

***In Vitro* Development of Reconstructed Bovine Embryos and Fate of Donor Mitochondria Following Nuclear Injection of Cumulus Cells**

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In this study, we examined the developmental potential of reconstructed bovine embryos and the fate of donor mitochondria during their preimplantation development after nuclear transfer. Isolated cumulus cells were used as donor cells in nuclear transfer. Cumulus cells labelled with MitoTracker Green FM fluorochrome were injected into enucleated bovine MII oocytes and cultured *in vitro*. MitoTracker labelling on donor cells did not have a detrimental effect on blastocyst formation following nuclear transfer. Cleavage rate was about 69% (56/81) and blastocyst formation rate was 6.2% (5/81) at 7 days after nuclear transfer. The labelled mitochondria dispersed to the cytoplasm and became distributed among blastomeres and could be identified up to the 8- to 15-cell stages. Small patches of mitochondria were detected in some 8- to 15-cell stage embryos (5/20). However, donor mitochondria were not detected in embryos at the 16-cell stage and subsequent developmental stages. In the control group, mitochondria could be identified in arrested 1-cell embryos up to 7 days after nuclear transfer. These results suggest that donor mitochondria disappear from recipient cytoplasm before 16-cell stage following nuclear transfer in reconstructed bovine embryos.

(Key words) Bovine embryos, Cumulus cell, Mitochondria, Nuclear transfer