P-55

Effects of Cumulus Cells and Lipid Droplets on Viability of Immature Porcine Oocytes after Vitrification

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This study was conducted to evaluate the effects of cumulus cells(CC) and lipid droplets(LD) during vitrification on viability of immature porcine oocytes.

For this experiment, immature porcine oocytes were divided into 3 groups: 1) CC(-)LD(-) : cytoplasmic LD and CC were removed. 2) CC(-)LD(+) : CC were removed but LD were existed. 3) CC(+)LD(+) : LD and CC were existed. The LD of porcine oocytes were removed through the use of micromanipulation to remove the lipid layer formed after centri-fugation and CC were removed through the use of 0.1% hyaluronidase. The oocytes exposed to increasing concentration of ethylene glycol(5% ~ 40%) with in 1h after LD and/or CC removal and vitirified using EM grid. The viability of vitrified oocytes were evaluated by FDA-test.

P3 grade score were CC(-)LD(+) were significantly($P<0.05$) higher than CC(-)LD(-) and CC(+)LD(+), P1 grade score were CC(-)LD(-) were significantly higher than CC(-)LD(+) and CC(+)LD(+) and P2 and P0 grade score were not significantly different 3 groups. Mean FDA score were not significantly different 3 groups.

The vitrified immature porcine oocytes containing LD in the cytoplasm but not having CC revealed survival rates. Since CC seemed to prevent in permeation of cryoprotectant into cytoplasm at short time, the removal of CC effected on viability of immature porcine oocytes after vitrification.

Key words) *Porcine oocyte, vitrification, cumulus cell, lipid droplet, viability*