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Effect of Activation Time on the Nuclear Remodeling and *In Vitro* Development of Nuclear Transfer Embryos Derived from Bovine Somatic Cells

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This study was conducted to investigate the effect of recipient activation time on the nuclear remodeling, chromatin structure, pronuclear formation and *in vitro* development of bovine nuclear transfer embryos derived from adult ear skin cells. Somatic cells were transferred to enucleated oocytes after quiescent treatments by serum starvation or culture to confluency. Nuclear transfer embryos were activated with a combination of Ca^{2+}-ionophore and cycloheximide at 1, 1.5, 2, 2.5, 3, and 5 h after electrofusion. After fusion, number of embyos with condensed chromsomes of I (early PCC) and II (full PCC) types increased in embryos activated within 2 h, while III(elongated PCC) and IV(scattered PCC) types increased in embryos activated after 2.5 h. The proportion of embryos with single chromatin clump (40.6-56.7%) was significantly increased when nuclear transfer embryos were activated within 2.5 h after fusion compared to these of embryos were activated at 3 (22.3%) and 5 h(0.0%) after fusion($P<0.05$). Developmental rate to the blastocyst stage significantly higher in embryos activated within 2 h after fusion(17.3-21.7%) compared to these of embryos activated at 2.5 to 5 h after fusion($P<0.05$). From the present result, it is suggested that activation time after fusion can affect nuclear remodeling, chromatin structure and *in vitro* development of bovine nuclear transfer embryos. Activation within 2 h after fusion can enhance the *in vitro* development of nuclear transfer embryos derived from bovine adult ear skin cells. (Supported by the Grant from the Special Research Program of the Agricultural R & D Promotion Center, Ministry of Agriculture and Forestry GSRP-MAF, 300012-5)

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