Follicular and endocrinological turnover associated with GnRH induced follicular wave synchronization in Indian crossbred cows

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Abstract

The goal of this study was to record the hormonal and follicular turnover in Jersey crossbred cows when subjected for follicular wave synchronization using GnRH. Six healthy, non-lactating and regularly cycling Jersey crossbred cows (5–6 y) were used for the study. In the control group, the follicular wave pattern was ultrasonographically investigated in 18 cycles (3 cycles/cow). In the treatment group, GnRH analogue (buserelin acetate 10 μg im) was administered on Day 6 of the cycle and follicular wave pattern was studied in 12 cycles (2 cycles/animal). Follicular population was categorized based on their diameter Class I, ≤5 mm; Class II, >5–<9 mm; Class III, ≥9 mm) and the number of follicles in each category was determined on Day 6, Day 8 and Day 10. Plasma FSH and progesterone concentrations were estimated in both control and treatment groups. Out of 18 estrous cycles studied, 14 cycles (77.8%) three cycles (16.7%) and one cycle (5.6%) exhibited three-, two- and four-follicular waves per cycle, respectively. It was evident that the DF of Wave I established its dominance and was in the growing phase by Day 6 of the estrous cycle in all the normally cycling crossbred cows. The DF ovulated in all the animals (100%) in the mean interval of 27.7 ± 0.2 h after GnRH administration. A synchronized homogenous group of follicles emerged two days after GnRH injection (Day of 8.0 ± 0.0) in all the animals (100%). The combination of LH surge induced ovulation of DF (abrupt termination of Wave I) and FSH surge stimulated homogenous recruitment of Class I follicles, led to a synchronized emergence of follicular wave. All the GnRH treated cows had three follicular waves because of early emergence and short period of dominance of Wave II DF.

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1. Introduction

Success of estrus synchronization and superovulation programs in dairy cows is highly influenced by the follicular status of the individual animal before hor-