



## Air quality status in central shah alam, Malaysia using lichens as Bio-Indicator

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### Abstract

Bio-monitoring technique using lichens are frequently used for bio-monitoring of air pollution due to their ability to absorb toxic materials in their thallus. A study in Shah Alam, Selangor, Malaysia was conducted to assess the air pollution level according to Lichen Biodiversity Index (LBI). This study aimed to determine the effect of motor vehicle on the LBI value and species composition; to identify the most tolerant and the most sensitive lichen species in the study area. A total of 52 sampling stations in central Shah Alam were studied where 12 stations showed high alteration of air, nine stations showed moderate alteration of air, 18 stations showed low alteration of air but with low naturality, 12 stations showed moderate naturality of air and one stations showed high naturality of air. According to LBI standard, this study area is considered polluted since 40.38% of the study area showed condition above moderate pollution level (low alteration/low naturality) while only 25% of the study area showed condition below moderate pollution level. Regression analysis showed a strong negative linear relationship between LBI value and frequency of motor vehicles ( $R^2 = 0.902$ ) which denoted that air pollution caused by motor vehicles negatively affected LBI value and the species composition of lichen in this area. Thirteen species of lichen were recorded with *Pyxine* cocoas was identified as the most tolerant lichen species while *Parmotrema praesorediosum* was identified as the most sensitive lichen. This study has proven that lichen is suitable to be used as bio-monitoring tool for air pollution and air quality assessment.

### Biography

Asmida Ismail (Dr.) is a Senior Lecturer in School of Biology, Faculty of Applied Sciences, Universiti Teknologi MARA, Malaysia. She obtained her BSc and MSc from University Kebangsaan Malaysia (UKM), where she involved in the monitoring and assessing the diversity and abundance of seaweeds in many islands and coastal areas of Malaysia. In 2000, she received her scuba-diving certificate from National Association of Underwater Association (NAUI) which enables her to explore and study seaweeds inhabiting deeper levels of the marine ecosystem. She then received a scholarship from Ministry of Higher Education Malaysia and UiTM to pursue a PhD in Environmental and Plant Biology at the Imperial College London, United Kingdom. She has been teaching Biology and Biology-related subjects for the last 17 years. She is a Senior Editor for the International Journal of Agricultural and Environmental Research, a Senior Member for International Seaweeds Association and a Committee Member for Air Pollution and Environmental Research (UK). Her research interest is in taxonomy and ecology of marine and freshwater algae. She is currently venturing into utilizing terrestrial algae and lichens as bio-monitoring. Her works on environmental biology has been presented in local and international conferences and being published in reputable journals including a Q1 journal.

### Publications

1. Biodiversity of Macroalgae in Blue Lagoon, the Straits of Malacca, Malaysia and Some Aspects of Changes in Species Composition
2. Anti-pyretic action of *Caulerpa Lentillifera*, *Hibiscus Rosa-Sinensis* and *Piper Sarmentosum* aqueous extract in mice
3. Species composition of seaweeds in Port Dickson, Peninsular Malaysia
4. Epiphytic terrestrial algae (*Trebouxia* sp.) as a biomarker using the free-air-carbon dioxide-enrichment (FACE) system
5. Investigation on the cytotoxicity, neurotoxicity and dyeing performances of natural dye extracted from *Caulerpa lentillifera* and *Sargassum* sp. seaweeds

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