Electrical Activation Following Cycloheximide (CHX) Treatment Improves Subsequent Blastocyst Development of Porcine Parthenonenetic and NT Embryos

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The present study was to investigate the effects of cycloheximide (CHX) to porcine matured oocytes and reconstructed embryos on subsequent development of parthenogenetic and nuclear transfer (NT) embryos. Cumulus-free oocytes were exposed with NCSU-23 medium containing cycloheximide (10 μg/mL) for 0, 5, 10, 20, 30 and 60 min and then activated by electrical pulses treatment and cultured in PZM-3 for 7 days. Matured oocytes were enucleated and reconstructed by donor cells and exposed without or with NUSU-23 medium containing cycloheximide (10 μg/mL) for 10 min and then fused with two DC pulses (1.2 kV/cm, 30 μsec) and cultured in PZM-3 for 7 days. Electrical activation after cycloheximide (10 min) treatment in parthengenetic embryos significantly increased the percentage of blastocyst formation than in the control group. Also, blastocyst developmental rates of porcine NT embryos following CHX treatment were significantly higher than in the control group. However, electrical activation after 60 min exposure to cycloheximide significantly decreased blastocyst developmental rates of parthenogenetic embryos compared with the control group. Total cell number of blastocysts in 60 min groups was significantly lower than the control group. And, the percentage of cleavage and total cell number in parthenogenetic and somatic cell nuclear transfer embryos was not significantly increased after CHX treatment. In conclusion, electrical activation after cycloheximide treatment supported the subsequent blastocyst development of porcine parthenogenetic and somatic cell nuclear

transfer embryos.