

Fine Particles exposure in the relation to DNA methylation

Hsi-Yuan Chiu, Department of Occupational Safety and Health, *China Medical University, Taiwan*

Yu-Ting Lin, Department of Occupational Safety and Health, *China Medical University, Taiwan*

Bing-Fang Hwang, Department of Occupational Safety and Health, *China Medical University, Taiwan*

Background and Aims: DNA methylation is a potential pathway linking air pollution to disease. Limited epidemiological studies have been assessed the association between exposure to ambient air pollution and DNA methylation(hydroxysteroid 11-beta dehydrogenase 2). The study was to assess the long-term exposure to particles with an aerodynamic diameter of 2.5 μm or less (PM_{2.5}) and the risk of DNA methylation.

Methods: This study was comprised of 938 participants aged from 24 to 64 years in central Taiwan. The exposure assessment was based on residential address of participant, and applied geographic information system (GIS) to integrate monthly air pollutant data from 73 EPA monitoring stations which was interpolated to pollutant surfaces using Kriging method. DNA methylation in whole blood was analyzed with Methylation-Specific Polymerase Chain Reaction(MS-PCR).The effect estimates were presented as odds ratios per IQR changes for PM_{2.5}.

Results: In the logistic regression adjusting for confounding , DNA methylation was increased in association with per IQR increase of PM_{2.5} (adjusted OR=1.049; 95%CI: 0.878-1.255), particularly among summer (June-August).

Conclusions: The study provides evidence that exposure to PM_{2.5} may increase the risk of DNA methylation.