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Bovine oocyte transportation in environment with or without control gas atmosphere

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Maturation stage includes all events that enable maximum expression of oocyte potential for development after fertilization. Indeed, it is one of the most important phases of IVP because in this period the oocyte reaches the ability to complete the next events (IVF and IVC). Several factors such as nutrients, atmosphere, temperature and pH are important and should be controlled during in vitro production targeting to simulate the characteristics of in vivo follicular environment. The aim of this study was to evaluate the effect of time (1, 8 and 24h) and of oocytes transportation device (with and without automatic control of gaseous atmosphere) on *in vitro* embryo production. Cumulus-oocyte complexes (COCs) were obtained from slaughterhouse ovaries, selected (only grades 1, 2 and 3), and grouped in 15 - 20 structures in cryotubes with TCM 199 supplemented with bicarbonate plus LH, FSH, estradiol, sodium pyruvate and fetal calf serum (FCS). Then, cryotubes were filled with a gas mixture containing 5% CO_2, 5% O_2 established in N_2, and placed in two different transportation devices: with controlled temperature and gaseous atmosphere (L1, Carrier Lab Mix Touch, WTA Watanabe Applied Technology Ltda EPP, Cravinhos, Brazil) and only with control of temperature (L2, Carrier oocytes MOD toi-16i, WTA Watanabe Applied Technology Ltda EPP, Cravinhos, Brazil). Cryotubes were kept on transportation devices for 1, 8 and 24 hours (T1, T2 e T3, respectively). A total of 679 viable oocytes were assigned into 6 treatments in 8 replicates. After the exposure period, COCs were transferred to IVM medium and cultured at 38 °C and 5% CO_2 until they completed the 24-hour period of maturation. The embryo production was assessed on the seventh (D7) and tenth (D10) days after in vitro fertilization. The experiment was arranged in 3 x 2 factorial design (time x carrier). Data were analyzed by GLM (general linear models), with means compared by Student Newman-Keuls (SAS), considering the effects of time, transportation device and interaction. There was no effect (P> 0.05) of transportation device (L1 and L2) on the cleavage rate (68.3 ± 3.1 and 71.7 ± 2.5%, respectively), blastocysts production on D7 (26, 9 ± 2.6 and 29.4 ± 2.4%, respectively) and on D10 (31.1 ± 2.5 and 31.0 ± 2.5%, respectively). Similarly, there was no effect of time (1, 8 and 24 hours) on the cleavage rate (74.1 ± 3.4, 67.2 ± 3.3 and 68.7 ± 3.7%, respectively), blastocysts on D7 (26.8 ± 2.9, 31.4 ± 3.0 and 26.2 ± 3.4%, respectively) or on D10 (29.6 ± 3.1, 35.2 ± 2.6 and 28.2 ± 3.4%, respectively), or interaction between time and transportation device (P> 0.05). In conclusion, bovine oocytes can be transported in incubators with or without automatic control of the gaseous environment by extended period of time without affecting the viability of the oocytes or embryonic development potential.

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