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Determination of Phytoremediation Capability of Selected Plant Species (*Atriplex Nitens* And *Descurainia Sophia*) for Lead Contamination

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Phytoremediation involves the use of plants to remove toxic compounds from water and soil (Robinson et al., 1997, Singer et al., 2007). Phytoremediation is one of the environmental friendly technologies that use plants to clean up soil from heavy metal contamination. The uptake and accumulation of pollutants vary from plant to plant and also from species to species within a genus (Singh et al., 2003). Proper selection of plant species for phytoremediation plays an important role in the development of remediation methods (decontamination or stabilization), especially on low-or-medium-polluted soils (Salt et al., 1995). There are several distinct groups of plant species according to their heavy metal accumulation capability. Heavy metals enter soils through addition of sludge, composts, or fertilizers. Even with the strictest source control, domestic sewage sludge contains heavy metals because they are present in items washed down drains or toilets (Kirkham, 2006). Lead is an element of considerable environmental and toxicological interest because of its potential deleterious effects upon human health (Demirezen and Aksoy, 2004). The study was undertaken to assess the phytoremediation potential of *Atriplex nitens* and *Descurainia sophia* are known as unwanted wild plant in agricultural area growing at a heavy metal polluted site in greenhouse experiment. Lead was shown to preferentially accumulate in the *Descurainia sophia* compared to the *Atriplex nitens*. Furthermore, significant differences in the concentration levels of lead were observed in between the control and lead-exposed plants. Overall, the plants of *Atriplex nitens* and *Descurainia sophia* were found suitable for the decontamination of the metals from heavy metal contaminated sites especially, agricultural area.

In conclusion, these species could provide a new plant resource that explores the mechanism of lead hyperaccumulation, and has potential for usage in the phytoremediation of lead contaminated soil.

References:

D. Demirezen, A. Aksoy, *Chemosphere*, 56 (2004) 685-696.
A.C. Singer, T. Bell, C.A. Heywood, J.A.C. Smith, I.P. Thompson, *Environ. Poll.* , 47: 74-82.
B.H. Robinson, A. Chiarucci, R.R. Brooks, D. Petit, J.H. Kirkman, P.E.H. Gregg, V. DeDominicis, *J. Geochem. Explor*., 59 (1997) 75-86.
M.B. Kirkham, *Geoderma*. 137 (2006) 19-32.
O.V. Singh, S. Labana, G. Pandey, R. Budhiraja and R.K. Jain, *Appl. Microbiol. Biotechnol.*, 61 (2003) 405–412.
D.E. Salt, M. Blaylock, P.B.A.N. Kumar, V. Dushenkov, B.D. Ensley, I. Chet and I. Raskin, *Biotechnology*, 13 (1995) 468–474.