

## EVALUATION OF TWO INVASIVE PLANT SPECIES (*LANTANA CAMARA* L. AND *WEDELIA TRILOBATA* L.) FOR SELECTED HEAVY METAL ION UPTAKE FROM POLLUTED AREAS

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Heavy metals significantly contribute to the pollution of a range of ecosystems in Sri Lanka. This study examined the potential of two alien invasive plant species *Wedelia trilobata* L. and *Lantana camara* L., threatening the native flora of Sri Lanka, for the removal of nine selected heavy metal ions (Cd, Cr, Cu, Co, Ni, Pb, Fe, Mn and Zn) from polluted environments.

The extent of removal of heavy metal ions by *L. camara* was determined by placing finely ground stems under static condition (immersing in each metal ion solution) and dynamic condition (passing each metal ion solution through a column packed with finely ground stems). In order to determine the instantaneous heavy metal uptake level, each metal ion solution was passed through fresh wood segments of *L. camara*. The reference plant for *L. camara* was *Albizia odoratissima* L. The other species, *W. trilobata* was used to investigate the efficiency of heavy metal uptake directly from polluted environments/disposal areas, with reference to *Ipomoea aquatica* Forsk.

Under static condition, *L. camara* and *A. odoratissima* showed the ability of removing nearly 50% of  $Zn^{+2}$ ,  $Cd^{+2}$ ,  $Ni^{+2}$ ,  $Mn^{+2}$ ,  $Co^{+2}$  and  $Cu^{+2}$ . However, the removal of  $Cr^{+6}$ ,  $Fe^{+2}/Fe^{+3}$  and  $Pb^{+2}$  was less than 50%. The removal ability for each metal ion can be enhanced under dynamic conditions and when solutions were passed through fresh stem segments. *W. trilobata* showed the ability of absorbing more than  $1mg\ dm^{-3}$  of  $Ni^{+2}$ ,  $Mn^{+2}$ ,  $Co^{+2}$  and  $Fe^{+2}/Fe^{+3}$  after 72 hours and  $Zn^{+2}$ ,  $Pb^{+2}$  and  $Cr^{+6}$  after 120 hours of treatment with heavy metal ion solutions. The ability of high level of ion uptake by *W. trilobata*, *A. odoratissima* and *L. camara* has been due to the presence of large mass of parenchyma in their tissues. This aspect has already been studied.

Both study species show capabilities of heavy metal accumulation very much similar to their respective reference plants. Hence, both these invasive species can be recommended as phytoremediators to treat heavy metal contaminated industrial waste. On the other hand, the use of *L. camara* and *W. trilobata* for the control of environmental pollution may indirectly help to minimize the spread of these alien invasive species into natural vegetations.

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