

[P-73]

Urinary 1-Hydroxypyrene Glucuronide Levels in Chinese and Korean Children in Relation to Environmental PAHs Exposure

Kyoung-Ho Lee¹, Zhong-Min Li², Dong-Ho Yoo¹, Soo-Hun Cho¹, Ho-Jang Kwon³ and Daehee Kang¹

¹Department of Preventive Medicine, Seoul National University College of Medicine, Institute for Environmental Medicine, SNUMRC, Seoul Korea, ²College of Public Health Science, Jilin University, Changchun, China and ³Dankook University College of Medicine, Korea.

The aim of the study was to see if there is any differences in urinary 1-hydroxypyrene glucuronide (1-OHPG) levels in children (9-15 years old) living three cities in South Korea (Seoul, Incheon and Pohang) and three in China (Changchun, Datong and Kunming), where the levels of particulate air pollution varies. The factors related with urinary 1-OHPG levels were also evaluated. The study subjects consisted of 60 Korean children and 60 Chinese children. Urinary 1-OHPG was measured by synchronous fluorescence spectroscopy after immuno-affinity purification using monoclonal antibody 8E11. Information on recent consumption of diet containing high PAHs, environmental tobacco smoke (ETS), type of cooking and heating fuels, and other life-style characteristics were collected by self-administered questionnaire. Average urinary 1-OHPG levels ($2.88 \pm 4.01 \mu\text{mol/mol creatinine}$) in Chinese children were 8- to 10 fold higher than those in Korean children ($0.23 \pm 0.23 \mu\text{mol/mol creatinine}$) ($p < 0.001$). Urinary 1-OHPG levels were higher in children living the polluted cities (Seoul in Korea and Datong in China, respectively). The concentrations of urinary 1-OHPG were significantly elevated in Chinese children with ETS exposure. Type of heating fuels, type of residential area, and father's occupation ($p=0.01$) were significantly associated with urinary 1-OHPG levels in Chinese children. Multiple linear regression analysis indicated that living in factory area (vs. residential area), use of coal stove as heating fuel, and frequent vegetable intake were significant predictors for log-transformed 1-OHPG (overall model $R^2=0.42$). These results indicated that urinary 1-OHPG levels were related with ambient particulate air pollution, type of heating fuels and certain type of diet.

Keyword : 1-hydroxypyrene glucuronide, PAHs, Children