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Lab 7 -Carbon Dioxide Uptake and Production in Autotrophs and Heterotrophs

Abstract

In this experiment, the amount of carbon dioxide produced by an aquatic plant, *Cabomba*, was studied through photosynthesis. Photosynthesis is the process in which green plants use sunlight to synthesize foods from carbon dioxide and water. Furthermore, carbon dioxide is used for photosynthesis. In the *Cabomba* will produce carbon dioxide through respiration as well as using carbon dioxide through photosynthesis. 1g of *Cabomba* were measured out and placed into six different beakers where they were either placed under a light, placed in the dark, or had no *Cabomba*. The plants sat in these conditions for approximately an hour. Phenolphthalein at a pH indicator was added to each of the beakers, and was followed by NaOH until the solution turned a pink color, which would indicate how much carbon dioxide was in each beaker. The results showed that the amount of carbon dioxide taken up by the *Cabomba* was 100%, which showed an increase of carbon dioxide. However when testing non-*Cabomba* in six beaks the results gave the same result for the plant that was in the dark because this plant showed a decrease of carbon dioxide.

Introduction

Living things can be autotrophs, which produce their own energy, or heterotrophs, which obtain energy from other organisms. *Cabomba* is an autotroph, which will not only produce its own energy source but will also uptake carbon dioxide. Autotrophs also convert carbon dioxide to oxygen and carbohydrates by photosynthesis. The more carbon dioxide that is produced by the *Cabomba*, the more water the water will become acidic is why the pH indicator is used to note the changes of pH of carbon dioxide. That pH will also be added to make the solution more basic, knowing there are three groups will allow the calculation of the amount of carbon dioxide taken up by the *Cabomba*. It all started with this the purpose of this experiment was to determine the amount of carbon dioxide produced by *Cabomba* through photosynthesis in various conditions, measured by the pH method, as well as carbon dioxide. The hypothesis being used was that in certain temperatures, the *Cabomba* plant in either the dark or light conditions would produce less carbon dioxide.

Materials and Methods

100 mL of distilled water was added into each of the five clean beakers. Bubbles were blown through a straw for one minute so the water was saturated in carbon dioxide. 100% of water was added to each of the five beakers. *Cabomba* that weighed approximately 1g was obtained and placed into two out of the three beakers. The two beakers that contained any *Cabomba*, which would serve as the control. One of the beakers was then placed under a lamp, and the other beaker with *Cabomba* in it was placed in the dark, but in the cabinet below the table. The *Cabomba* would stay in the position for 60 minutes. After