

한국산 배(梨)와 다환성방향족탄화수소
The Korean pears and polycyclic aromatic hydrocarbons

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Bioproduction of reactive intermediate of polycyclic aromatic hydrocarbons (PAHs) or induction of oxidative stress have been suspected as the mechanisms of PAHs-related diseases such as lung cancer, asthma, etc. Thus, to clarify potential of functional food in the Korean pears against PAHs-exposure, we studied effects of the Korean pears on 1. PAHs- toxicokinetics, 2. PHAs- induced oxidative stress in intervention trials (N=30; male, N=10; female, N=20), and 3. PAHs- related chronic obstructive pulmonary disease (COPD: N= 30). The intake of Bulgogi, Korean barbeque, was used as exposure to PAHs. After 3 weeks trials for the same subjects (1 week for Bulgogi only; 1 week for Bulgogi with the pears; 1 week for the pears only), we found rapid excretion of urinary 1-OHP with the pears during 24 hrs compared to that without pears ($0.05 < p < 0.1$). In addition, we analyzed urinary levels of malondialdehyde (MDA), a biomarker for oxidative stress, following time course. As results, we found that the Bulgogi induced MDA and the pears reduced the Bulgogi- induced MDA. We also analyzed another biomarker for oxidative stress due to PAHs, i.e. change in dichlorodihydro fluorescein (DCF). As a result, the DCF levels were not affected by intake of Bulgogi or the pears. However, intake of the pear (half of a pear per day for 1 month) did not show significant improvement of 'the St George's respiratory questionnaire score' or 'forced expiratory volume for 1 second (FEV).

In conclusion, our results suggest that the Korean pears have

chemoprevention effects on PAHs- induced carcinogenic mechanisms due to rapid excretion of PAHs- intermediates and reduction of PAHs- induced oxidative stress. However, the pear-chemopreventive effects against PAHs-related diseases should be further clarified in enlarged population studies.