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Effects of the Korean Pears on Environmental Exposure to Polycyclic Aromatic Hydrocarbons

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People are environmentally exposed to polycyclic aromatic hydrocarbons (PAHs), which include lots of carcinogens, such as benzo(a)pyrene. To prevent carcinogenic/toxic effects of PAHs, chemopreventive approaches with food are recommendable. In our previous epidemiological study, we found that consumption of Korean pears had inverse association with urinary 1-hydroxypyrene (1-OHP), which is an exposure biomarker for PAHs and the major metabolite of pyrene. To clarify mechanism of Korean pears on PAHs, we investigated effects of the Korean pears on urinary 1-OHP using a pilot intervention study. Study subjects were 17 Korean men including 13 smokers and 4 nonsmokers (mean age, 20 yrs). We analyzed 1-OHP level with HPLC/FD in their urine and blood species which were collected before and 24 hr-after the pear consumption. As results, urinary 1-OHP level was significantly reduced by the pear consumption (before vs. after the pear intake, 0.11 ug/L vs. 0.06 ug/L, $p < 0.05$), however, blood 1-OHP level was not. These results suggest that the Korean pears play the role of excretion of 1-OHP rather than antioxidant effects. Further toxicokinetic study will be performed to clarify chemopreventive mechanism of Korean pears against PAHs-exposure.

Keyword : Polycyclic aromatic hydrocarbons (PAHs), 1-hydroxypyrene (1-OHP), Toxicokinetics, Korean pear, Chemoprevention