IN VITRO BISPHENOL A EFFECT ON TFAM AND SIRT1 GENE EXPRESSION IN PORCINE OOCYTE MITOCHONDRIA

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Abstract

Mitochondria are the main cellular organelle responsible for energy production, having an essential role in maintaining cellular homeostasis. In this study, the gene expression of TFAM (Transcription Factor A Mitochondrial) and SIRT1 (Silent Information Regulator) in sow oocytes cultured in vitro was assessed using the RT-qPCR reaction. The primers were tailored after our own design. The groups were: V1 (matured oocytes, control group), V2 (matured oocytes with hormones), V3 (medium supplemented with Bisphenol A), V4 (medium supplemented with Bisphenol A and hormones). Our findings reveal a reduction in SIRT1 activity following maturation in all experimental groups, while TFAM activity displayed more elevated levels, seemingly independent of the SIRT1 gene expression. The highest values of gene expression for TFAM and SIRT1 were obtained in V2 (supplemented with FSH and LH, -0.277 and 0.010) and V4 (FSH, LH and bisphenol A - 0.272 and 0.015) without significant differences (p=0.941). Bisphenol A alone generated low values, presumably due to its endocrine disruptor action. We concluded that FSH/LH addition might rescue some of the TFAM expression during bisphenol treatment, but the mechanism might be independent of SIRT1.

Key words: sow oocyte mitochondria, TFAM and SIRT1 expression, bisphenol A