

137 PHENAZINE ETHOSULFATE AND FETAL CALF SERUM EFFECTS ON THE DEVELOPMENT AND APOPTOSIS OF *IN VITRO* PRODUCED BOVINE EMBRYOS

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Phenazine ethosulfate (PES) is a metabolic regulator that inhibits fatty acid synthesis and favours the pentose-phosphate pathway. Supplementation of fetal calf serum (FCS) during culture has been correlated with the reduction of quality of *in vitro* produced bovine embryos (IVPE). The aim of the present study was to evaluate embryo development and apoptosis in blastocysts after the supplementation of PES and FCS in culture medium of IVPE. Oocytes ($N = 4320$) were matured and fertilized *in vitro* (Day 0). The zygotes (*Bos indicus*) were cultured in SOFaa medium with 4 concentrations of FCS (0, 2.5, 5, and 10%) and with the use or not of 0.3 μ M PES from Day 4 (after 96 h of embryo culture). Embryo development was evaluated after 7 days of culture. Apoptosis in blastocysts ($N = 60-80$) was assessed through TUNEL reaction. Embryos (*Bos indicus*) recovered from superstimulated cows were used as *in vivo* control ($n = 15$). Data were analysed by ANOVA followed by LSD using PROC GLIMMIX (SAS; SAS Institute Inc., Cary, NC, USA) means \pm SEM. Increasing FCS concentration in the culture media did not change cleavage (86.7 ± 1.7 , 82.3 ± 1.6 , 86.3 ± 1.4 , 87.0 ± 1.5 , $P > 0.05$) and augmented blastocyst production (30.5 ± 2.5^a , 41.8 ± 2.4^b , 40.5 ± 2.6^b , 47.2 ± 2.8^b , $P < 0.05$), respectively, for 0, 2.5, 5, and 10%. Additionally, increasing FCS concentration increased apoptosis in blastocysts (13.8 ± 1.2^b , 19.1 ± 1.8^b , 20.7 ± 1.9^{bc} , 28.4 ± 2.3^c , $P < 0.05$, respectively, for 0, 2.5, 5, and 10%). The addition of PES from Day 4 in the culture medium did not affect ($P > 0.05$) cleavage (87.0 ± 1.3 and 84.4 ± 1.3), blastocyst production (42.0 ± 2.8 and 43.0 ± 2.0), and apoptosis in blastocysts (20.7 ± 2.0^b and 18.9 ± 2.1^b), respectively, for control and PES Day 4 groups. Independent of FCS withdrawal or PES addition to culture medium, the *in vivo* control group presented the lowest apoptosis rate (6.3 ± 1.1^a). Therefore, increasing FCS concentration augmented embryo development and reduced blastocyst quality. However, the addition of 2.5% of FCS in the culture medium increased the embryo development without the reduction of blastocyst quality. Moreover, the PES supplementation from Day 4 did not affect embryo development and blastocyst quality.