

Title: How Light Affects Photosynthesis.

Aim: My aim was to investigate how light affected photosynthesis.

Prediction: My prediction is that the closer the weed is to the light the faster the photosynthesis as light acts as a catalyst which speeds it up.

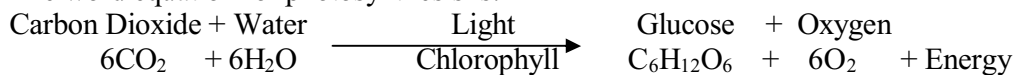
Bibliography: For my work I used the internet and certain science books for info.

Hypothesis: Photosynthesis is a process by which green plants and certain other organisms use the energy of light to convert carbon dioxide and water into the simple sugar glucose. In doing so, photosynthesis provides the basic energy source for virtually all organisms. An extremely important by product of photosynthesis is oxygen, on which most organisms depend.

Factors that affect Photosynthesis

- Light affects the rate of photosynthesis, it is the main energy source, and this is what we are testing in this investigation.
- Carbon Dioxide is a raw material which affects the rate of photosynthesis
- Water also affects the rate of photosynthesis; this water mostly comes from the roots.
- Chlorophyll is the miracle molecule which actually makes photosynthesis

The word equation for photosynthesis is:



Things needed for Photosynthesis

- Light
- Carbon Dioxide
- The right Temperature

Apparatus: For my experiment I will need:

- A boiling tube
- Water
- A spatula
- Sodium Hydrogen Carbonate
- A beaker (200ml)
- A lamp (240v)
- Pond weed
- A ruler
- A stopwatch

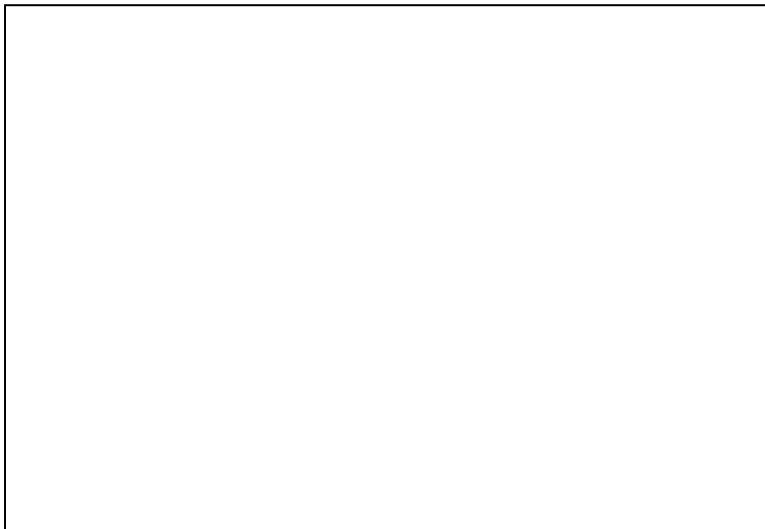
Method:

1. First I took a boiling tube and I filled $\frac{3}{4}$ of it with water,
2. Then I added $\frac{1}{2}$ a spatula of sodium hydrogen carbonate to the water and mixed it, this is so it has carbon dioxide in the water.

3. Then I placed a piece of pond weed inside the boiling tube and left it for 1 minute to let it get used to its surroundings.
4. Then I counted the number of oxygen bubbles given off in 1 minute.
5. Then I placed the lamp 10cm away from the boiling tube and counted the number of bubbles given off in 1 minute and done this for extra 10cm each time.
6. Then I repeated the experiment for any mistakes.

Results:

Distance from lamp	Number of oxygen bubbles given off in 1 minute		Average number of oxygen bubbles
	Experiment 1	Experiment 2	
0	4	2	3
10	84	76	80
20	72	64	68
30	63	58	60.5
40	54	46	50
50	50	32	41
60	43	28	35.5
70	35	22	28.5
80	20	18	19
90	4	6	5
100	3	1	2



Fair test: I made the experiment a fair test by putting the same amount of sodium hydrogen carbonate, the same pond weed, the same amount of water, same amount of light, all these are constants. I kept to my plan during the experiment; the only variable I had was the distance from the light.

Safety: I made sure I was working carefully by handling the glass safely because it is dangerous and tried also not to spill its contents as it is quite dangerous if it goes into your eyes.

Analysis: My results show that as the light increases the rate of photosynthesis increases for example when the lamp was 10 cm away from the lamp there was 80 bubbles and when the lamp was 20cm away there was 68 bubbles. I had some anomalous results like when there was no light there were 4 oxygen bubbles, where as when the lamp was 100cm away there were 2 bubbles. This could be due to other factors that affect the rate of photosynthesis for example the amount of carbon dioxide in the atmosphere or the temperature. My results agree with my prediction that was; the closer to the light the faster the rate of photosynthesis. My graph is a straight-line graph with a negative correlation.

Conclusion: My investigation has shown me that the more the light, the faster the rate of photosynthesis, my results don't show me a definite conclusion because there are more factors that affect the rate of photosynthesis like the amount of carbon dioxide in the atmosphere and the temperature. I could improve my investigation by using a syringe to measure the volume of oxygen given off rather than counting the bubbles because they can be in different sizes. Also I can use others factors that affect the rate of photosynthesis like temperature by having the water at different temperatures and also the concentration of carbon dioxide by controlling how much sodium hydrogen carbonate I put in.