatory follicle, ~30 and ~140 days after for pregnancy check.
- The data was analyzed using the GLIMMIX procedure (SAS).

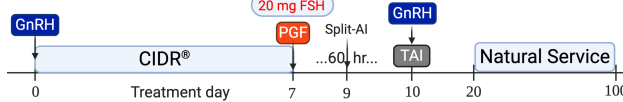
Control group^a

7-Day Co-Synch+CIDR



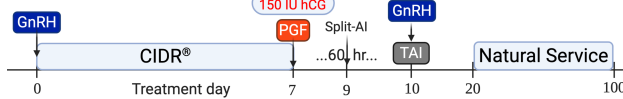
FSH group^a

7-Day Co-Synch+CIDR+FSH. Apply 20 mg of FSH at CIDR removal.



hCG group^a

7-Day Co-Synch+CIDR+hCG. Apply 150 IU of hCG at CIDR removal.



^a TAI to non-responders at 60 hr after PGF with GnRH at TAI.

Protocol description

- At day 0 a dose of GnRH (Factrel, Zoetis) was injected and an Eazi-Breed CIDR (Zoetis) was inserted for 7 days. At day 7 the CIDR was removed, and a dose of PGF was injected (Lutalyse Highcon, Zoetis) to all heifers; for the animals in the FSH group a dose of 20 mg of Folltropin-V, Vetequinol was applied and for hCG group a dose of 150 IU of Chorulon, Merck was injected. Heat detection was assessed 36 hours after the application of PGF, all animals that presented estrus were AI with a dose of GnRH. The animals that did not present estrus were TAI 60 hours after the PGF with an application of GnRH.

RESULTS

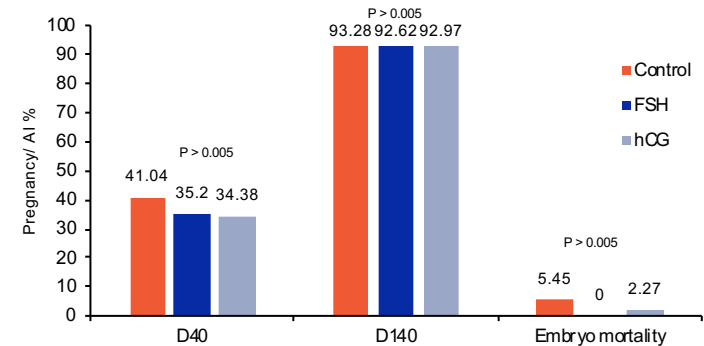


Figure 1. Pregnancy rates 30 and 140 days after TAI

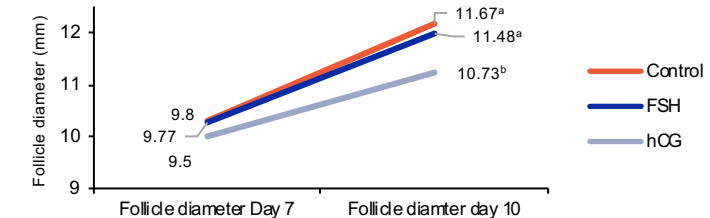


Figure 3. Dominant follicle diameter on day 7 and day 10 of the protocol

- The rate of follicular growth (Control: 4.96 ± 0.37 ; FSH: 4.59 ± 0.39 ; hCG: 5.12 ± 0.38 ; $P = 0.64$) was not different among groups

CONCLUSIONS

- The use of low dose of FSH or hCG at the time of device removal did not increase the proportion of pregnant heifers and did not enhance the follicular growth rate.