

Accumulative Study of Heavy Metals in Soil, Water and Uptake by Rhizome of two *Cissus* Species from Various Sites

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The determination of heavy metals in soil samples, plants samples and also water samples are very important in monitoring environmental pollution. Metals are toxic even in traces. The ability of the plant to absorb heavy metals can cause human health or ecological become worst. The ecological differences have direct or indirect contact to the medicinal plants and they may be regarded as an index of trace metal concentration in the surroundings i.e., soil, water and atmosphere.. The aim of this study was to determine physico- chemical parameters and concentration of heavy metals in soils, water and rhizome of two *Cissus* species from various sites and to make awareness among the public regarding its safer use and collection areas, containing high level of heavy metals and their adverse health effects. The atomic absorption spectrophotometer was employed for content of heavy metals (Cd, Ca, Cr, Cu, Fe, Pb, Mg, Mn, Ni, K, Na and Zn) of rhizome of *Cissus repens* Lam. (တဝင်တိုင်မြန်မာအနီ) and *Cissus discolor* Blume. (တဝင်တိုင် အဖြူ) from Myitkyeena, Moegoke, Aungban, and Pyin Oo Lwin and their soil, water in which they grown were selected for their analysis. The factors affecting metal accumulation by plants species including metal concentrations, pH, electrical concentrations, pH, electrical conhigh amount of Ca and Fe than permissible limit set by Ajasa, 2004 (44-61 $\mu\text{g/g}$) and WHO, 2008 in edible plants (20 mg/kg). Where, rhizome of *Cissus repens* Lam. Form Myitkyeena contained Mn (364.73 ± 73 ppm) , Ni (1.51 ± 0.07

ppm) and Moegoke contained Mn (228.35 ± 4.76 ppm) , Ni (2.16 ± 0.08 ppm) which were above the permissible limit. Most of the selected rhizomes and all their soils from four different locations contained the metals which are within permissible limit. In water samples, all elements were found to be within the permissible limit (WHO/FAO 199) in four different sites. This revealed that free from toxic contaminant (Cd, Cr and Pb) in soil, water and rhizomes of two *Cissus* species from four different sites were detected. As a conclusion, monitoring of heavy metal distribution data in soil, water and plants samples are very useful for becoming main references or guidelines to order to monitoring and avoid environmental pollution become worst in terms of quality of soil and safe level for medicinal plants to be consumed.