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ALTERATIONS IN SEX STEROID RECEPTOR LEVELS AND HOXA-10 EXPRESSIONS OF THE UTERI FOLLOWING NEONATAL EXPOSURE TO PERMETHRIN IN FEMALE MICE

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Many pesticides possess hormonal activity and have been thus classified as endocrine disruptors. Permethrin, a pyrethroid insecticide has little been characterized to its hormonal potential. In the present study, effects of neonatal exposure to permethrin on the sex steroid receptor levels and *hoxa-10* expression of the uteri were investigated in female mice. Female ICR mice were treated with corn oil (vehicle control), 5 $\mu\text{g}/\text{kg}/\text{day}$ of diethylstilbestrol, DES (positive control), 100 or 500mg/kg/day of permethrin via subcutaneous injection on days 1-5 after birth. On postnatal day (PND) 6, 18 30, uteri were removed and frozen, and protein levels of sex steroid receptors were determined by Western blot analysis. In addition, uterine tissues were fixed in 4% formaldehyde in PBS for whole mount in situ hybridization of *Hoxa-10*. Treatment of permethrin led to significant reductions in uterine levels of estrogen receptor a (ER- α), whereas increases in estrogen receptor b (ER- β) at dose of 100 mg/kg/day on PND 6. Permethrin had no effects on uterine androgen receptor (AR) levels on PND 6 and 18, but its levels were significantly reduced in all treatment groups on PND 30. Northern blot analysis and whole mount in situ hybridization showed that permethrin inhibited the *hoxa-10* expression in the uteri of female mice. These results demonstrate that neonatal exposure to permethrin alters uterine sex steroid receptor levels and *Hoxa-10* expression. Thus, the results suggest that permethrin may affect the developing reproductive system in female mice.

Keyword : Permethrin, Sex steroid receptor, *Hoxa-10*