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## Use of moss (*Barbula* spp.) as a bioindicator to monitor atmospheric deposition of polycyclic aromatic hydrocarbons (PAHs): A preliminary study

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This study was conducted to investigate the suitability of moss (*Barbula* spp.) as a bioindicator to monitor the atmospheric deposition of polycyclic aromatic hydrocarbons (PAHs). Two moss species (*Barbula* sp.1 and *Barbula* sp.2) which have been identified only up to genus level were used in this study to investigate the atmospheric deposition of PAHs, qualitatively as a preliminary study. Moss samples were collected from three different locations around the industrial area of Sapugaskanda, which includes an oil refinery, an industrial zone and three power plants. Background level was determined using the samples collected from Sinharaja, approximately 100 km away from the study area where anthropogenic influence is very low.

Analysis of PAHs was carried out by reverse phase liquid chromatography using a UV detector after extracting the moss samples separately using Soxhlet extractor. Cleaning-up procedure to isolate the PAH fraction was performed using a silica gel column.

HPLC traces obtained from all the sampling sites were compared with pure naphthalene and anthracene. A more or less similar pattern of traces were obtained for both *Barbula* sp.1 and *Barbula* sp.2. In each HPLC trace, 4 peaks could be identified for *Barbula* sp.1 and 5 peaks for *Barbula* sp.2. It was revealed from the comparison, the first peak of each trace corresponds to naphthalene (MW = 128.18) and the third peak corresponds to anthracene (MW = 178.24). The second peak is suspected to be acenaphthylene (MW = 152.20). Hence the first three peaks correspond to low molecular weight PAHs (up to 3 rings) where as forth and fifth peaks may be due to high molecular weight PAHs (more than 3 rings). Sinharaja moss sample was used as a background sample and no significant peaks were observed. Therefore these particular moss species can be used as a bioindicator to monitor atmospheric deposition of PAHs.

Key words: - Bioindicator; Moss; PAHs

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