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Transcript analysis of maternal effect and oxidative stress genes in oocytes matured either *in vivo* or *in vitro*

Pereira, MM[1]; Assunção, CM[1]; Serapião, RV[2]; Campos Jr, PHA[2]; Costa, FQ[2]; Viana, JHM[2]; Machado, MA[2]; Camargo, LSA[2]

[1] Universidade Federal de Juiz de Fora, Juiz de Fora, MG.
[2] Embrapa Gado de Leite, Juiz de Fora, MG.
mimunckjf@yahoo.com.br

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The efficiency of in vitro production (IVP) and somatic cell nuclear transfer (SCNT) is low, probably caused by an inadequate oocyte in vitro maturation and nuclear reprogramming. The oocyte cytoplasmic environment contains transcripts and proteins necessaries for embryonic genomic activation as well for nuclear reprogramming of cloned embryos. The aim of this study was to evaluate the relative abundance (RA) of TEA domain 2 (TEAD2), High Mobility Group N1 (HMGN), Zygotic Arrest 1 (ZAR1) and Peroxiredoxin 1 (PRDX1) transcripts in bovine oocytes matured in vivo or in vitro. In vivo matured oocytes, obtained from ovum pick-up from superstimulated donor cows, and in vitro matured oocytes, obtained from slaughterhouse animals, were used in three pools of 10 oocytes for each experimental group. Reverse transcription was performed after RNA extraction and the cDNA obtained were submitted to real-time PCR, using the β-actin gene as endogenous reference. Results were analyzed by REST software© using the pair wise fixed reallocation randomization test. Data from in vivo matured oocytes group was used as calibrator. The PRDX1(0.34 ±0.28) was down-regulated ($P<0.05$) while TEAD2 (4.24±2.51) was up-regulated ($P<0.05$) for in vitro matured oocytes. There was no difference ($P>0.05$) in RA to transcripts of HMGN1 (1.19 ±0.89) and ZAR1 (0.28±0.23) between in vivo and in vitro matured oocytes. In conclusion, in vitro maturation can cause alterations on gene expression, which suggests that in vitro matured oocytes may be less suitable for fertilization or SCNT.

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