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Effect of progestin treatment on formation of persistent follicles in beef heifers

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Effective estrous synchronization protocols frequently utilize progestins (melengestrol acetate [MGA] and Controlled Internal Drug Release [CIDR] inserts) to synchronize estrus. Previous research demonstrated that long-term treatment with MGA, in the absence of a corpus luteum, caused formation of persistent follicles and resulted in low fertility. The specific aims of this project were to determine if the presence of a new or used CIDR, in heifers without a corpus luteum, would induce the formation of persistent follicles and to compare the pattern of serum concentrations of progesterone in heifers treated with a new or used CIDR to luteal phase concentrations of progesterone (P4) in non-treated heifers. Normally cycling heifers were allocated by age, weight, and breed into four treatment groups: Control (n=8), MGA (n=4; 0.5 lbs⁻¹hd⁻¹day), new CIDR (n=7; 1.38 g P4), and used CIDR (n=8; new CIDR's previously inserted into cows for 7 d). Progestin treatment (MGA or CIDR) began on d 4 post-estrus and PG was injected on d 6 to induce luteolysis (d 0 = estrus). MGA or CIDR treatment continued for 14 d and length of a follicular wave was defined as the interval from follicular recruitment to ovulation or initiation of a new wave. Length of the first follicular wave (d) was 10.9^a, 18.0^b, 17.1^b, and 16.9^b (^{ab}P<.05) and maximum diameter (mm) of the dominant follicle was 14.4^c, 18.8^d, 16.0^c, and 18.5^d (Control, MGA, new CIDR, and used CIDR, respectively; ^{cd}P<.06). Dominant follicle diameter was greater (P<.05) in the used CIDR group compared to the new CIDR group after d 10 of treatment but similar to the MGA group. Serum concentrations of progesterone in the new and used CIDR groups were similar (P>.05) throughout the 14 d treatment period but lower than in the control group. In summary, treatment with a new or used CIDR induced formation of persistent follicles in beef heifers and there was no difference in serum concentrations of progesterone between the two CIDR groups.