

Expression of the Antioxidant Enzyme and Apoptosis Genes in *in vitro* Maturation *in vitro* Fertilization of Porcine Embryos

H. Y. Jang¹, H. S. Kong², K. D. Choi³, G. J. Jeon², H. K. LEE² and B. K. Yang¹

¹Division of Animal Resources Science, Kanagwon National University. Chunchon 200-701, Korea, ²Department of Genomic Engineering, Genomic Informatics Center,

Hankyong National University. Ansong 456-749, Korea

³East West Kidney Disease Research Institute, School of Medicine, Kyung Hee University, Seoul, Korea

The present study was conducted to determine the expression of the antioxidant enzyme(*CuZn-SOD*, *Mn-SOD* and *GPX*) and apoptosis gene(*caspase-3*) for *in vitro* culture in *in vitro* maturation and *in vitro* fertilization(IVM/IVF) embryos in porcine. Porcine embryos derived from IVM/IVF were cultured in NCSU23 medium under 5% CO₂ in air at 38.5°C. The patterns of gene expression for several antioxidant enzyme and apoptosis genes during preimplantation porcine embryo development were examined by the modified semi-quantitative single cell reverse transcriptase- polymerase chain reaction (RT-PCR).

Preimplantation porcine embryos produced by IVM/IVF have expressed mRNAs for *CuZn-SOD* and *GPX*, whereas transcripts for *Mn-SOD* have not detected at any developmental stages. Expression of *caspase-3* mRNA was detected at 2 cell, 8 cell, 16 cell and morula stages. The *fas* ligand transcripts were detected in porcine blastocyst.

These results suggest that various antioxidant enzymes and apoptosis genes play crucial roles in *in vitro* culture of porcine IVM/IVF embryos.

Key Words) *Porcine embryo*, *RT-PCR*, *Antioxidant*, *Apoptosis*