

# THE USE OF THE POLYMERASE CHAIN REACTION FOR THE DETECTION OF AIRBORNE *MYCOBACTERIUM TUBERCULOSIS* IN HEALTH CARE SETTING

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**Objective :** Tuberculosis (TB) has re-emerged as one of major infectious diseases of public health concern. Tubercle bacilli in airborne droplet nuclei produced by person with pulmonary tuberculosis. This study attempts to use a sensitive PCR analytical method coupled to a filter sampling method to detect the presence of airborne *Mycobacterium tuberculosis* in the hospital environment.

**Method :** The patients selected for this study were identified with clinical diagnoses of tuberculosis. The expired-air via respiratory tube connecting with a ventilator from patient in ICU was filtered using Polycarbonate (PC)/Teflon filters. The air samples were taken through a three-piece cassette from the negative pressure isolation rooms of patients selected for the study. After sampling, these two different filters were analyzed using PCR method.

**Results :** Sixteen of 32 expired-air samples from the study patients had positive membrane air sampling with PCR analysis, including PC filters (4/16) and Teflon filters (12/16). The indoor air samples of negative pressure isolation rooms of the patients also had positive PCR runs (PC: 10/17, Teflon: 8/17).

**Conclusion :** We have performed air sampling of expired-air of patients diagnosed for pulmonary tuberculosis and patient isolation rooms. It showed that PCR amplification of the hospital air samples detected the offending pathogens (50%). Indoor air quality of hospital environments will investigate in the future.

**Key words :** tuberculosis, *Mycobacterium tuberculosis*, filter sampling, polymerase chain reaction analysis