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Effect of PACAP (Pituitary Adenylate Cyclase Activating Polypeptide) and Its Receptor on Oocyte in Vitro Maturation

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AIM: The aim of this study is to investigate the role of PACAP (pituitary adenylate cyclase-activating peptide), which has an important role on oocyte development, in vitro maturation.

METHODS; In our study we injected i.p (intraperitoneal) with 5 i.u. PMSG (pregnant mare serum gonadotropin) to 21-24 days old female mice to enhance multiple follicular development. The ovaries of mice were collected after sacrifice by cervical dislocation. Immature oocytes (GV) were separated from granulosa cells and cultured separately in DMEM medium, a commercial IVM medium and with 450 ng solution with PACAP. Genetic analysis is achieved by flourization of PACAP and receptors (PAC1, VPAC2 and VIP) with whole mount immunofluorescence and qRT-PCR on Metafase II oocytes.

RESULTS: After culturized 24 hours maturation averages are as follow: on DMEM group %57, IVM group %53 and IVM with PACAP group is %57. After whole mount immunofluorescence PAC1, VPAC1 and VIP showed different immunoreactivitiy.

CONCLUSION: Addition of PACAP supplementation to IVM medium enhances the maturation. However, to analyze the effects on receptors which are vital for maturation and other side effects we need to increase the numbers of oocytes and more advanced techniques.

Keywords: Oocyte, PACAP, qRT-PCR, whole mounth immunohistochemistry, cell culture

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Effect of Salermide on Young and Aged Testicular Tissue

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AIM: Aging is associated with increased oxidative stress, atrophy and decreased antioxidant defense in testicular tissue. Salermide (SLM) was shown to be protective against oxidant stress in aged rat brain in our previous study. Our aim is to investigate the oxidant stress levels and histological changes of SLM application in testicular tissue in aging.

METHODS: Four groups were formed using aged (22 months, n=12) and young (3 months, n=12) Wistar albino rats. Rats; 1-Young Control (YC), 2-Young Salermide (Y-SLM: 1mM SLM, 25 µl/100 g, ip), 3-Aged Control (AC: Dimethyl sulfoxide (DMSO: 100 µl/bw, ip)), 4-Aged Salermide (A-SLM: 1mM SLM, 25 µl/100 g, ip). Malondialdehyde (MDA), with TBARS formation, Glutathione (GSH) modified Ellman, total oxidant level (TOS) and total antioxidant level (TAS) with commercial kits, oxidative stress index (OSI) was calculated. Histologically, light microscope examination was performed with Hematoxylin-Eosin (HE) staining. ANOVA, LSD and Pearson r were used for statistical analysis ($p < 0.05$).

RESULTS: Aging increased TOS, OSI and MDA and decreased GSH levels. While the application of SLM decreased OSI in the aged; TAS has increased. In young, SLM application increased MDA; reduced GSH. OSI showed negative correlation with TAS and positive with TOS. Aging testicular tissue is associated with atrophy in some seminiferous tubules and deterioration in spermatogenic cell lines compared with the young control. While the application of SLM to young rats did not change compared with the control group, it was observed that germinal epithelial irregularity persisted in the seminiferous tubules with the application of SLM in aged rats, whereas in some areas the cells of the spermatogenic series were in normal arrangement and interstitial connective tissue integrity was preserved.

CONCLUSION: SLM application in testicular tissue in aging may be protective with increased antioxidant defense, decreased atrophy and improvement in spermatogenic structure.

Keywords: Aging, Salermide, Testis, Oxidan-Antioxidant System