

## O-3(기초) Survivin Acts as an Anti-apoptotic Factor During the Development of Bovine Preimplantation Embryos

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**Background & Objectives:** Survivin is a member of inhibitor of apoptotic protein (IAP) containing a single BIR (baculoviral IAP repeat) domain and known as a bifunctional protein that suppresses apoptosis and regulates cell division. We investigated the expression of survivin, and its role in preventing apoptosis and improving development in pre-implantation embryos.

**Method:** The knocked down survivin in bovine embryo was investigated by double stranded RNA (dsRNA) interference. In vitro fertilized embryos (1-cell) were injected with survivin dsRNA. DNA fragmentation of blastocyst was examined by TUNEL assay. The expression patterns of survivin mRNA were evaluated using real time quantitative RT-PCR. To determine survivin protein expression, we performed immunocytochemistry with rabbit anti-bovine survivin antibody.

**Results:** In vitro development rate of blastocyst was lower survivin dsRNA injected group (10.0%, dsRNA group) than sham injected group (18.5%, sham group). And, total cell number of blastocyst was decreased in dsRNA group. Expression levels of survivin mRNA and protein, were decreased in dsRNA group compared to sham group. Also, TUNEL assay showed more increase of apoptotic index in dsRNA group than in sham group.

**Conclusions:** These results indicated that survivin is an important factor of development and total cell number in bovine blastocyst and that could suppress apoptosis of preimplantation embryo.

## O-4(기초) 생쥐 난자 및 초기 배아에서 Suppressors of Cytokine Signalling (SOCS)의 발현과 Insulin 및 LIF에 의한 발현 조절

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**Background & Objectives:** 착상 전 초기 배아는 insulin, IGF, LIF 등 다양한 생물학적 활성 ligand들에 대한 수용체를 발현하며, 이들 ligand에 의해 발생 프로그램의 정교한 조절을 받는다. Suppressors of cytokine signalling (SOCS)은 JAK-STAT pathway를 활성화 시키는 다양한 종류의 cytokines과 growth factors에 의한 신호전달을 억제한다. SOCS는 JAK 또는 ligand receptor와 결합하여 signaling을 억제한다. 본 연구는 생쥐 난자와 초기 배아 발생과정에서 생물학적 활성분자 신호전달의 조절 규명의 일환으로 MII oocyte와 1-, 2-, 4-, 8-cell embryos, morula, compacted morula, early blastocyst, late blastocyst에서