Andrea Monroy-Licht, J Clinic Toxicol, 2018, Volume 8
DOI: 10.4172/2161-0495-C1-028

A study of elemental Mercury accumulation in macrophytes roots.

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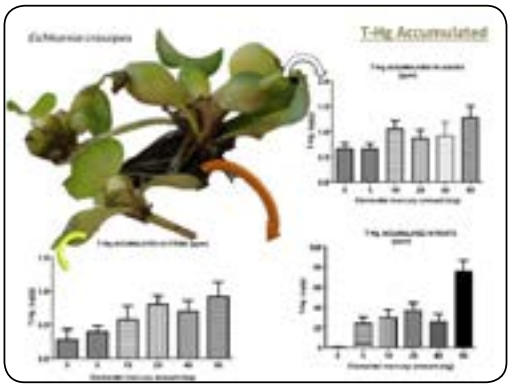
Mercury is considered one of the priority hazardous substances due to their toxicity, mobility and high residence in the atmosphere. In Colombia, the largest amount of mercury is released into the environment associated with mining activities, becoming a permanent pollution source to air, water, soil and sediment level. On the other hand, Macrophyte Eichhornia crassipes is an aquatic native plant of South America, with great potential in environmental pollution treatment. In this experimental study, Eichhornia crassipes´s ability to accumulate elemental mercury was determined. This mercurial specie is released continuously in Artisanal and small-scale mining in this country. Several Eichhornia crassipes individuals were exposed to amounts of 5, 10, 20, 40 and 80 mg of elemental mercury. Total mercury (THg) was analyzed by direct mercury quantification in leaves, stems, and roots. The results showed accumulation of 1.28 ± 0,11ppm and 1.13 ± 0.03 ppm in leaves and stems, respectively. The greatest THg accumulation was obtained in roots with values of 75.55 ± 0,54ppm. In addition, Dunnett's multiple comparison analysis showed no significant differences between leaves and stems. However, a significant difference was presented in roots with respect to the control group, leaves, and stems. Additionally, the weight of plants was monitored; Fischer test shows that the interaction between the amount of mercury and weight of the plants in each group is not significant with a p-value of 0.364. However, weight gain was observed in all groups exposed to the metal at the end of the period. Furthermore translocation ability values were calculated. The results showed a low translocation capacity between 59.02 and 22.10. Therefore, it is demonstrated that root is the tissue where most THg is stored. Based on the results of this study the E. crassipes is able to accumulate elemental mercury from contaminated water.



Biography

Andrea Monroy-Licht is visiting doctoral student at Bayreuth University (Germany). Doctoral student in Environmental Toxicology (Colombia). Master in Environmental Management for sustainable development. Microbiology. Topics of interest Bioremediation and phytoremediation of environmental pollutions. Expertise in microbiology and fitotoxicity.

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