

Oocyte quality of lactating dairy cows submitted to feed restriction and heat stress

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The objective was to evaluate the effects of heat stress on oocyte quality in dairy cows previously submitted to feed restriction. In the study, 12 Girolando (*Bos taurus* x *Bos indicus*) cows, with 88.2 ± 2.7 days in milk, milk production of 25.3 ± 0.4 kg/day, during the dry season (Jul-Sep) were used. The experimental design aims to evaluate only the effects of heat stress, as heat-stressed cows consume less dry matter. In this context, the cows in the study would already have reduced feed consumption when they underwent heat stress. The cows were housed in a free-stall barn for seven days to monitor dry matter intake and adaptation, followed by feed restriction (15% of ad libitum intake) for eleven days (Control group). Four days before (D-4) the beginning of the period of feed restriction the emergence of the follicular wave was synchronized (2mg estradiol benzoate + P4 intravaginal device). After ten days (D6), the P4 device was removed and measurement and follicular fluid aspiration of the dominant follicle was performed, followed by resynchronization of the emergence of the follicular wave. After five days (D11), all visible follicles were counted and OPU was performed. At the end of the feed restriction period, the same cows were adapted to a climate chamber for four days and exposed to heat stress for eleven days [Heat Stress Group (HS)] (day THI = 85; night THI = 72). The same experimental design as the control group was carried out to synchronize wave emergence and follicular aspirations. The recovered oocytes were evaluated for quantity and quality. In addition, vaginal temperature was measured every 10 minutes throughout the experimental period using digital thermometers inserted intravaginally. Respiratory rate was evaluated three times a day (08, 12 and 16h) by visual inspection of respiratory movements during a period of 30 seconds. Statistical analyses were performed by SAS using the GLM and GLIMMIX procedures. Vaginal temperature and respiratory rate were greater in cows submitted to heat stress (Control = 38.8 ± 0.1 and HS = 39.1 ± 0.1 °C; $P < 0.0001$; Control = 40.6 ± 1.9 and HS = 59.9 ± 2.8 respiratory movements; $P < 0.0001$, respectively). The follicular diameter ten days after the start of the ovulation synchronization protocol was similar between the experimental groups (Control = 17.8 ± 0.8 and HS = 17.4 ± 1.1 mm; $P = 0.72$). Furthermore, there was no difference between treatments in the number of follicles aspirated (Control = 15.6 ± 2.4 and HS = 14.4 ± 2.5 ; $P = 0.72$), in the total number of oocytes recovered (Control = 6.6 ± 1.7 and HS = 7.0 ± 2.0 ; $P = 0.90$), total of viable oocytes (Control = 6.6 ± 1.7 and HS = 7.0 ± 2.0 ; $P = 0.45$) and the rate of viable oocytes [Control = 64.3% (54/84) and HS = 71.23% (52/73); $P = 0.35$]. It is concluded that exposure to acute heat stress did not affect the oocyte quality of lactating dairy cows when compared to cows previously submitted to restriction of feed intake. Support: Fapemig APQ 00049-2018.