Effect of Nannochloropsis oceanica in Carbonic Acid Acidification

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Scientists had long praised the ocean as being a great carbon dioxide “sink” and for good reason, a study published in a Science journal found that the ocean absorbed 30% percent of the emissions produced from the beginning of the industrial revolution to the mid- 1990s (Gerber). However, over the past decade, scientists have come to realize that this reduction in atmospheric carbon dioxide does have a cost: it alters the pH composition of the ocean. In this experiment, I sought to find a way to control ocean acidification through the introduction of a biological remediation species of algae. In this experiment, Nannochloropsis Oceanica was identified as a possible remediation species due to its rapid-reproductive rate, long suspension / non-symbiotic self-dependence, and its potential in biofuel and waste disposal research. The Nannochloropsis in this experiment was cultured in synthesized seawater and later CO_2 was introduced at a rate of 0.114g per minute over a five-hour testing period. Of the varying concentrations of Sechi millimeters - 140mm, 100mm, and 60mm - the 60mm absorbed the most - CO_2 8.94 x 10^-5 percent of grams total- vs. the control absorption of 3.73 x 10^-4 percent of grams total. Similarly, this highest concentration limited pH changes the most - ending average pH of 6.51 versus control ending average of 5.98. Thus the results supported the initial hypothesis that as the concentration of Nannochloropsis increased, the rate of pH change and absorption of CO_2 would decrease.