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Developmental Ability of Porcine Fragmented Parthenote and Cloned Embryos Produced by Somatic Cell Nuclear Transfer

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Blastomeric fragmentation is most frequently observed in porcine embryos and is associated with reduced blastocyst and pregnancy rates. The aim of this study was to evaluate the developmental potential of somatic cell nuclear transferred (NT) and parthenogenetic porcine embryos following abnormal cell division. Prepubertal ovary derived porcine oocytes were matured *in vitro* and reconstructed with fetal fibroblast by electrofusion. Parthenogenetic activation was achieved by single DC pulse. Embryos were cultured in NCSU23 medium after 10 μ g/ml CB treatment for 4 hr. Inner cell mass (ICM) ratio in blastocysts was assessed by differential immunostaining. Results show that the cleavage and blastocyst rates and total nuclei number per blastocyst in parthenotes (68.6%, 27.5% and 33.2) were significantly higher ($P < 0.05$) than those of NT embryos (55.3%, 13.2% and 24.9), but ICM ratio of parthenotes (20.9%) and NT embryos (23.1%) did not differ significantly. Percentage of fragmentation was significantly higher ($P < 0.05$) in NT embryos (40.6%) than parthenotes (29.7%). Blastocyst rate, ICM ratio and total cell number of blastocysts derived from non-fragmented embryos in parthenote (32.6%, 26.2% and 34.4) and NT embryos (21.8%, 28.0% and 29.9) were significantly higher ($P < 0.05$) than those derived from fragmented parthenote (17.9%, 17.3% and 22.3) and NT embryos (6.5%, 19.7% and 19.0). These results therefore, suggest that porcine embryos fragmented at early stage does have developmental ability but is less than those of non-fragmented embryos and is associated with reduced developmental ability of pig parthenotes and NT embryos. Work supported by Research project on the Production of Bio-Organ, Ministry of Agriculture and Forestry, Korea.

Keywords: *Nuclear Transfer, Activation, Fragmentation, Porcine*