IDENTIFICATION OF MOLECULAR MARKERS FOR OOCTYE COMPETENCE IN BOVINE CUMULUS CELLS

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Communication between the oocytes and cumulus cells is considered to play an important role during oocyte growth and maturation, being essential for the acquisition of developmental competence. Given the bilateral communication that occurs between cumulus cells and oocytes, it can be acceptable that cumulus can reflect the quality of the enclosed oocyte. Therefore, the aim of the present study was to compare transcript profile of cumulus cells from less competent cumulus-oocytes-complexes (COC), obtained from 1-3 mm follicles and more competent COCs, obtained from 8mm follicles, to identify differential expressed genes that could be used as markers. A microarray analysis was done using GeneChip® bovine Genome Array (Affymetrix inc., Santa Clara, CA, USA). A total of 4.178 genes were found differentially express (P<0.05) between the two cumulus cells categories. When we set up a cut-off value of 2.5x fold change, only 223 gens were identified. Six candidate genes (FGF11, IGFBP4, SPRY1, ARHGAP22, COL18A1 e GPC4) were selected for validation by real time PCR. For validation we used CC from COC with low and high competence obtained from follicles of 1-3, 6-8 e ≥8, 1mm diameter as previously validated in our lab. Three of those genes (COL18A1, GPC4 e IGFBP4) have confirmed the array results (P<0.05). However, only GPC4 gene showed differential expression in both groups of high competent COCs (6-8 and ≥8,1 mm); compared to the less competent COCs (1-3 mm). Therefore, these genes can be used as a markers for bovine oocytes competence without the necessity of invasive procedures like biopsies.