



11. Oxygen from plants

Team Nitro

Reviewer: Mihnea Grigore

Summary

Problem statement: Suggest an experimental method to measure how much oxygen is produced by a green plant.

Summary:

The reporter has proposed an experimental method to measure the quantity of oxygen produced by a selected aquatic plant and actually record it.

The Report

- Pros

- + explained profoundly the photosynthesis equation
- + talked about both photosynthesis and respiration
- +varied the distance from the light source
- +data presented in graphs
- +explained why she chose her method and the lacks of the other methods

- Cons

- did not explain **why** she chose **Ambulia**
- did not say from **where** the **carbon dioxide** was taken (example: did not say if she used a carbon dioxide fertilizer) **for the photosynthesis** to happen
- Only** used a **white light bulb**, did not explain the influence of different wavelengths on the production of oxygen (ex: UV light)
- Did **not explain why** the **oxygen generation tops** out at a certain point
- Did **not** talk about the **composition of the water** (minerals and CO2 concentration)
- Did **not** have **hypotheses**
- did **not measure** the **oxygen quantity** in grams or number of moles;
- used **volume as unit of measure**, which depends on the **pressure** and **temperature** of the environment;
- did not take the oxygen bubbles on the beaker walls into consideration;

The Opposition

- Pros

- + highlighted that the colour of the light (different wavelengths) were't tested
- +observed that the theory was consistent
- +highlighted the lack of proof of the experiment (the sensors used) and the lack of environmental parameters
- +brought into the discussion several parameters that were not studied in the reporter paper

- Cons

- did not ask from where the carbon dioxide was taken and if the reporter used any fertilizer
- did not ask/take into consideration that some bubbles of oxygen stuck to the beaker's sides
- time management was poor
- did not observe that the quantity of oxygen was not exprimated in mass or number of moles;

The discussed topics

- Opponent question

- 1) Did you take the environmental parameters into consideration?
- 2) Where did you conduct the experiments?
- 3) Do you think the color of the light matters?
- 4) What was the temperature of the room?
- 5) Did the light bulb heat up? (the question of the opponent is a little irrelevant, since the bulb is placed away from the beaker and it does not influence thermally)
- 6) Why did you use an aquatic plant?
- 7) Why did you use the same plant for all the experiments
- 8) What do you think would've happened if you used green light?

- Reporter answer

- 1) Yes.
- 2) In her apartment.
- 3) yes (we agree with the reporter, although the reporter did not study this aspect in the paper)
- 4) 23 degrees Celsius
- 5) No because the bulb was LED
- 6) It was easier to perform the experiment using an aquatic plant
- 7) Because it would give more consistent results.
- 8) White lights contains the whole spectrum of colors (it is a correct statement, but it does not answer the question)