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Proceedings of the 32nd Annual Meeting of the Brazilian Embryo Technology Society (SBTE); Florianópolis, SC, Brazil, August 16th to 18th, 2018, and 34th Annual Meeting of the European Embryo Transfer Association (AETE); Nantes, France, September 7th and 8th, 2018

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A116 OPU-IVP and ET

Characterization of expression pattern of genes involved on the activity of PGE2 and PGF2 α in bovine COCs with different levels of competence during *in vitro* maturation

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During the preparation of the follicle for ovulation and during maturation of the cumulus-oocyte complexes (COC) an increase of PGE2 and PGF2 α levels occurs in the follicular fluid of several species, suggesting that these substances play an important role in those processes. Studies have reported that oocytes from large follicles have greater developmental capacity than oocytes derived from small follicles, resulting in high rates of *in vitro* embryo production. The aim of this study was to determine the level of transcripts for genes involved in the activity of PGE2 and PGF2 α and to evaluate whether their expression profile varies during maturation according to the competence level of the COCs. The ovaries were collected in local slaughterhouses and the COCs were obtained from follicles of 1.0-2.9 mm (incompetent oocytes; INC) and 6.0-8.0 mm of diameter (competent oocytes; COM) by dissection, and from aspirated 3-8 mm diameter follicles as the control (CTL). The expression pattern of the PTGS2 (PGE2 and PGF2 α synthesis), PTGES1 (PGE2 specific synthase) and AKR1B1 (PGF2 α specific synthase) were evaluated in cumulus cells (CCs) and PTGER2 (PGE2 specific receptor) and PTGFR (PGF2 α specific receptor) in oocyte from COCs of different categories. For each group four pools of CCs obtained from 17 COCs and three pools of 6 oocyte were used for gene analysis by RT-qPCR. The expression values were normalized using GAPDH for CCs and PPIA for oocytes as constitutive gene data of the gene expression were analyzed by analysis of variance and Tukey's test or by Kruskal-Wallis and Mann-Whitney, if they presented normal or non-normal distribution, respectively. Initially, levels of transcripts of genes before and after IVM were compared in CCs of the different groups of COCs, the results showed that after 24 hours of IVM the expression of PTGES1 increased ($P < 0.05$) in the INC and COM groups, and that of PTGS2 in the INC group. Regarding the AKR1B1 gene the expression level decreased in the INC group ($P < 0.05$). When the expression of genes was compared between CCs from the different groups of COCs at the same time of maturation (0 or 24 hours), the level of transcripts of all genes evaluated were similar between groups ($P > 0.05$), both at 0 and 24 hours of IVM. With the exception of the PTGS2 gene, which presented lower expression in the COM group ($P < 0.05$) than the INC and CTL groups at 24 hours. Subsequently, the expression of the PTGER2 and PTGFR genes was quantified in oocytes from the three groups of COCs, however they were not detected. Based on the results it can be concluded that although the specific receptors of PGE2 and PGF2 α are not expressed in oocytes, genes related to the synthesis of these PGs are differentially expressed during maturation and the PTGS2 gene showed to be a good marker for competence of mature COCs.