The Effects of a Simulated Mars Environment on the Primary Productivity of Select Cyanobacteria

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The purpose of this experiment is to determine which cyanobacterias from those selected (Anabaena, Eucapsis, Fischerella muscicola, Tolypothrix distorta, Merismopedia,and Spirulina) would prosper in Mars Simulated Environments. The three Mars Simulated Environments were created to demonstrate how a cyanobacteria might photosynthesize after 48 hours in either iron, magnesium, or silicon, which are all prevalent in Martian soil. An environment with just water was additionally created to serve as a control. It was suggested that the dissolved oxygen levels would increase after 48 hours. To test this hypothesis, the 4 Mars Simulated Environments were created by setting the components in the bottom of 18 containers. 2 mL of the selected cyanobacteria were added to 3 containers of each Mars Simulated Environment. The initial dissolved oxygen levels were tested and recorded using a dissolved oxygen probe, and 48 hours later the dissolved oxygen levels of the light and dark environments were recorded and compared to the initial levels. Results showed that in the 72 trials, only 6 resulted in the dissolved oxygen levels rising. Further testing is currently being conducted. This conclusion shows that cyanobacteria might be able to photosynthesize in Mars which could lead to life being sustained on Mars.

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