

## Characterization of Surfactants and Bioaerosols from Particulate Matter (PM) at Different Background Area of Perak

Helmiah Abdul Razak and Nurul Bahiyah Abd Wahid\*

Department of Biology, Faculty of Science and Mathematics, Universiti Pendidikan Sultan Idris, 35900 Tanjung Malim, Perak, Malaysia.

\*Corresponding author

Email: nurul\_bahiyah@fsmt.upsi.edu.my

This study was conducted to determine the concentration of surfactants and bioaerosols in particulate matter (PM) from selected area of Perak, Malaysia. A high volume air sampler (HVAS) was used to collect samples from urban (Ipoh), marine (Manjung) and sub-urban (Tanjung Malim) areas. The sampling was conducted to collect fine ( $<1.5 \mu\text{m}$ ) and coarse ( $>1.5 \mu\text{m}$ ) mode particles. Colorimetric analysis was performed to determine the concentrations of anionic surfactants as Methylene Blue Active Substances (MBAS) using a UV spectrophotometer. Meanwhile, the bioaerosols were determined by spread-plate technique onto the surface of trypticase soy agar and malt extract agar for bacteria and fungi-associated PM. Overall, the concentration of PM and surfactants were dominated by fine mode particles for all sampling stations. Result from this study showed that Manjung had the highest average concentration of surfactants in PM for fine mode ( $182.96 \pm 63.47 \text{ pmol m}^{-3}$ ) while Ipoh indicated the highest value of MBAS in coarse mode ( $27.40 \pm 7.99 \text{ pmol m}^{-3}$ ). There is no significant variation ( $p > 0.05$ ) were observed between all sampling stations. In addition, fungi associated PM was found in higher concentrations than bacteria. In conclusion, characterization of surfactants and bioaerosols from PM is crucial to be identified in order to maintain good air quality of Perak, Malaysia.

**Keywords:** Surfactants, Particulate matter, MBAS, Bacteria, Fungi