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Effects of *in utero* Exposure to Di(n-butyl)phthalate or Flutamide on Gene Expression of Male Rats Reproductive Organs

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The aims of present study were to investigate the effects of *in utero* exposure to di(n-butyl) phthalate (DBP) on the development and growth of reproductive organs and to investigate its specific mechanisms related to the abnormalities observed in the male reproductive system. During gestation days 10-19, pregnant Sprague-Dawley (SD) female rats were administered orally with corn oil (control), DBP (250, 500, or 700 mg/kg/day) or flutamide (1, 12.5, or 25 mg/kg/day). It was found that DBP and flutamide dose-dependently increased the incidence of hypospadias and cryptorchidism in male offspring. The weights of testes and accessory sex organs were significantly reduced in the DBP and flutamide groups compared with the control. Furthermore, epididymides cauda agenesis and ventral prostate atrophy were observed in the DBP (700 mg/kg/day) and flutamide (25 mg/kg/day) treated groups. At 31 days of age, dihydrotestosterone (DHT) and IGF-I levels significantly decreased in the DBP (700 mg/kg/day) and flutamide (25 mg/kg/day) treated groups. Particularly, the expression of androgen receptor (AR), Shh and 5 α -reductase type 2 in the penis decreased in the DBP (700 mg/kg/day) or flutamide (25 mg/kg/day) treated groups. In addition, DBP or flutamide dose-dependently decreased the expression of 5 α -reductase type 2 and IGF-II in the undescended testis. Development of prostate duct tips inhibited in DBP or flutamide exposed groups. These results demonstrate that *in utero* exposure to DBP or flutamide during gestation days 10-19 causes alteration in the endocrine system that result in the abnormal development of the male reproductive tracts.

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