

Evaluation of the influence of tributyltin on rat gonad organ culture.

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[Purpose] We are anxious about the influence of endocrine disruptors on reproduction of human and animals in recent years. Tributyltin (TBT) is globally used as antifouling paint. The exposure for TBT causes imposex in snail, such as Ibonishi, and reduces egg production capability of it. Although it has been reported that the inhibition of aromatase activity is involved in the mechanism of the snail masculinization, it has not yet examined whether TBT has any influence on the formation of reproductive organs in mammals including human. In this study, therefore, the influence of TBT was investigated using organ culture system consisted of fetal gonad and mesonephron. [Method] Rats from Wistar Imamichi rat inbred strain was used. The day at which the sperm was appeared in smear was designated as embryonic day (ED) 0.5. The cesarean section was carried out at ED15.5, and the embryo was extracted. The embryos were dissected under the stereoscopic microscope, the gonads were extracted with mesonephros, and it was cultured on floating filters in CMRL culture medium. TBT (50nM-1 μ M), testosterone (2 μ M), and the aromatase inhibitor (100nM-10 μ M) were added to the culture medium, respectively. Gonads were cultured during 4 day, and the influence was investigated. After culture period, gonads were fixed in Bouin solution and processed with histological examination. [Result] Although TBT has no influence on testicular development, the tips of male Wolffian ducts were expanded with the dosage of TBT. In female culture, Wolffian ducts were remained until later stage. In testosterone and aromatase inhibitor, although dilations of male Wolffian ducts were not found, the ducts were remained until later stage in females as shown in TBT exposure. [Consideration] By this study, it is suggested that TBT has an influence like aromatase inhibitor in gonad organ culture. The dilations of Wolffian ducts found in male gonads may be caused by the other specific mechanism for TBT. The organ culture system developed in this experiment may become a useful tool for studying the direct influence of endocrine disruptors on the reproductive organ development of rats.

