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Evaluation of oxidative stress effect for *in vitro* matured cow oocytes through gene expression quantificationCamelia Tulcan, Calin Mircu, Ioan Hutu, Cornel Balta, Popescu Sorina, Marc Simona, Alexa Ersilia and Oana-Maria Boldura
Banat's University of Agricultural Sciences and Veterinary Medicine Timisoara, Romania

In the current assisted reproductive practice in cows the IVF technique is used in increasing proportion. However, the used methods are not always standardized and are needed to be improved. The first challenge in optimization of IVF techniques is obtaining mature oocytes by growing them in culture media and by this to preserve their high fertilization quality. A crucial factor in improving IVF results is the prevention of oocytes from *in vitro* cultivation stress effects. In the presented study the beneficial effect of antioxidant supplementation in maturation culture media of cow oocytes was evaluated by apoptotic genes expression quantification. The oocytes were cultivated for 24 hours on conventional (control variant), supplemented with rosmarinic acid (RA variant) and ascorbic acid (C variant), maturation media. The oocytes were classified in three quality classes by morphological observation from which the total RNA was isolated. Quantitative PCR technique was used for quantification of BAX and BCL2 apoptotic genes expression. Results of qPCR were interpreted by $\Delta(\Delta Ct)$ method. The ratio BCL2/BAX was considered as an indicator of matured oocytes homeostasis. Antioxidants culture media supplementation resulted in a better expansion of cumulus cells. The level of expression of the BAX gene has an increasing trend in all COC's, inversely proportional to oocyte quality, indicating the overcoming of cell adaptation process for the inferior class. Regarding the BCL2 gene, significantly higher expression levels can be observed in class I oocytes supplemented with antioxidants. The level of maintenance of cell homeostasis, as reflected by the ratio of BAX/BCL-2, with a value above 7, indicates that apoptotic processes have been installed in all class III oocytes. Supplementation with antioxidants exerts a beneficial effect on inferior class cells, which have a high stress level, to some extent assuring their protection, indicating the effectiveness of administering this supplement.

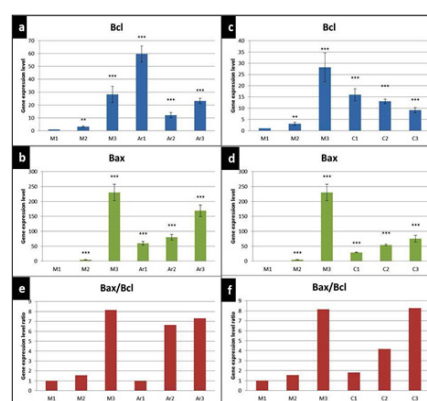


Figure-1: BAX and BCL2 gene expression matured oocytes. a - BCL2 gene expression for AR samples; b - BAX gene expression for AR samples; c - BCL2 gene expression for C samples; d - BAX gene expression for C samples; e - BAX/BCL2 genes expression ratio for AR samples; f - BAX/BCL2 genes expression ratio for C samples.

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Biography

Camelia Tulcan is an Assistant Professor at Biochemistry Department, Faculty of Veterinary Medicine, Timisoara and Coordinator of Antioxidant Research Lab-Horia Cernescu Research Unit. She has expertise in oxidative stress evaluation in different physiological or pathological condition and was involved in management team of research infrastructure project and in implementation of quality management systems.

cameliatulcan@usab-tm.ro, tulcancamelia@gmail.com