

Copper accumulation by *Linaria canadensis* and its tolerance.

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For the purpose of phytoremediation,we searched metal accumulators in Natsume mine,Nakase mine, Ikuno mine,Kotobiki pass, along the shore of Hayashida river,Ibo river,and Ichikawa river in Hyogo,Japan.By qualitative analysis using X-ray fluorescence spectrometer and quantitative analysis using atomic absorption spectrometry,we found that *L.canadensis* accumulated 3490 ug/gDW Cu in their shoots,and was defined as a Cu accumulator.We cultured the callus of *L.canadensis* on MS medium adding 0, 0.1,0.5,1,5,10mg/l Cu conditions for three and six weeks. As the result of three weeks cultivation ,the apparent increase of wet weight of callus in 0.5,1 mg/l Cu added medium were observed. After three and six weeks cultivation,the increase of wet weight of callus in 5 mg/l Cu added medium was similar as control.These indicated that callus was resistant to Cu up to 5 mg/l in medium.Under Cu concentration of 5,10 mg/l, callus accumulated 2700 ug/gDW after 3weeks ,and 5300 ug/gDW in 6weeks,respectively.From callus cultivation experiments,high Cu accumulation potential of *L.canadensis* was shown.