CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY

Name(s)
Noelle R. Stiles

Project Number
S1616

Project Title
The Study of Echeveria's Chemical Reactions to Historic Martian Conditions

Abstract

Objectives/Goals
Determine which plants from the genus Echeveria will have the most chemical and productivity change under the chosen Historic Martian conditions (CO(2) and UV light)? Which plant will be the best suited to survive? What conditions cause the most chemical and productivity change?

Methods/Materials
Materials:
Carbon dioxide Four Echeveria species
Table & Board Valves,Connectors and spray nozzles
Ten Plastic Boxes Syringe and Microscope
Sap testing materials (for Benedict, Iodine and Precipitate tests)
Black light

Procedure:
A. Label plants, connect valves to boxes, syringe and Carbon Dioxide tank
B. Blow air out of boxes, place all plants in appropriate conditions (UV, CO(2), Both), with a thermometer in each condition
C. Record data daily on plants conditions, watering, temperatures, and refill boxes every two days
D. Remove plants from conditions, take samples and conduct Benedict, Iodine, Precipitate and Ph tests.

Results
Echeveria Gibbiflora had the most chemical change, Echeveria Pulidonis and Echeveria Doris Taylor both had the second most chemical change, and Echeveria Aeonium Cyclops was the least chemically changed (according to the Iodine, Benedict, and Precipitate tests). For overall conditions Echeveria Gibbiflora faired the best and Ecehveria Aeonium Cyclops the worst. The conditions of solely CO(2) and Both UV and CO(2) caused the most chemical change.

Conclusions/Discussion
My conclusion is that Ancient Mars would chemically alter Echeveria Gibbiflora the most, in terms of energy production and storage. Therefore because Gibbiflora is the best fairing species as well this change can be accounted as positive. This information gives scientists a narrower range in the types of fossils to search for on modern mars, and allows us a glimpse of the possible differences between Martian life and Earthly life.

Summary Statement
I am exploring the possibility of historic plant life on mars, and the difference and parallels this life could have to earthly plant life.

Help Received
My father helped me set up the CO(2) apperatus