

Ap biology photosynthesis lab



**ASSIGN
BUSTER**

Photosynthesis is affected by light intensity, water, and temperature. Plants grow more abundantly because the weather is warm. Carbon Dioxide given off by animals is consumed by plants that replace the oxygen animals take it. Experimentation will help understanding how plants are vital because of the oxygen they release. If leaf disks in the experiment release oxygen, they will undergo photosynthesis and float. If there is no temperature buffer of water, the higher temperature will cause more leaf disks to float at a faster rate. (Experiment Central)

Methods:

This lab required 100 ml of water, 3 grams of baking soda, several leaves, a single hole punch, a plastic syringe with a removable stopper, a beaker large enough to hold 100+ ml of liquid, a beaker large enough to block out the prior, a light fixture, and a thermometer.

This experiment began by preparing 100 ml of bicarbonate solution for each trial. To do this, 3g of baking soda was dissolved into 100ml of water. The bicarbonate served as an alternate dissolved source of carbon dioxide for photosynthesis. Then 12 leaflet disks (leaf chads) were cut for each trial. Single hole punches were used to cut these out. The disks were then placed in the bottom of an empty syringe. As the syringe filled with the bicarbonate solution, the leaf disks were immersed in the solution. A finger was placed over the opening of the syringe, and as the plunger was pulled down it created suction. The goal of this step was to create a vacuum, so the empty air pockets in the leaf chads that made them buoyant were filled with water (so they would sink).

The disks were poured into the 100ml solution, and sank to the bottom. The temperature of the water was recorded. A heat buffer that consisted of a larger beaker filled with water was placed in between the solution and the light fixture, and the light was then turned on. Over the course of 8 minutes the leaf chads underwent photosynthesis and began to float back to the surface of the water. The number of floating disks was recorded each minute and then the process was repeated without the heat buffer. While being repeated without the heat buffer, the temperature was checked every minute and recorded.

Data and Results:

Conclusions:

The rate of photosynthesis was measured by floatation of leaf disks when oxygen was released. The hypothesis was not supported because the leaf disks did not float at a higher rate when the temperature was slightly higher. Figure 1 shows this because the rate of floating leaf disks did not increase as predicted. The change in heat did not affect the amount of floating leaf disks, perhaps due to a large margin of error. The margins for error include the clumps of leaf disks, too much water in the buffer, too many air pockets in the leaves and not having stronger temperatures. A follow up experiment would test the same leaf disks with a stronger heat source. This follow up would most likely support the current hypothesis.