P0435

Effect of Supplements Added into the Maturation Medium on Lipid Droplets Formation and *In Vitro* Development of Immature Porcine Oocytes.

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This study was conducted to investigate the effects of various supplements added into maturation medium of immature porcine oocytes on quantity of cytoplasmic lipid droplets(LD), subsequent fertilization and development to the blastocyst stage *in vitro*. The basic maturation medium was TCM 199 + 1 ㎍/㎖ FSH, 0.57 mM cystein, 10 ng/㎖ EGF and was supplemented various supplements(10% FBS, 10% pFF, 0.4% BSA, 1.0% BSA, 0.4% PVP, 1.0% PVP). The assessment of cytoplasmic lipid droplets in oocytes was conducted by histochemical staining method of Sudan Black B solution. The Sudan Black-positive LD were classified into three types by diameter; small(5>㎛), medium(5~10㎛) and large(10<㎛). *In vitro* fertilization was carried out using fresh semen in mTBM + 0.4% BSA for 6 hours and *in vitro* culture up to the blastocyst stage was performed in NCSU23 + 0.4% BSA for 7 days.

The number of small LD in the cytoplasm of oocytes matured in 1.0% PVP was significantly($P<0.05$) higher than 0.4% BSA and 0.4% PVP, but the number of medium LD was no differences among various supplements. The number of large LD in the cytoplasm of oocytes matured in 0.4% BSA was significantly($P<0.05$) higher than 10% pFF and the number of total LD in the cytoplasm of oocytes matured in 1.0% BSA was significantly($P<0.05$) higher than 0.4%. Maturation rates and cleavage rates were no differences among various supplements, but blastocyst formation rates of oocytes matured in 1.0% PVP was significantly($P<0.05$) lower than another supplements.

These results suggest that *in vitro* maturaton and development were not affected by various supplements, however, high concentration BSA(1.0% BSA) showed relatively lower blastocyst formation rates. In addition, lipid droplets formation was not affected by various supplements, either.

Key words: ***Lipid droplet(LD), Porcine oocyte, Cytoplasm, supplement***