

Partition of Nonylphenol between Different Compartment for Mother-Fetus Pairs and Health Effects of Newborns

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Abstract : Nonylphenol (NP) is a degradation product of nonylphenol ethoxylates (NPEOs). It is a well-known endocrine disruptor which may cause estrogenic effects. The growing fetus and infants are more vulnerable to exposure to NP than adults. It is important to know the levels and influences of prenatal exposure to NP. The aims of this study were (1) to determine the levels of prenatal exposure among Taiwanese, (2) to evaluate the potential risk for the infants who were breastfed and exposed to NP through the milk. (3) To investigate the correlation between birth outcomes and prenatal exposure to NP. We analyzed thirty one pairs of maternal urines, placentas, first month' breast milk by high-performance liquid chromatography coupling with fluorescence detector. The questionnaire included socio- demographics, lifestyle, delivery method, dietary and work history. Information about the birth outcomes were obtained from medical records. The daily intake of NP from breast milk was calculated using deterministic and probabilistic risk assessment methods. The geometric means and geometric standard deviation of NP levels in placenta, and breast milk in the first month were 31.2 (1.8) ng/g, 17.2 (1.6) ng/g, respectively. The medium of daily intake NP in breast milk was 1.33 $\mu\text{g}/\text{kg-bw}/\text{day}$ in the first month. We found negative association between NP levels of placenta and birth height. And we observed negative correlation between maternal urine NP levels and birth weight. In this study, we could provide the NP exposure profile among Taiwan pregnant women and the daily intake of NP in Taiwan infants. Prenatal exposure to higher levels of NP may increase the risk of lower birth weight and shorter birth height.

Keywords : nonylphenol, mother, fetus, placenta, breast milk, urine

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