P-25 Effects of Epidermal Growth Factor, Transforming Growth Factor Beta and Gonadotropin on In Vitro Maturation of Porcine Oocytes

Sang Jun Uhm, Jin Young Joo, Ji Yun Chang, Nam-Hyung Kim, Hoon Taek Lee and Kil Saeng Chung

Animal Resources Research Center, Kon Kuk University, Seoul 143-701, Korea

Epidermal growth factor (EGF) and transforming growth factor beta (TGFβ) have been considered as potential regulators of meiotic and cytoplasmic maturation of porcine oocytes. However, little information is available on their intergrated roles and interactions with gonadotropins and other components of follicular fluid during meiotic maturation. The objective of this study is to determine the interactive effects of EGF, TGFβ and gonadotropin on the meiotic maturation in the presence and absence of porcine follicular fluid (pFF). Radioimmunoassay revealed that the pFF used in this study contained with 6.1 ng/ml estradiol-17b, 15.61 ng/ml testosterone and 35.7 ng/ml progesterone. Cumulus-oocyte complexes from slaughterhouse-obtained porcine ovaries were matured in TCM 199 medium containing 10 ng/ml EGF, 1 ng/ml TGFβ and/or 10 mg/ml FSH for 44 h at 39℃ under an atmosphere of 5% CO_2 and 95% air with high humidity. In the absence of pFF, EGF alone or incombination with FSH stimulated oocytes maturation, while TGFβ decreased incidence of meiotic maturation. In the presence of pFF, in contrast, the inhibitory effect of TGFβ on the meiotic maturation was reduced. However the stimulatory effects of EGF alone was not changed in the presence of pFF. These results suggested that the stimulatory and inhibitory effects of EGF and TGFβ on the oocytes maturation were intergrated with gonadotropin and other components of follicle in the pig.

P-26 Comparison of microtubule organization and chromatin configuration in bovine oocytes following intracytoplasmic injection with spermatozoa and isolated sperm heads

Soo Hyun Jun, Jung Tae Do, Jong Tae Choi, Mi Yong Chung, Nam-Hyung Kim, Hoon Taek Lee and Kil Saeng Chung

Animal Resource Research Center, Kon Kuk University, Seoul 143-701, Korea

Microtubule assembly and chromatin configuration were compared in bovine oocytes following intracytoplasmic spermatoozoon and isolated sperm head injection. Microtubule localization was confirmed using a mouse monoclonal antibody to a-tubulin and detected using as fluorescent labeled goat anti-mouse secondary antibody. DNA was stained with propidium iodide. The image of microtubules and chromatin was captured using laser scanning confocal microscope. Soon after a spermatozoon injection, microtubular aster was seen adjacent to the sperm neck area. The sperm aster enlarged and, at the time of pronuclear apposition, filled the cytoplasm. In contrast, microtubule aster was not seen in the all case following sperm head injection. Instead, a dense