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Transcripts levels of enzymes involved in histone acetylation in bovine oocytes of different competences

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Oocyte competence refers to the ability of an oocyte to undergo maturation, to be fertilized and to have normal embryonic development. Studies have reported the importance of enzymes involved in the acetylation of histones in oocyte during maturation and their possible association with oocyte competence. The aim of the present study was to analyze the expression profile of genes involved in histone acetylation and deacetylation in bovine oocytes of different competence levels in maturation. COCs were recovered from 1.0-3.0mm (less competent) and 6.0-8.0mm diameter follicles (more competent) dissected from the ovarian cortex. Oocytes from each group were matured in vitro for 0, 8 and 24 hours and stored for gene expression analysis. Total RNA was extracted from 4 pools of 15 oocytes, from each treatment at each maturation time. The levels of the gene transcripts involved in acetylation (HAT1, KAT2A) and histone deacetylation (HDAC1, HDAC3) were determined by qPCR, being the expression values normalized by the constitutive gene PPIA. Data were analyzed by ANOVA, and the means of each treatment were compared by Tukey test at the significance level $p < 0.1$. The results showed that the expression pattern of the genes studied was similar ($p > 0.1$) for more and less competent oocytes, not change during maturation. With the exception of the HAT1 gene, in which its transcripts increased ($p = 0.05$) between 0 and 8 hours of maturation in the most competent group. When the different groups were compared at the same maturation time, the most competent group presented higher expression ($p = 0.06$) of HAT1 and HDAC1 ($p = 0.03$) at 8 hours of maturation than the less competent group. The other genes had similar expression in the different treatments ($p > 0.1$). It can be concluded that transcription of HAT1 gene had occurred during maturation in the most competent group, and that this group shows a improve expression of the HAT1 and HDAC1 genes at 8 hours of maturation than the less competent, suggesting that these can be used as markers for oocyte competence.
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