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Comparison of Arsenic Uptake and Oxidative Stress by Christmas Fern and Spider Brake Fern

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Abstract

Plants are widely considered the most cost effective and environmentally friendly way to clean soils and waters contaminated with toxic metals, e.g. arsenic and mercury. We have focused our research on the uptake of arsenic and its biochemical effect on two species of fern, *Spider brake fern* and *Christmas fern*. Spider brake fern is known to be capable of accumulating significant amounts of arsenic. We wish to determine whether the levels of arsenic uptake in *Christmas fern* are comparable to *Spider Brake fern* (>1g kg^{-1} plant biomass) when both are grown under the same conditions. Another aim of the research was to see whether these plants respond differently to the arsenic stress. For that purpose, we used a technique referred to as one and two-dimensional gel electrophoresis. In addition, we plan to test whether the stress, if present, is due to the presence of oxidant (oxygen radicals) by measuring the activity of an antioxidant enzyme (superoxide dismutase).