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Use of recombinant human FSH in TAI protocols: Preliminary results

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A number of timed artificial insemination (TAI) protocols, particularly those developed for cows under postpartum anestrus, use eCG to stimulate follicular growth and increase ovulation rate and the of the subsequent corpus luteum (CL). The current trend in animal reproduction, however, is to replace hormones obtained by purification from biological samples by synthetic analogues. Reference doses, however, still need to be determined for each hormone and protocol, aiming at stimulating follicle growth but avoiding double or multiple ovulations. In the current study we tested two doses of a recombinant human FSH (rhFSH) in an ovulation synchronization protocol. Cycling, non-lactating Nelore cows with an average 3.0 ± 0.1 BCS received the same TAI protocol (2 mg estradiol benzoate and 1 g progesterone implant on day 0, and implant removal, 0.5 mg cloprostenol sodium and 1 mg estradiol cypionate on day 8), and were randomly allocated into three groups, which received on day 8: a) no stimulus (control group, G0, $n = 15$); b) 3.5 mcg rhFSH (G3.5, $n = 13$); or c) 6.5 mcg rhFSH (G6.5, $n = 15$). The size of the largest follicle was measured by rectal ultrasonography at days 8 and 10, and the number of CL formed was evaluated on day 17. Data was analyzed using the Mixed model of the SAS software, and a P-value < 0.05 was considered as significant. There was no difference among groups G0, G3.5 or G6.5 in the of the dominant follicle at days 8 (9.3 ± 0.1 , 9.4 ± 0.1 and 9.2 ± 0.1 cm; respectively; $P > 0.05$) or 10 (11.6 ± 0.1 , 11.7 ± 0.1 and 11.5 ± 0.0 cm; respectively; $P > 0.05$), or on ovulation rate (86.7%, 92.3% and 100.0%, respectively; $P > 0.05$). However, we observed a greater incidence of codominance ($0.0\%^a$ and $0.0\%^a$ vs $26.7\%^b$, $P = 0.03$) and average number of ovulations (0.9 ± 0.1^b , 0.9 ± 0.1^{ab} and 1.3 ± 0.2^a , $P = 0.03$) in the group G6.5, compared with G0. Our results suggest that the target dose of rhFSH to be used in TAI protocols should be lower than 6.5 mcg to avoid double or multiple ovulations and, consequently, double pregnancies.