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Researching Calcification and the Effects of Ocean Acidification on Marine Algae

The purpose of this research was to test two hypotheses, which addressed the global dilemma of ocean acidification. It was hypothesized that through the process of photosynthesis, the marine phytoplankton *Nonochloropsis oculata*, and the macroalgae *Chaetomorpha spiralis*, would be able to process excess carbon dioxide (CO₂) before it could form carbonic acid (H₂CO₃) and acidify the water. Also that supplementation of ascorbic acid would be able to increase the rate of calcification in the calciferous algae's *Halimeda monile*, and *Udotea flabellum*. It was found that the average pH of the compartment with CO₂ supplementation, which did not contain photosynthetic organisms, was 7.17. This was contrasted by the compartment which was supplemented with CO₂ and contained algae which had an average pH of 7.94. This confirmed my first hypothesis. When researching calcification the pH of two compartments was lowered to 7.9, and for specimens of *H. monile*, and one specimen of *U. flabellum* were added to each compartment. To one of the compartments 0.2 mL of ascorbic acid was supplemented per 10 L of water. Every 12 hours, a calcium titration was performed to observe calcium uptake. The results of this experiment confirmed my hypothesis that ascorbic acid supplementation increased calcification, with the rate of calcification of the algae which was supplemented with ascorbic acid being 2.6-3.5 times greater than the unsupplemented algae.