CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY

Name(s)
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Project Number
J1210

Project Title
A CO(2) Overdose

Abstract

Objectives/Goals
The main goal of this project was to see how high levels of carbon dioxide affect the stomata in an ice plant. The hypothesis was that the plant exposed to 400 grams of carbon dioxide will have 75% of the stomata closed compared to the plant exposed to 200 grams and the controlled not exposed to the solid Carbon dioxide. This is because the more carbon dioxide is added the more the stomata will die and close up.

Methods/Materials
First, I planted three 4 inch sections of ice plants inside plastic tubs with potting soil. Then I waited 6 hours and measured the carbon dioxide levels and recorded the data. Then I removed the epidermis layer from each ice plant. I made a wet mount slide. To make a wet mount slide, you must add a drop of water and a drop of iodine to the glass slide. Once the slide was prepared the peeled layers were examined under a microscope. While they were examined the numbers of stomata were counted and they were either classified as open or closed.

Results
After waiting six hours, on average the plant exposed to no additional carbon dioxide had 11 stomata and 41 percent of the stomata were closed. On average, the plant exposed to 200 grams of additional carbon dioxide had 13 stomata and 52 percent of those stomata were closed. Then, on average the plant exposed to 400 grams of carbon dioxide had 19 stomata and 61 percent of those stomata were closed.

Conclusions/Discussion
The data collected in the experiment indicates that the carbon dioxide affects the stomata in a minimal way. The hypothesis was that the plant exposed to 400 grams of carbon dioxide will have 75% of the stomata closed compared to the plant exposed to 200 grams and the controlled not exposed to the solid Carbon dioxide. This is because the more carbon dioxide is added the more the stomata will die and close up. This was not supported in the stomata reaction data table. The ice plant exposed to 0 grams of dry ice on average had a low percentage of stomata closed which came out to be 41%. The second ice plant exposed to 200 grams of dry ice on average had 52% of stomata closed. The last ice plant exposed to 400 grams of dry ice on average had 61% of stomata closed. Increased levels of carbon dioxide based off the data collected will not damage stomata function in plants but more research could be done by observing long term effects.

Summary Statement
The main goal of this project was to see how high levels of carbon dioxide affect the stomata in an ice plant.

Help Received
science teacher helped get equipment (microscope, slides, classroom, e.g.) PARENTS HELPED WITH PURCHASING GOODS AND ATTCHING MY BOARDS TOGETHER.