HOW TO IMPROVE SUCCESS OF INTER-SPECIES SOMATIC CELL NUCLEAR TRANSFER IN ENDANGERED SPECIES

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It has been shown that advanced reproductive biotechnologies such as artificial insemination (AI), in vitro fertilization (IVF) and embryo transfer (ET) are the important tools for conservation of endangered species. Since the birth of first cloned mammalian animal using somatic cell nuclear transfer (SCNT) was announced in 1997, several live cloned domestic, laboratory and companion species have been produced using homologous oocytes. In endangered species, there are extremely lack of homologous oocytes and recipients as perform in traditional SCNT. Interspecies SCNT (iSCNT) is an alternative technique for producing embryos and offspring of endangered species. The iSCNT procedure need the oocytes of animals and also the female recipients which are the same genus of individual that we want to propagate. The advanced of iSCNT already demonstrated in ovine, bovine and feline families. Even though live offspring iSCNT of these three species have been produced, but still have very low success. There are numerous technical and biological factors affecting the success of iSCNT. The low frequency of successful has been associated with abnormal nuclear and epigenetic reprogramming, mitochondrial heteroplasmy as well as incompatibilities between the nucleus and cytoplasm that could possibility impair embryo development, high abortion rate, anatomical and physiological abnormalities of fetus, offspring died immediately before and after birth. Numerous factors which involve in low efficiency of embryo production and survival of live birth need to be examined. In this review we will discussed how to improve success rate of iSCNT in endangered species. This work was supported by Suranaree University of Technology.