A0317

High Postnatal Survival and Efficacy of Female-Derived Donor Cells in the Productive of Somatic Cloned Piglets

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This study was conduct to compare the efficacy to produce male and female somatic cloned piglets. Maturation of porcine COCs was accomplished by incubation in NCSU-23 medium supplemented with 0.6 mM cysteine, 10% porcine follicular fluid, 1mM dibutyryl cyclic adenosine monophosphate (dbc-AMP, Sigma, USA), and 0.1 IU/ml human menopausal gonadotrophin (hMG, Teikokuzoki, Japan) for 20h and then cultured without dbcAMP and hMG for another 18 to 24 h. Female and male fetal cells were isolated from each fetus, cultured in ES-DMEM medium containing 10% FCS. Enucleated oocytes were fused with fetal fibroblasts (passage 4 to 15). Reconstructed embryos were cultured in NCSU-23 with 4 mg/ml BSA under mineral oil at 39℃ in 5% CO_2 in air. A total of 12,328 nuclear-transferred embryos (1- to 4-cell stage) were surgically transferred into 69 surrogate gilts. Three recipients aborted during the period of conception. Three gilts delivered eleven female piglets, and five recipients gave rise to birth 22 male piglets. The average birth weigh of the cloned piglets was 1.52 kg (1.38～1.83 kg) in female piglets and 0.84 kg (0.45～1.25 kg) in male piglets. Alive cloned pigs was seven in female piglets (63.6%) and four in male piglets (18.2%). The other two recipients is ongoing. This study suggests that female-derived fetal cell as a nuclear donor has more capability on production of cloned piglets than male.

Key words) ***Cloned pig, Muclear transfer, Embryo transfer, Pig***