PHTHALATE EXPOSURE AND THYROID FUNCTION IN PRE-PUBERTAL CHILDREN FROM CENTRAL TAIWAN

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Background and Aims: Thyroid hormone is essential for development of pre-pubertal children. Toxicological evidence shows the probable thyroid-like function of some phthalates *in vitro* and *in vivo*, and some studies report that exposure to phthalates may alter thyroid hormones in women and men. However, little information is available on whether exposure to phthalates is correlated with thyroid function in children during pubertal development.

Methods: We studied 186 children, included 85 boy and 101 girls, born to previously established pregnant women cohort in 2009. We measured seven phthalate metabolites (MMP, MEP, MnBP, MBzP, MEHP, 5OH-MEHP, 5oxo-MEHP) in urine samples of children 8-9 years using LC-MS/MS. Serum sample was analyzed for 3,5,3'-triiodothyronine (T_3), thyroxine (T_4), thyroid-stimulating hormone (TSH) and thyroxine-binding globulin (TBG) using radioimmunoassay.

Results: The urinary levels of MnBP and MEHP in Taiwanese children at 8-9 years old were 3 folds higher than those in American children. In girls, we found that T_4 is significantly and negatively correlated with urinary 5OH-MEHP (β: -0.225, 95%CI: -1.57~-0.27, p=0.006), the metabolites of DEHP, after adjustment for TBG, urinay MBzP using step-wise multiple regression. In boys, we found that T_3 is marginal significantly and positively correlated with urinary MEHP (β: 0.258, 95%CI: 0.011~0.063, p=0.006) after adjustment for TBG and maternal education. It is indicated that phthalate exposure, especially for DEHP, in pre-pubertal children may alter thyroid function in different manner between genders.