

# Y5: Risk of Criteria Air Pollutants on Cardiovascular and Respiratory Diseases from Hospital Admission and Emergency Room Visits at University Hospital in Kuala Lumpur

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## ABSTRACT

**Introduction:** Numerous studies have shown the association between outdoor air pollution and mortality, as well as hospital admissions and emergency visits for respiratory illness and also cardiovascular diseases. **Methods:** This study was conducted to determine the associations and risk estimates of daily variations of air pollutants in the Kuala Lumpur area with cardiovascular and respiratory cases from both hospital admissions and emergency room visits at University Hospital in Kuala Lumpur. Data on daily hospital admissions (2010-2014), and emergency room visits (2013) were obtained. Daily mean concentrations of air pollutants of particulate matter less than 10 $\mu\text{g}/\text{m}^3$  (PM<sub>10</sub>), sulfur dioxide (SO<sub>2</sub>), carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), and daily observations of meteorological conditions were obtained from Malaysian Department of Environment. We examined the associations between daily level pollutants and daily hospital admissions and emergency room visits of cardiovascular and respiratory using time series analysis of Poisson regression while controlling for time trends, meteorological factors and holiday indicator. Effects for every 10 $\mu\text{g}/\text{m}^3$  increase in pollutants were reported as Relative Risk (RR) on current-day (lag 0) exposure to previous five days (lag 5). **Results:** The highest association among all was from respiratory admission with SO<sub>2</sub> at lag 4 (RR = 1.123113, 95% CI = 1.045253-1.206772), followed by cardiovascular admission with NO<sub>2</sub> at lag 5 (RR = 1.025222, 95% CI = 1.004689-1.046174), NO<sub>2</sub> at lag 0 (RR = 1.022244, 95% CI = 1.000757-1.044192) and O<sub>3</sub> 8hour at immediate effect lag 0 (RR = 1.020816, 95% CI = 1.006672-1.035159). The highest association with respiratory emergency was with PM<sub>10</sub> at lag 0 (RR = 1.012778, 95% CI = 1.003016-1.022635) while cardiovascular emergency recorded the highest with CO at lag 1 (RR = 0.997912, 95% CI = 0.996051-0.999776). **Conclusion:** Significant associations were found with all cardiovascular and respiratory admissions in the single-pollutant model for all the pollutants. Gaseous pollutants showed higher risk in both cardiovascular and respiratory admissions while PM<sub>10</sub> showed higher risk in respiratory emergency. Both immediate and delay effects were also found in both hospital admissions and emergency visits for cardiovascular and respiratory diseases associated with all pollutants.

# Y6: Antibacterial Activity of Methicillin-Resistant *Staphylococcus Aureus* (MRSA) Treated with Acetone Extract from *Canarium odontophyllum* (Dabai) Leaves

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## ABSTRACT

**Introduction:** Methicillin-resistant *Staphylococcus aureus* (MRSA) infection is a major nosocomial infection that has emerged as community-acquired MRSA worldwide. The resistance and limitation of present antibiotic lead to research on natural product as novel target for MRSA treatment. *Canarium odontophyllum* (CO) Miq. locally known as dabai has been considered as an alternative phytotherapeutic treatment against MRSA. **Methods:** The aim of this study is to optimize protein concentration of MRSA Mu50 treated with acetone extract from *C. odontophyllum* for protein expression profile (PEP). The concentration and duration for treatment is determine using minimum inhibitory concentration (MIC) and time-kill assay (TKA) by broth microdilution and drop plate method. Sonicator were used to obtain protein extracts from MRSA cells and protein were separated by SDS-PAGE. **Results:** The MIC value of acetone extract from *C. odontophyllum* against MRSA Mu50 was 0.3125 mg/ml. TKA showed that extract of *C. odontophyllum* exhibit dose-dependent manner with bacteriostatic action at 1/2x MIC, 1x MIC, 2x MIC and 4x MIC against MRSA. Subinhibitory concentration at 8 hour of 1/2x MIC were optimum condition for protein extraction treatment. SDS-PAGE map of MRSA treated with extract exhibited different protein expression pattern compared to untreated. The optimum MRSA protein concentration that produced the best resolution using silver staining was 300  $\mu\text{g}/\text{ml}$ . Moderate and low molecular weight protein were dominant in protein banding pattern of MRSA treated with extract. **Conclusion:** Acetone extract from *C. odontophyllum* is a bacteriostatic agent that target MRSA cell protein patterns.