

**Abstracts - 35th Annual Meeting of the Brazilian Embryo Technology Society (SBTE)****Embriology, developmental biology and physiology of reproduction****DEVELOPMENTAL KINETICS OF BOVINE EMBRYOS EXPOSED TO ISOFLURANE**

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**Resumo**

Isoflurane is an inhalation anesthetic widely used in veterinary and medical practice. The concentrations used on general anesthesia can change (0,3V% - 5V%), according to the species. During the process of IVF of mice exposed to Isoflurane concentrations at 1,5%, similar to those used in anesthesia for ART, delayed the blastocyst development. The aim of this study was to investigate the effects of the anesthetic isoflurane on the kinetics of preimplantation embryo development. We used the bovine in vitro model of exposure during the third maternal-zygotic transition phase, on day 3. A total of 933 oocytes from slaughterhouse ovaries were selected. IVM was performed in TCM199 5% FCS medium at 38.5°C, 5% CO<sub>2</sub>. After 22-24h the oocytes were transferred to IVF plate with TALP medium. The drops were inseminated at 1x10<sup>6</sup> sperm/mL and placed for 22-24h at 38.5°C. After, zygotes were cultured in SOF medium at 5%CO<sub>2</sub>/90%N<sub>2</sub>/5%O<sub>2</sub>. On day 3, the groups were exposed to isoflurane forming the treatment groups: control group (CG) was not submitted to the anesthetic, and groups exposed to isoflurane for 1h, 3h, and 6h (G1h, G3h, and G6h, respectively). The exposure was performed in a modular incubator (Pharma, 2L) with maximum humidity, at 38.5°C, in an atmosphere with 5% CO<sub>2</sub>, 5% O<sub>2</sub> balanced with N<sub>2</sub>. This chamber was connected to an anesthesia machine airflow rate of 6 L/min and vaporize concentrations of 3% isoflurane for 3 min (based on the method CHETKOWSKI, 1988). On day 7, the groups were evaluated by analysis of embryonic development stage (Mo; Bi; Bl; Bx) and embryonic kinetics, classifying them into slow (Mo + Bi) and fast (Bl + Bx) embryos. The test for homogeneity of proportions was used to compare the independent variables. The results found for blastocyst development stage at D7 indicated a significant difference between CG (Bi: 23.81%; Bl: 40.00%; Bx: 36.19%; p<0.001) and the others, as for the exposed groups G1h (Bi: 19.44%; Bl: 22.22%; Bx: 11.11%; p=0.739), G3h (Bi: 25.71%; Bl: 14.29%; Bx: 8.57%; p=0.209) and G6h (Bi: 26.92%; Bl: 19.23%; Bx: 0.00%; p=0.353) there was no statistical difference among them. Also on the seventh day, it was found that 50% of the embryos were in the morula stage (G1: 47.22%; G3: 51.43%; G6: 53.85%), while the CG (0%; p<0.001) had no embryos in this stage. In the evaluation of the kinetics of development there was a significant difference in the number of fast embryos in the CG compared to the other exposed groups, which were similar (CG: 76.19%; G1: 33.33%; G3: 22.86; G6: 19.23; p<0.001). Slow embryos predominated in all three exposure groups, differing from the control, which was significantly lower (CG: 23.81%; G1: 66.67%; G3: 77.14%; G6: 80.77%; p=0.856). These results indicate that there is an interference in the early developmental patterns of embryos exposed to isoflurane, interfering with developmental kinetics by delaying the embryonic events of compaction, blastocle opening and initial blastocyst formation.