

Photosynthesis

The Background

All around us plants take in carbon dioxide and release oxygen into the atmosphere. Plants do this through a process called photosynthesis. Photosynthesis converts light energy from the Sun, into chemical energy that can be later released to fuel the plant. In the process oxygen is also released. Here is an experiment where we can prove that oxygen is indeed being released by plants during photosynthesis.

Did you know?

The first scientific evidence for photosynthesis was found in the late 18th Century by chemists Joseph Priestley and Jan Ingenhousz. They noticed that a plant could revive a mouse from suffocation in an enclosed jar, using sunlight.

The Experiment

Goal

- Prove photosynthesis has occurred and that oxygen is a product of photosynthesis.

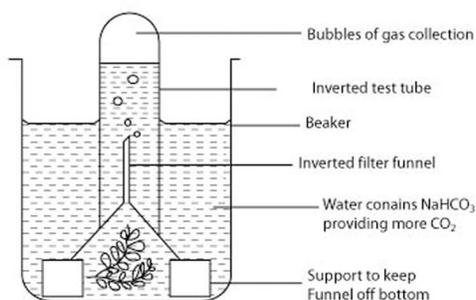
Materials

- Beaker
- Short Stemmed Funnel
- Test Tube
- Water Plant (e.g Elodea or Spirogyra)
- Sodium Bicarbonate (NaHCO_3) *optional*
- Glowing Splint *optional*
- Blocks (keep funnel off the bottom of the beaker)
- Light Source

Procedure

1. Cut the stem of the water plant at an angle and gently crush it.
2. Place the prepared water plant in the beaker
3. Place the funnel over the water plant and fill the beaker with water. (You can add sodium bicarbonate to the water to increase the available CO_2).
4. Fill the test tube with water. Place a finger over the test tube and invert the test tube so it positioned over the end of the funnel. Put a mark on the test tube to record the starting air level.
5. Place the jar in sunlight. Check for evidence of bubbles. If no bubbles are present after 5 minutes you may need to recut the stem on the water plant.
6. Once bubbles are flowing leave the apparatus under light for 24 hours. Record level of gas in the test tube by making another mark on the test tube.
7. Setup an identical apparatus and leave it in the dark for 24 hours. Record the level of gas in the tube and compare to the plant in the sunlight.

If you would like to prove the gas is oxygen. Take the test tube and insert a glowing splint. We recommend this teacher is done only by the teacher as a demonstration. The splint bursting into flame is an indication of the presence of oxygen.



The Science

Photosynthesis is a process plants use to make food using the sun's energy. Plants capture the sun's energy using a chemical called chlorophyll. This provides the energy need to combine water and carbon dioxide into sugar. Oxygen is also created through photosynthesis and released through a plant's stomata.

