CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)
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Project Number
S1703

Project Title
The Aluminum Accumulating Abilities of Cicer arietinum

Abstract

Objectives/Goals
To determine whether the leaves, stems, or roots of the Cicer arietinum are most efficient for storing aluminum.

Methods/Materials
Cicer arietinum beans were grown in individual containers under controlled lighting. After planting, the experimental group was watered with a saturated aluminum solution and the control group was watered with tap water every other day for a period of eleven days. The plants were then rinsed in deionized water and divided into roots, stems, and leaves. A rapid titrimetric method was used to determine quantitative amounts of aluminum ions.

Results
The rapid titrimetric method helped us determine amounts and concentrations of aluminum ions in the leaves, stems, and roots of the plants. Comparing two-sample t-tests allowed us to see that there were both significantly higher amounts and concentrations of aluminum ions in the leaves of the plants when compared to roots and stems.

Conclusions/Discussion
The results show that the majority of the absorbed aluminum is stored in the leaves of the Cicer arietinum. With this knowledge, bioremediation techniques can be altered to become more efficient. Further research can be done using different plants and different metals to see if storage varies depending on the plant and/or metal.

Summary Statement
This experiment compared amounts and concentrations of aluminum ions in different sections of contaminated C. arietinum.

Help Received
Dr. Rocklin helped provided guidance on titrations. Mrs. Alonzo advised us on how to improve the project. Lynbrook High School provided equipment.