

Name _____
Date _____ Per _____

Lab on Photosynthesis

This lab will involve looking at the various processes involved in photosynthesis, especially the light reactions. You will measure the absorbance of chlorophyll extract in order to see which wavelengths of light that plants absorb the most. The machine that does this is called a Spectrophotometer. This is a machine that measures wavelengths of light that are absorbed by pigments. You will also look for evidence of photosynthesis in leaves. You will do this by punching out small round disks from fresh leaves and shine light on them. After removing all air from the disks you will place them in front of a light and as they photosynthesize and break down water they will give off oxygen. The oxygen is released and trapped in the disk the disks will raise.

Materials:

Spectronic 20 Spectrophotometer, cuvettes, 80% Acetone,
Buckner funnel, filter paper,

Procedures:

Part I ANALYSIS OF CHLOROPHYLL EXTRACT OPTICALLY

1. Get a small hand full of fresh leaves. Place these in a mortar and pestle and grind these in some 80% acetone. Let stand for about 5 min and grind again. Keep grinding and adding acetone until all leaves are used.
2. Filter this mixture using a buchner funnel and filter paper.
3. Use the Spectrophotomer to take absorbance every 10nm from 400-800nm. Graph this information. Use acetone as your reference test tube. We will do this in groups of 4 and share information overall.

Watch the demo. Record procedures and then run your sample.

Part II Rate of Photosynthesis

1. Obtain fresh leaves from the bushes outside.
2. Cut disks using the cork borers.
3. Place them into a syringe filled with water.
4. Place your finger over the tip of the syringe and pull backwards creating a vacuum. Hold for a while and watch the bubbles develop on the leaves.

5. Release the plunger and shake the syringe to see if the disks sink. You may need to repeat this for a few times.
6. place them into a cylinder and place in front of the light. Record rate over time. As they break water down they release oxygen that gets trapped inside the leave and makes them less dense.
7. Develop a controlled experiment that explores a factor that might influence the rate of photosynthesis.