**An investigation of arsenic contamination in Peninsular Malaysia based on Centella asiatica and soil samples**


ABSTRACT

The first objective of this study was to provide data of arsenic (As) levels in Peninsular Malaysia based on soil samples and accumulation of As in Centella asiatica collected from 12 sampling sites in Peninsular Malaysia. The second objective was to assess the accumulation of As in transplanted C. asiatica between control and semi-polluted or polluted sites. Four sites were selected which were UPM (clean site), Balakong (semi-polluted site), Seri Kembangan (semi-polluted site) and Juru (polluted site). The As concentrations of plant and soil samples were determined by Instrumental Neutron Activation Analysis. The As levels ranged from 9.38 to 57.05 ε g/g dw in soils, 0.21 to 4.33 ε g/g dw in leaves, 0.18 to 1.83 ε g/g dw in stems and 1.32ï 20.76 ε g/g dw in roots. All sampling sites had As levels exceeding the CCME guideline (12 ε g/g dw) except for Kelantan, P. Pauh, and Senawang with P. Klang having the highest As in soil (57.05 ε g/g dw). In C. asiatica, As accumulation was highest in roots followed by leaves and stems. When the As level in soils were higher, the uptake of As in plants would also be increased. After the transplantation of plants to semi-polluted and polluted sites for 3 weeks, all concentration factors were greater than 50 % of the initial As level. The elimination factor was around 39 % when the plants were transplanted back to the clean sites for 3 weeks. The findings of the present study indicated that the leaves, stems and roots of C. asiatica are ideal biomonitors of As contamination. The present data results the most comprehensive data obtained on As levels in Malaysia.



**Keyword:** Arsenic; Centella asiatica; Peninsular Malaysia; Neutron activation analysis