

Edexcel Biology IGCSE

2.45B: Gas Exchange in Plants

Practical notes

This work by [PMT Education](https://www.pmt.education) is licensed under [CC BY-NC-ND 4.0](https://creativecommons.org/licenses/by-nc-nd/4.0/)



Gas Exchange in Plants

Aim

Investigate the effect of light on net gas exchange (given by the carbon dioxide production) from a leaf, using hydrogen-carbonate indicator.

Equipment

- a boiling tube
- pondweed
- a light source
- a ruler
- a test tube rack
- a stopwatch
- a glass rod
- measuring cylinder
- bicarbonate indicator solution
- bicarbonate indicator colour standard chart

Method

1. Place a test tube rack containing a boiling tube 10 cm away from the light source, measured using the ruler.
2. Fill the boiling tube with a fixed volume of bicarbonate indicator.
3. Place the cut pondweed into the boiling tube with the cut end at the top. Gently push the pondweed down with the glass rod.
4. Record the initial colour and pH (using the colour standard) of the solution and start timing.
5. After 30 minutes, record the final colour and pH (using the colour standard) of the solution.
6. Repeat steps 1-5 for 3 more distances (20, 30, 40 cm) of the boiling tube from the light source.

Controlled variables

- Volume of hydrogen carbonate indicator
- Species of pondweed
- Time
- Temperature

Distance between pondweed and light source in cm	Final Colour	Final pH

Potential Hazards

The light source may get hot.

Keep water away from electrical outlets and wiring.

