CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)

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Project Number

22114

Project Title

Culturing Strains of Chlamydomonas reinhardtii Acclimated to High Salt Concentrations

Abstract

Objectives/Goals

The objective was to determine if a strain of a freshwater algae, C. reinhardtii, could be cultured over| period of time that was acclimated to seawater if exposed to increasingly elevated concentrations of Instant Ocean-artificial seawater.

Methods/Materials

Wild type C. reinhardtii from Duke University were exposed to a range of Instant Ocean concentration for| seven days to observe sensitivity to salt concentrations. Then, algae were exposed to increasingly high| concentrations of Instant Ocean in bubbler tubes with daily cell counts taken for 63 days. The acclimat| culture (17.4 g/l) was then compared to freshwater controls. The freshwater controls were abruptly exposed to the same concentration of Instant Ocean and observations were made.

Results

The data show the acclimated strain continued to have elevated cell counts while the freshwater control abruptly exposed had decreased cell counts. Culturing was continued until reaching 30.4 g/l where no algae were present.

Conclusions/Discussion

Discussion: This #endpoint# could have been due to a more aggressive acclimating regement or 30.4 g/l may indeed be the highest concentration of salt that this freshwater algae can tolerate.

Conclusion: It was determined that a strain of C. reinhardtii could be cultured that would reproduce at| rates similar to those in freshwater when the salt concentration is as high as 30.4 g/l and possibly higher.

Summary Statement

The freshwater algae Chlamydomonas reinhardtii was cultured over time in increasingly elevated concentrations of Instant Ocean in order to create a strain that was acclimated to very high salt concentrations.

Help Received