

A Comparative Analysis of Tissue-Specific Silver Hyper-Accumulation in *Myriophyllum aquaticum*

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Heavy metal pollution is a serious ecological problem that our world is currently facing. Our blatant disregard for the disposal and release of heavy metals has allowed them to be allowed to contaminate and alter some of our most important geographic areas, such as the Everglades. However, there is a promising future in the use of phytoremediation to remove these dangerous toxins. The researcher created an experiment with the thought of discovering where hyperaccumulators stored heavy metals. The researcher hypothesized that the silver would be collected in the leaves due to the increased epidermal surface area. To test this hypothesis the researcher took specimens of *Myriophyllum aquaticum* and subjected them to a habitat with colloidal silver. After a month, the plants were pulverized and dissolved using a three molar nitric acid solution. Then, the researcher created a colloid by reacting silver nitrate with sodium chloride. Finally, the researcher used colorimetry to determine the amount of silver in different portions of the plant. The results of this experiment did not support the researcher's hypothesis. The results showed that once the data had been actualized for biomass, the stem tissue was most efficient at accumulating silver, with an absorbance of 4.938. The leaf tissue was the second most efficient at accumulating silver with an absorbance of 3.467, and the root tissue was the least efficient with an absorbance of 2.4095. The researcher attributes these results to the increased thickness of the epidermal layer in the stem. This research has strong applications in the development of a feasible phytoremediation system that could potentially be used to remediate polluted areas around the world.