Phytoremediation by *Persicaria thunbergii*

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Abstract

For the consideration of phytoremediation, Cd^{2+} and Pb^{2+} were analysed in the soil of the habitats and the leaf, stem and root of *Persicaria thunbergii* in the different localities of Bong-Dong river. In the soil and plant samples of research areas, Cd^{2+} was not detected but, Pb^{2+} detected as follows; about $7.8 \sim 12.6 \mu g/g$ in the soil of habitats, about $11.7 \sim 18.4 \mu g/g$ in the leaf, about $7.5 \sim 15.5$ $\mu g/g$ in the stem and about $89.1 \sim 193.6 \mu g/g$ in the root of *P. thunebrgii* and the correlation coefficient value between the Pb^{2+} contents in soil and *P. thunbergii* was $0.814(> t_{12, 0.01})$. After *P. thunbergii* was treated with $Cd(NO_3)_2$ and $Pb(NO_3)_2$ of 5 and 10mM, the bioaccumulation of Cd^{2+} and Pb^{2+} in the leaf of plant, the remaining mass of heavy metals and the variation of pH in the soil, and the increasing rate(%) of phytochelatin in plant were examined. The concentrations of Cd^{2+} and Pb^{2+} in the leaf as follows; in the case of Cd^{2+}, about $0.82 \sim 2.79 \mu g/g$ and in Pb^{2+}, about $2.87 \sim 8.08 \mu g/g$. The remaining mass of heavy metals and the variation of pH in the cultured soil decreased as follows; about 77.1% and pH6.39 in Cd^{2+}5mM, about 90.2% and pH5.79 in Cd^{2+}10mM, about 81.1% and pH6.00 in Pb^{2+}5mM and about 85.7% and pH5.80 in Pb^{2+}10mM. The phytochelatin were increased in plant samples treated with 10mM $Cd(NO_3)_2$ and $Pb(NO_3)_2$ as follows; about 259% by Cd^{2+} and about 305% by Pb^{2+} be compared with control, and the molecular weight(da) of these phytochelatins were estimated about $4,300 \sim 8,600$da in the case of the treatment of Cd^{2+} and about $3,200 \sim 9,700$ in Pb^{2+}.