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Effects of Taxol™ and Cytochalasin B on the Developmental Capacity of Vitrified Porcine Immature Oocytes

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This study was conducted to investigate cytoskeleton alterations during vitrified (Open Pulled Straw method) porcine immature oocytes, to utilize Taxol™ (polymerization of tubulin molecules) and Cytochalasin B (CB, depolymerization of actin filaments) during vitrification to stabilize microtubule and microfilaments (MT and MF), and to determine *in vitro* maturation, fertilization and development of cytoskeletal-stabilized and vitrified porcine immature oocytes.

In preliminary experiment, cytoskeletal inhibition of porcine immature oocytes were examined by culturing during *IVM* in the presence or absence of various concentration of cytoskeleton inhibitors. At concentration of 20 μM Taxol™ or 10 μM CB, cytoskeleton of porcine immature oocytes were inhibited. Effects of Taxol™ and CB on changes of cytoplasmic membrane of porcine immature oocytes were examined by exposure of cryoprotectant agent (CPA) and vitrification process. Significantly difference among experiment groups were not shown, but damages of cytoplasmic membrane were higher during the vitrification process than exposure with CPA. The rates of normal MII spindle and cytoskeletal distribution after thawing were significantly lower vitrified group (OPS vitrification, 25%; Taxol™ group, 50%; CB group, 36%) than fresh group (83%) ($P<0.05$). Normal nuclear status and MT, Taxol™ group were higher compared to OPS vitrification and CB group. But in normal MF and cortical granule cells, CB group were higher compared to Taxol™ and OPS vitrification group. The rates of blastocyst after insemination were significantly higher fresh group (13%) than OPS vitrification (0%) and Taxol™ group (1%) ($P<0.05$). However, there was no differences between the CB (11%) and fresh group.

The results of present study show that treatment of cytoskeletal stabilizer prior to vitrification can reduce cryo-damages and improve normal fertilization and blastocyst development after insemination.

Key words: ***Vitrification, Taxol™, Cytochalasin B, Open Pulled Straw***