Photosynthesis in Action

Photosynthesis is the process that plants, algae, and some bacteria use to make food. Carbon dioxide and water are turned into glucose and oxygen. This important chemical reaction only occurs with the presence of light to start the reaction. Try these two easy experiments to explore the inputs and outputs of photosynthesis.

Key Terms

Photosynthesis- process that converts light energy into chemical energy in the form of sugars
Chloroplast- organelle inside plant cells that performs photosynthesis
Chlorophyll- green pigment inside chloroplasts that absorbs light energy and turns it into sugars
Pigment- a substance that gives color

Photosynthesis Equation

Sunlight
↓
Carbon Dioxide + Water → Glucose + Oxygen

What does it mean?

Inside the chloroplasts, the pigment chlorophyll absorbs light energy from the sun. The energy from the sun is what drives the reaction between carbon dioxide and water inside the plant. The outputs, or results of the reaction, are glucose (which is food for the plant) and oxygen. Without sunlight, this reaction can't happen.

Part One- Observing Outputs

Materials

Clear glass bowl
Water
Large leaf (must be fresh cut/picked, be sure to ask permission before taking a leaf off a plant)

Procedure

1. Fill a clear glass bowl with water
2. Place your large, freshly cut/picked leaf into the bowl. The leaf should be fully submerged.
3. Place the bowl in a sunny spot (outside or in a bright window will do) and leave for one hour.
4. Check your bowl after one hour, what do you see?

Photosynthesis in Action

Guiding Questions

1. Think back to your photosynthesis equation. The bubbles are a result of the plant photosynthesizing, what do you think the bubbles are?
2. What do you think might happen if you didn't put the bowl in a sunny spot?

Part Two- Importance of Sunlight

Materials

A medium sized houseplant or backyard plant with large, broad leaves
Paper clips
Construction paper
Scissors
Observation Log (Provided)

Procedure

1. Using your paper clips, attach pieces of construction paper to a few of the leaves on the plant. The paper should completely cover the selected leaves. Be sure to leave some leaves uncovered
2. Check your plant each day for two weeks, and observe the differences between the covered and uncovered leaves. Do not remove the construction paper, just check underneath it. Be sure to take notes in your observation log. It could also help to draw pictures to accompany your observations.

Guiding Questions

1. On the first day you checked your plant, did you notice a difference between the covered and uncovered leaves?
2. How long did it take for the effect of the covering to become visible?
3. Did you notice any difference in color between the covered and uncovered leaves. What was the color of the uncovered leaves? Why might that be?
4. Besides the color, what other physical differences did you find between the leaves? When did you start to notice those differences, early on or later in observation?