

21 by intraperitoneal injection as well as subcutaneous treatment, whereas had no effect on preputial separation (PPS). In addition, 10 mg/kg of permethrin elevated serum level of testosterone and increased in testis weight of male rats on PND 49. In the female offspring of PND 22, serum level of E2 was reduced and significant reductions of ovarian ER α mRNA and protein level were showed. In contrast, reproductive organ weights (uterus, vagina and ovary) were increased. Our results demonstrated that in utero exposure of permethrin might alter normal sexual maturation of male and female in rats.

[PA4-20] [04/18/2002 (Thr) 14:00 - 17:00 / Hall E]

Effects of Neonatal Exposure to Di(n-butyl)phthalate on Reproductive Organ Development in Sprague-Dawley Male Rats

Kim TaeSung⁰, Kim HyungSik, Shin JaeHo, Moon HyunJoo, Kang IlHyun, Kim InYoung, Kim SunKyu, Jang HyeJin, Nam SangYun, Han SoonYoung

Endocrine Toxicology Division, National Institute of Toxicological Research, Korea Food and Drug Administration, Seoul, 122-704, Korea, College of Veterinary Medicine, Chungbuk National University, Cheongju, Korea

Effects of a xenoestrogen, di(n-butyl)phthalate (DBP), on development of male reproductive organ were investigated using neonate male rats. The aim of present study is for a better understanding of how DBP influences the growth of reproductive organ when neonatally exposed to male rats. Sprague-Dawley neonate male rats were injected by s.c. with corn oil (control), flutamide (0.05, 0.1, and 0.5 mg/animal) and DBP (5, 10, and 20 mg/animal) on days 5-14 after birth. All animals were killed at 31 (immature) and 42 (pubertal) days of age, respectively. Blood was collected for serum testosterone analysis, and then testes and accessory sex organs (epididymis, seminal vesicles, ventral prostate, levator ani plus bulbocavernosus muscle (LABC), cowper's glands) were dissected carefully and weighed. In addition, steroid hormone receptors (AR and ER) expression was examined in the testes and ventral prostate. At 31 days of age, flutamide (0.5 mg/animal) and DBP (20 mg/animal) significantly decreased the weights of ventral prostate, seminal vesicles, LABC, and cowper's glands as compared with those in the control group, but serum testosterone levels were unaffected. Flutamide slightly delayed the testes descent at the high dose (0.5 mg/animal), but DBP did not show any significant effect on the testes descent at all doses. In addition, DBP and flutamide also significantly decreased the expression of AR in the testes, but expression of ER- β is increased in prostate. At the pubertal stage, seminal vesicles, and cowper's glands weights were significantly decreased only at the high dose of flutamide (0.5mg/animal) and DBP (20 mg/animal), whereas the weights of the testes and epididymis were unaffected. Moreover, DBP also markedly decreased serum testosterone levels. In contrast, flutamide also significantly decreased the expression of AR in the testes, but expression of ER- β were similar to control. Based on these results, flutamide and DBP have shown a number of similarities in patterns of reproductive organ development, but some marked differences.

[PA4-21] [04/18/2002 (Thr) 14:00 - 17:00 / Hall E]

Gender-related Difference in Alteration of Acetylcholinesterase Activity of Rats Exposed to Organophosphate Pesticide Terbufos

Kim SeungYong⁰¹, Kim JungRan¹², Ryu JaeChun¹, Kim HyoJoon², Kwon OhSeung¹

¹Toxicology Lab., Korea Institute of Science and Technology, Seoul 136-791, ²Biochemistry and Molecular Biology, Hanyang University, Ansan, Kyunggido 425-791

An organophosphate pesticide terbufos (S-t-butyl thiomethyl O,O-diethyl phosphorodithioate, TBF) has been extensively used as an insecticide. A sexual dimorphism in the cholinergic innervation between both sexes was reported in certain species. However, a sexual dimorphism in TBF toxicity was not reported and remains unclear. TBF (0.5 mg/kg x 2) was orally administered to both male and female rats (postnatal day 48). The rats were sacrificed at 6, 12, 24 and 72 hr after oral administration. Acetylcholinesterase (AChE) and neuropathy target esterase were determined in the brain and liver tissues and the blood. AChE activity in the frontal cortex was significantly inhibited by 38% in female and 30% in male at only 6 hr after administration. In the entorhinal cortex AChE activity was significantly inhibited by 24-38% in female rats at