

## Gene Expressions in Bovine Nuclear Transferred Embryos with Mouse Fetal Fibroblast Cell

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Interspecies nuclear transfer has been interested to determine ability of oocyte cytoplasm to support reprogramming of somatic cell nuclei of different species. In this study, we investigated developmental ability and mRNA expression patterns of developmentally important genes in bovine reconstructed embryos using a mouse fibroblast cell nucleus. While 20% nuclear transferred embryos with bovine fibroblast developed to morulae/blastocysts, a few(2~5%) nuclear transferred bovine embryos with mouse fibroblast developed to morula. RT-PCR assay was employed to compare gene expression in xenonuclear transferred bovine morulae, in vivo fertilized mouse morulae, normal fertilized bovine morulae, mouse oocytes and bovine oocytes. Six mRNAs were selected by their importance to early development (octamer-binding transcription factor 4, Oct4), compaction (cell adhesion protein E-cadherin, E-cad; desmosomal glycoprotein desmocollin II, DcII), cavitation (Na-K ATPase  $\beta$ 1 subunit, Atp1b1), implantation (interleukin 6, IL6). The primers were designed to fit for mouse gene. All mRNA transcription were seen in mouse morulae, however, IL6 and Atp1b1 were not detectable in mouse oocytes. Using the mouse gene primers for PCR, Oct4 and E-cad were observed in bovine oocytes, morulae, and xenotransplanted embryos, respectively. However, the molecular size of Oct4 were similar with mouse morulae, not with bovine morulae. In addition, the expression intensities of Oct4 and E-cad were higher in mouse morulae than in xenonuclear transferred bovine morulae. These results suggest that the aberrant transcription in reconstructed embryos may lead developmental limitation of nuclear transferred bovine embryos with mouse fibroblasts.

Key words) *Interspecies nuclear transfer, RT-PCR, Gene expression*