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Effect of plant protein supplementation on in vitro development of porcine embryos

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Abstarc :

The aim of the study was to investigate the possibility of using plant protein (PP) substitute instead of bovine serum albumin (BSA) in the culture of porcine embryos in vitro. The experiment was done on pig zygotes collected from superovulated gilts at 24-26 h after insemination. Zygotes were cultured in vitro in NCSU-23 medium supplemented with 0.004 g PP/ml (experimental group) or 0.004 g BSA/ml (control group). Embryo quality criteria were: cleavage, morula and blastocyst rates, timing of development, total cell number per blastocyst and degree of apoptosis assessed by TUNEL method. Results were analysed by chi-square and ANOVA tests. There were no differences in cleavage rate between embryos cultured in NCSU-23 medium supplemented with PP (88.1%) and BSA (87.7%). The percentage of embryos developed to the morula and blastocyst stage was 83.4 and 67.7 for experimental group (PP) and 76.6 and 61.7% for control group (BSA), respectively (intergroup differences not significant). Timing of development of embryos for group PP and BSA was on the same level. There was no differences in total number of cells per blastocyst between experimental and control groups. Differences were noticed ($P<0.05$) in the apoptotic index between experimental (19.7%) and control group (11.2%). It is concluded that the possibility exists of using plant protein in in vitro culture of pig embryos. Further studies to optimize the concentration of PP in culture medium and to examine the in vivo developmental potential of porcine embryos cultured in medium with PP are required.

Key Word :
apoptosis, embryo, in vitro culture,pig, plant protein

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