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Follicular population and oocyte quality from Holstein x Gyr cows under heat stress in climatic chamber and supplemented with organic chromium**L.R. Carnevalheira^{1,3}, B.C. Carvalho³, L.S. Ribeiro^{2,3}, T.J.F. Goes², S.F. Vieira⁴, W.F. Fontes⁴, R.A. Torres Filho², C.S. Oliveira³, L.G.B. Siqueira³, L.S.A. Camargo³, F.Z. Brandão²**

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Changes in energy metabolism were related as an important cause of losses change in productive and reproductive performance. It is observed that cows under heat stress have higher peripheral glucose metabolism, reducing the blood flow to the reproductive tract, impacting ovarian physiology. Chromium enhances the function of insulin, increasing its efficiency and optimizing the absorption of glucose by cells. This study evaluated the follicular population and the quality of oocytes from Holstein x Gyr dairy cows submitted to heat stress and supplemented with organic chromium in the diet. Were used thirty-six ¾ Holstein x Gyr cows, average 113 days in milk, in a 2 x 3 factorial design, two diets (control and diet with 0.08 mg Cr/kg metabolic weight) and three environmental conditions: heat stress in climatic chamber - temperature and humidity index (THI) 85 for eight hours daily, thermoneutral environment in free stall - THI 68 feeding ad libitum and pair-fed group in same thermoneutral environment, totaling 6 contemporaneous groups with 6 animals each. The cows were submitted to ultrasound evaluation and OPU while all the animals were in thermoneutral environment (first moment) and after being distributed under the three environmental conditions, in two days of collection, after three and six days (second moment). Fisher's exact test was used to evaluate the categorical variables and the significance level was $P < 0.05$. No significant difference was observed in the follicular population in any of the effects studied (diet, environmental conditions and moment of collection), presenting a mean of 14.6 follicles in the assessments ($P > 0.05$). The cows that underwent heat stress in the climatic chamber showed a significant difference in oocyte quality between the two moments of collection, with a higher proportion of grade 1 oocytes (60.68% vs 39.32%), lower proportion of grade 2 oocytes (49.38% vs. 50.62%) and degenerated oocytes (37.25% vs. 62.75%) in the first and second moment of collection, respective ($P < 0.05$). The cows that received the control diet and suffered heat stress in the climatic chamber showed a significant difference in the oocyte quality between collections, higher proportion of grade 1 oocytes (72.73% vs. 27.27%) and a lower proportion of degenerated oocytes (35.71% vs. 64.29%) in the first and second moment of collection, respective ($P < 0.05$). However, the animals treated with the diet with organic chromium that suffered heat stress, did not present differences in oocyte quality between these collections. The oocyte quality is closely related to the environment in which it is found. Increases in body temperature have direct and adverse effect on cellular function compromising their quality (Hansen, J Anim Sci, 80: 33-44, 2002). In this study, animals treated with chromium did not present reduced oocyte quality when submitted to heat stress. Thus, chromium was effective on maintaining a healthy follicular environment under heat stress.

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