

Effects of Tributyltin Chloride (TBTCl) on Reproductive Organs and Steroidogenic Enzymes

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Tributyltin chloride (TBTCl) is an organotin compounds that have been widely used as antifouling agents and bioaccumulated in the food chain. TBTCl has been known to induce imposex in female gastropods. There are several reports that TBTCl increased testosterone level and inhibited the conversion of testosterone to estradiol by the aromatase cytochrome P450 enzyme. In this studies, we investigated the effects of TBTCl on steroidogenesis in testes. We dosed to 4-week-old Sprague-Dawleys (SD) male rats with TBTCl (0, 1, 5, 10, and 20mg/kg/day) daily by gavage for 14 days. TBTCl significantly decreased the weights of seminal vesicle, prostate, cowper's gland and LABC at 10 and 20mg/kg/day but significantly increased the weights of liver at 10 and 20mg/kg/day and adrenals at 20mg/kg/day. mRNA levels of steroidogenic acute regulatory (StAR) and P450 aromatase were decreased and mRNA levels of cytochrome P450 17 α -hydroxylase/C₁₇₋₂₀ lyase (P450c17) were increased by TBTCl. TBTCl significantly increased serum testosterone level in dose-dependent manner. From above results, we found that TBTCl altered mRNA levels of enzymes related steroidogenesis, weights of organs and serum testosterone levels. This suggests that change of hormone levels may be due to alteration of mRNA levels of steroidogenic enzyme in testes, but further studies are necessary to investigate hormone levels in testis organ in order to find a relation of enzyme related to steroidogenesis with hormone levels. This work was supported by the Korea FDA Grant KFDA-03131-EDS-010.

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