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Cytoplasmic granules in oocytes do not influence embryonic and early fetal development in bovine

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Morphological oocyte evaluation is imprecise and subjective. The aim of this study was to test the hypothesis that oocyte with cytoplasmic granules can be included in IVP routine. Two experiments were performed using control cytoplasm (CC- homogeneous cytoplasm) and granulated cytoplasm (GC- cytoplasmic dimorphism). Both presented intact cumulus cells (more than three layers of cells, nonatretic, with no signs of expansion). The first experiment evaluated cleavage (%Cleav), blastocyst (%Bl), pregnancy (%Pre) rates and early fetal development (Crown-rump lenght-CRL) of oocytes obtained from cow donors (CEUA / EGL-3956180316). The second experiment aimed characterization of oocyte quality by Active caspase 3 levels-C3, Gap junction activity-GJA (Calcein-AM), percentage of lipid content-LC (Oil red) and transcription profile of oocyte (P1A, IGF2R, ZAR1), cumulus cells (BMP15, IGF2R) and blastocyst (P1A, IGF2R) obtained from slaughterhouse ovaries (results were analyzed as expression of the target genes relative to the GAPDH endogenous gene using the standard curve method). Results when necessary are presented by number/mean ± SE. The %Cleav and %Bl were compared by T-Test and pregnancy rate by Fisher's Exact Test. The C3, GJA, LC and percentage of transcripts evaluated were compared by the Mann-Whitney Test. All analyses were performed using the GraphPad Instat Software. The CRL was submitted to ANOVA using the Minitab Software ($P<0.05$). In Experiment 1, none of the analyses performed differed statistically (%Cleav, CC: 813/68.8±4.8; GC: 469/74.4±5.8; %Bl, CC: 368/12.1±2.9; GC: 209/11.3±4.1; %Pre, CC: 60/24.2±10.8; GC: 30/26.3±8.0; CRL: CC/GC, n.40/25: 31d- 9.2/9.8; 37d- 16/17; 43d- 23.3/24; 49d- 31.4/33.9; 55d- 46.3/47.2). In Experiment 2, C3 of the GC group (39/172.1±16.9) was higher when compared to CC group (21/66.2±11.6), other structural analyses did not differ between groups (GJA: CC: 38/5.6±0.4, GC: 57/6.2±0.2, LC: CC: 9/21.9±7, GC: 9/19.9±6.6). In the transcription profile, only ZAR1 was higher in CC group (178.2±151.6) when compared to the GC group (0.8±0.8). All other transcripts analysis did not show significant difference in oocytes (P1A, CC: 1.140±1, GC: 0.09 ±0.04, IGF2R, CC: 0.09±0.09, GC: 0.55±0.47), embryos (P1A, CC:0.07±0.05, GC: 0.016 ± 0.02 IGF2R, CC: 0.16±0.16, GC: 0±0) and cumulus cells (BMP15, CC: 0.03±0.01, GC: 0.02±0.04, IGF2R, CC:0.14±0.03, GC: 0.31±0.1). Despite granulated oocytes presented particularities in C3 levels and expression of the ZAR1 transcript, the results demonstrate that they have the same potential for development of control oocytes, suggesting that cytoplasm heterogeneity does not reflect oocyte competence in bovine. Acknowledgments: EMBRAPA, CAPES, CNPq.