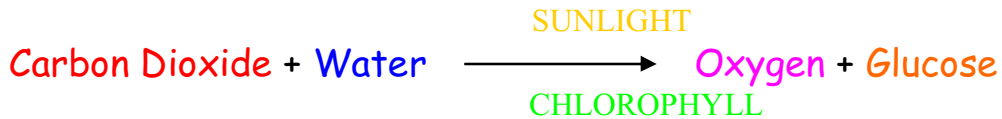


How does light intensity affect the photosynthesis of a Canadian water weed?

Photosynthesis happens in all types of plants, whether on land or in the water. Photosynthesis is a process that plants use every minute in order to survive. They create the food that they need from Carbon Dioxide and Water. Here is the full, balanced chemical equation;



Or the chemical equation:



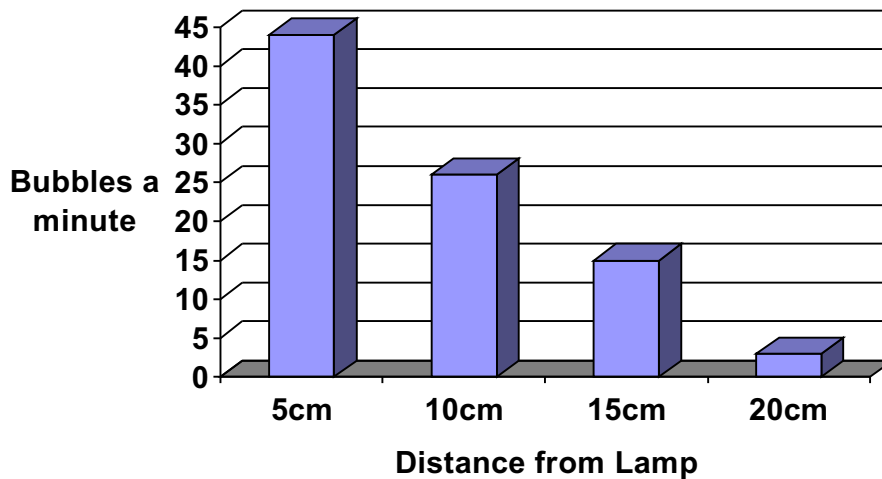
With these equations, we are going to see that at what rates photosynthesis happens in this Elodea.

We intend to use bulbs, to provide the 'sunlight' for our Elodea, if we use any kind of filter, then we would use a blue filter, red filter and yellow. We would not use the green filter, as that would turn the light green. If we turn the light green then the green chlorophyll would reflect the light. We would also have to control the temperature in the beaker full of Elodea, as if the temperature increased too much it would either denature the enzymes, ruining the experiment, or it would make the photosynthesis rates increase massively. To prevent the temperature from changing, one would place a beaker of water in between the light bulb and the beaker of Elodea, so that the light would only be able to alter the temperature of the beaker full of water and not the Elodea one. To make this experiment fair, then you should turn off the room's lights, so that the plant only gets light from our bulb. To stop the plant from getting unnatural Carbon Dioxide, we must put sodium hydrocarbonate in the beaker to absorb it. The reason why we did not take only one reason for each distance could have resulted in me recording an anomaly. So we took

We took some healthy looking Elodea from the large basin and put it in our beaker full of water. I then covered the Elodea with a funnel to catch the Oxygen bubbles coming off it. I then attached the lamp and turned it on. This light imitates the sunlight from which the Elodea will use to contribute to photosynthesis. The Elodea produced bubbles at a steady rate at each different length from the beaker of it. Here are my results:

5cm - 44 bubbles a minute
10cm - 26 bubbles a minute
15cm - 15 bubbles a minute
20 cm - 3 bubbles a minute

Rates of Photosynthesis



There were some things that we could have done, that would have massively improved the fairness of the test and also our results. Since I did my experiment in a room, which held in it another 10 people doing the same experiment, although we shut the curtains, I would still have got light from the other lamps. For an ideal experiment, we would have a completely dark room apart from the one lamp we were using. So that we could keep a constant temperature in the beaker of water, I should, next time, place another beaker of water in between the beaker of water filled with Elodea and the lamp. This would mean that the heat rays would be absorbed by the other beaker. Therefore, it would not increase or even decrease (if the enzymes denature) the speed of photosynthesis. Another problem is that we do not know the concentration of oxygen the bubbles are. We assume that they are pure 100% oxygen but in truth, they have much more in them. If we did the experiment again, then we would notice that the most amount of bubbles would come when the lamp was closest. Then the amount of bubbles would decrease, as you move the lamp further and further away.

If I were to re do the same experiment, then I would include the things in the paragraph above, for example the light intensity or the temperature of the water. I think that by doing the same experiment again, with only a few minor changes would only change the results minimally. I do not think that there would be a HUGE change in the results just because of two slight errors. Using my scientific knowledge, I know that these results would not change much, because in a room, light from other lamps would not affect the Elodea very much, as it would get diluted when travelling through the air. Likewise, I do not think that our beaker of Elodea would have been too badly affected.

As our apparatus, I took one beaker of water, and put our healthy piece of Elodea in it. I then put a funnel over the top of the Elodea so that the bubbles would travel up it. Then I installed a lamp and turned it on to create the 'sunlight.' Then we recorded the distances and the rate that bubbles of oxygen were produced. But of course, before all

this, I shut all the curtains and would if possible turn off all other light sources. So that there is only one light, our lamp.

I think that the experiment would produce very concise and truthful numbers and rates for the amount of bubbles. I do not think that I got any freak numbers, anomalous results. The experiment would also be the same if one was able to do the same for a plant that is outdoors and does not have to be under water. We used an Elodea because it is much easier to collect bubbles, as you can see them. The results would be the same whether you used an outdoor plant or did the test again, including all the precautions to minimalise freak results and other changes.

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