

**Abstracts - 35th Annual Meeting of the Brazilian Embryo Technology Society (SBTE)****Folliculogenesis, oogenesis and superovulation****EFFECT OF PREPUBERAL HEAT STRESS ON MICE EMBRYO PRODUCTION**

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**Resumo**

It has been widely demonstrated that heat stress triggers a series of cellular and molecular changes in the mammalian oocytes reducing oocyte developmental competence. However, little is known about the effects of heat stress in prepubertal animals. Thus, the objective of this experiment was to determine the effect of heat stress during the oocyte growth phase of prepubertal females on subsequent in vivo and in vitro embryo production. Swiss mice were mated for production of offspring. At postnatal day 10 of development (P10), offspring with lactating females were placed in environmental chambers under control (21°C/24h) or heat stress (35°C/12h during the light period and 21°C/12h during the dark period) for 11 days. All animals were weighed before (P9) and after (P21) exposure to treatments, followed by weekly weighing until P35. Upon puberty, females from the litter were subjected to hormonal stimulation. For experiment 1, females (control: N = 6; heat stress: N = 12) were superovulated with 10 I.U. of eCG and 10 I.U. of hCG within a 48-hour interval. Females were euthanized 14-15h after hCG administration to collect mature oocytes. Oocytes were submitted to parthenogenetic activation with strontium chloride and cytochalasin B to assess cleavage rates and embryonic development (morula and blastocyst) at 12 or 96h post-activation, respectively. For experiment 2, females (control: N = 14; heat stress: N = 19) were superovulated with 5 I.U. of eCG and hCG for in vivo embryo production. Females were allocated with fertile males and euthanized 94h after hCG administration for embryo collection and morphological classification according to the stage of development. Data were subjected to ANOVA using SAS. Heat stress reduced body mass of lactating females at P21 ( $P=0.0053$ ) and body mass variation ( $\Delta$  body mass = final mass – initial mass;  $P=0.0011$ ) in relation to control. There was no effect of heat stress on the body mass of offspring females. Exposure of prepubertal females to heat stress during oocyte growth phase did not affect cleavage rate after parthenogenetic activation. However, heat stress reduced embryonic development (morula and blastocyst) from  $23.74 \pm 4.12\%$  in the control group to 0% in the stressed group ( $P=0.0003$ ). There was no effect of heat stress on developmental competency and viability of in vivo produced embryos. Therefore, exposure of prepubertal females to moderate heat stress reduced oocyte developmental competence for oocytes that were activated in vitro, but not for oocytes in vivo fertilized, suggesting that the paternal genome and/or the reproductive tract environment rescued the deleterious effects of heat stress during the oocyte growth phase in mice.

**Keywords:** oocyte competence, oocyte growth, prepuberal, in vivo embryo, in vitro embryo