Name(s)	Project Number
Lincoln L. Tran	**S1322**

Project Title

The Effect of UV Light on Algae Cells

Abstract

Objectives/Goals

To determine how different time exposures of UV light affect algae survival and growth.

Methods/Materials

Immediate effect of UV over time- The initial concentration of Chlorella algae was found using a hemacytometer. Six samples of algae were exposed for 0.5, 1.0, 2.5, 5.0, 7.5, and 10 minutes to UV using stratalinker and a sample with no UV exposure for control. The temperature changes from the exposure every 5 minutes was measured using a thermometer and were duplicated with another three samples. The number of cells that died from the temperature increase were counted using trypan blue to tell dead and live cells.

Growth of exposed algae over time- The initial concentration of the Chlorella algae culture were calculated using a hemacytometer. Six samples of algae were exposed for 0.5, 1.0, 2.5, 5.0, 7.5, and 10 minutes to UV and a sample with no UV a control. Grow for four days. Every two days, a 100 microliter sample of algae was collected and fixed in an equal volume of 100% ethanol. Cells then counted using a hemacytometer.

Results

More UV was directly related to # of immediate deaths of algae cells. Over the four-day growth period, the control (0 min) doubled its population for each of the two-day intervals. The 0.5 min sample showed no growth the first two days but did on the fourth day. The 1 min sample showed decline after the two days, with recovery after two more days. For the 5 min, 7.5 min, and 10 min samples, the populations declined for all four days . No algae cells died from the increased temperature.

Conclusions/Discussion

My experiments validated my hypothesis. The control (0 min) doubled its population for each of the two-day intervals. The 0.5 min sample showed no growth the first two days. Not certain whether it was because the cells died but grew back or if they didn#t die at all. On the second day, it grew, signifying that there was DNA repair. The 1 min sample showed a decline, indicating that mutation did occur but the population recovered. This may indicate that the algae population underwent cell repair. For the 5 min, 7.5 min, and 10 min samples, the populations experienced a downward decline in population, indicating irreversible DNA damage. The relatively small decrease in population during the first two days in these samples suggests that the mutated cells were able to survive and function in interphase, but died after trying to undergo cell reproduction.

Summary Statement

To determine how different time exposures of UV light affect algae survival and growth.