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제 목	대기 오염 중 중금속과 폐기능의 연관성 연구 ASSOCIATION OF HEAVY METALS IN THE FINE PARTICLE AND LUNG FUNCTION IN AMBIENT AIR POLLUTION			
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<p>The heavy metals in air pollution particles are iron (Fe), manganese (Mn), zinc (Zn), lead (Pb), chromium (Cr), nickel (Ni), copper (Cu) and so on. These metals in the particle could contribute to lung injury after exposure to air pollution particles. The purpose of this study was to assess the exposure to concentrated metals in fine particles (i.e. PM2.5) and to determine whether lung function in children decreases following exposure to metals contained in particulate air pollutant.</p> <p>Daily ambient concentrations of PM2.5 are collected for 40 days duration the spring season at elementary school in Beijing, China. These samples were analyzed for heavy metals such as Fe, Ni, Mn, Pb, and Zn by inductively coupled plasma emission spectroscopy (ICP). The pulmonary functions such as peak expiratory flow rate (PEFR), FEV1, FVC and FEV1/FVC were studied. One hundred children (50 boys and 50 girls, mean age: 10.4 years old) participated in this study. The levels of PEFR in subjects were measured 3 times a day for study period with the baseline measurement of FVC and FEV1 on the first day. Inference on the air pollution and time effects of PEFR data were made by the mixed-model after adjustment of weather information such as temperature, humidity and atmospheric pressure.</p> <p>The mean concentrations of PM2.5, Fe, Ni, Mn, Pb, and Zn over the study period were 10.49±4.51, 0.72±0.22, 0.01±0.00, 0.04±0.02, 0.09±0.03, 0.12±0.04 &amp;micro;g/m3, respectively. The levels of PM2.5 were significantly correlated with individual heavy metals (P&lt;0.01) and total heavy metal (P&lt;0.01). The range of daily measured PEFR in this study was 213.1-545.5 L/min. Increase of individual or total heavy metal concentration (one day lag) was negatively associated with daily mean PEFR.</p> <p>These results suggest that heavy metals such as Fe, Ni, Mn, Pb, and Zn in fine particulate air pollution significantly affect pulmonary function such as PEFR.</p>				