A0315

Effects of Maternal Exposure to Xenoestrogens on the Steroidogenesis in Mouse Testis of Male Offspring

Su Yeon An[1,3], Hoon-Taek Lee[1], Suel Kee Kim[2], Yong Dal Yoon[2] and Ho Joon Lee[3]

[1]Animal Resource Research Center, Konkuk University, Seoul
[2]Department of Life Science, Hanyang University, Seoul
[3]Department of Physiology, Eulji University School of Medicine, Daejeon

The incidence of reproductive abnormalities in the male has been reported to have increased during the past 50 years. These changes may be attributable to the presence of chemical with oestrogenic activity in our environment. Present study was carried out to determine the effects of maternal exposure to xenoestrogens on the testicular development and on the transcriptional expression of the steroidogenic enzyme and subunits of inhibin/activin in testis of male offspring. Pregnant female mice were administrated with 4-*tert*-octylphenol (OP; 2, 20, 200mg/kg), Bisphenol A (BPA; 2, 20, 200μg/kg), β-estradiol 17-valerate (EV; 2μg/kg) or vehicle (CV; corn oil) during gestational days 11 to 17. Offsprings were sacrificed on gestational day 18 (fetal 18) and neonatal day 7. Body weights were significantly increased in groups treated with all doses of OP and BPA. Maximum seminiferous tubules diameter on gestational day 18 were not changed in any treatment group, however, they were significantly increased on the neonatal day 7 in the group treated with low-dose of OP (2 mg/kg) and BPA (2 μg/kg). Increased expression of the $P450_{17\alpha}$-hydroxylase dehydrogenase ($P450_{17\alpha}$), 3β -hydroxylase dehydrogenase (3β-HSD), and 17β-hydroxylase dehydrogenase (17β-HSD) on gestational day 18 were observed in the groups treated with 2 or 20 mg/kg of OP. However, expression of the steroidogenic enzymes were not changed in the groups treated with all the doses of BPA. In contrast with the results from fetal testis, no expressional changes of these enzymes was found in all the OP-treated group and increased expression of inhibin/activin βB subunit mRNA were observed in the 200 μg/kg BPA-treated group in the neonatal day 7. These results suggest that gestational exposure to low level of xenoestrogen causes a stimulatory effects on the transcriptional expressions of steroidogenic enzymes and subunits of inhibin/activin and on the seminiferous tubule development by their estrogen-like actions.

Acknowledgement: This was supported by a Grant-in-Aid for Scientific Research (R05200100039902002) from Korea Science and Engineering Foundation (KOSEF).

Key words) ***Xenoestrogen, Steroidogenesis, Testis, Inhibin/activin, Mouse***