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Correlation of Oct-4 and FGF-4 Gene Expression on Peri-Implantation Bovine Embryos Reconstructed with Various Somatic Cells

Yoon Byung Sun, Song Sang Jin, Do Jeong Tae, Hong Seung Bum, Lee Hoon Taek and Chung Kil Saeng

Animal Resource Research Center, Konkuk University, Seoul

The efficiency of animal production using cloning technology is relatively low. It is considered that the nuclear transferred (NT) embryos proceed inappropriate reconstruction with donor-recipient cell, which lead to a abnormal embryo development, and differential expression of mRNA transcript. Especially, the expression of mRNA on peri-implantation stage embryos is very important factor to decide success of implantation and ongoing pregnancy. Among these genes, Oct-4 consistently expressed in peri-implantation stage embryos, which functionally regulates expression of fibroblast growth factor-4 (FGF-4). Therefore, we were examined the developmental rates of nuclear transfer embryo reconstructed with different cell type and correlation of transcriptional level of Oct-4 and FGF-4 gene on peri-implantation stage embryos. There is no difference in blastocysts formation rate following NT with fetal fibroblast cell (16/72; 22.2%), cumulus cell (16/83; 19.2%) and ear cell (17/73; 23.2%). We have compared the expression level of Oct-4 and FGF-4 using RT-PCR technique. Oct-4 gene was highly expressed in hatching blastocysts derived by NT compared with IVF. Also, FGF-4 is co-expressed with Oct-4 in the blastocysts. In conclusion, it is suggested that the different transcription patterns observed in nuclear transfer embryos may lead to a lower rate of embryo development, implantation and pregnancy.

key words) ***nuclear transfer, Oct-4, FGF-4, somatic cell***