Field Studies of Infectious Bioaerosols

by

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Date : 23 July 2019 (Tuesday)
Time : 4:15 p.m.
Venue : Room S1B, G/F Jockey Club Building for Interdisciplinary Research, 5 Sassoon Road

Abstract:

A brief summary of our previous field studies for three infectious bioaerosols, airborne *Mycobacterium tuberculosis*, Influenza and Avian Influenza virus, and *Burkholderia pseudomalle*, will be presented. For airborne *Mycobacterium tuberculosis*, airborne *M. tuberculosis* concentrations from 1.43 x 10 copies/m^3 to 2.06 x 10^5 copies/m^3 were found from negative-pressure isolation rooms of tuberculosis patients. In addition, the concentration profiles of airborne *Mycobacterium tuberculosis* in a medical center were studied. Airborne *M. tuberculosis* concentrations in TB-areas (3.8 x 10^3 copy/m^3) were significantly higher than those in non-TB-areas (3.9 copy/m^3) (*p*=0.029). In regard with airborne influenza and avian influenza virus, it was revealed that both the positive rate and concentration of influenza A virus in the chicken pen were higher than that in the duck pen of a wet poultry market, possibly due to differences in ventilation type, climate factors, and avian characteristics. Ambient Influenza and avian influenza virus during dust storm days and background days were also investigated. The concentration of ambient influenza A virus was significantly higher during the ADS days than during the background days implying the possibility of long-range transport of influenza virus. We also tried to measure the concentrations of ambient *Burkholderia Pseudomallei* during Typhoon Season in endemic area of Melioidosis in Taiwan. Our data suggest the possibility of transmission of *B. pseudomallei* via inhalation during the typhoon season.

Bio-sketch:

Dr. Pei-Shih Chen is Professor and Chair of the Department of Public Health at the Kaohsiung Medical University, Taiwan. She earned her Ph.D. in Environmental Health from National Taiwan University in 2005. Dr. Chen's primary research areas are infectious bioaerosols, allergic bioaerosols, and indoor air pollutants. For infectious bioaerosol detection, Dr. Chen successfully developed the first report quantifying airborne *M. tuberculosis* (Chen and Li, 2005), airborne influenza virus (Chen et al., 2009), ambient avian influenza virus (Chen et al., 2009), and ambient *Burkholderia pseudomalle* (Chen et al., 2014) in field samples. Dr. Chen reviews manuscripts for over 20 different scholarly Journals. Presenting regionally, nationally, and internationally, she has published more than 25 peer-reviewed academic SCI journals in different areas including environmental health, public health, and aerosol biology.