

The effect of an acute energy deficit on the hormone profile of dominant follicles in dairy cows.

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Abstract

The effect of an acute energy deficit on the hormone balance of dominant follicles was studied in six normally-cycling, high-yielding Italian Friesian cows at 60 and 90 days after calving. At 60 days after calving, the cows, which had been fed according to their maintenance and production requirements, were synchronized and follicular fluid was collected from the dominant follicles under ultrasound guidance. At 90 days after calving, the same protocol was used on the same cows, which had been subjected to an acute dietary restriction since the day of the second prostaglandin treatment for synchronization. At the follicular level, the dietary restriction caused a significant reduction ($P < 0.05$) in the concentration of estradiol-17beta and a significant increase ($P < 0.05$) in NEFA. There were no significant differences in follicular diameter, follicular concentrations of progesterone, and Insulin-like Growth Factor-I (IGF-I). The amount of IGFBP2 and IGFBP3 in follicular fluid increased. The results suggest that an acute dietary restriction induces substantial changes at the dominant follicle level, despite the fact that the recruitment and selection phase occurred before the cows' diet was restricted.