Leaf Pigment Experiment

Have you ever wondered why leaves change colors in the fall or why some leaves are green, and others are red, orange, or yellow? Well, that's because of the magical pigments hidden inside the leaves! In this experiment, we'll collect different leaves from plants, and with a special trick using rubbing alcohol, we'll unlock the secret colors hidden within them.

Materials

- Variety of fresh leaves from different plants
- Several small containers (one for each leaf)
- Isopropyl or rubbing alcohol
- Spoon
- Coffee filter paper or chromatography paper

Science Behind the Experiment

Leaves contain various pigments, such as chlorophyll (green), carotenoids (orange and yellow), and anthocyanins (red and purple). These pigments play crucial roles in the process of photosynthesis and contribute to the diverse colors we see in leaves.

When you place a leaf in rubbing alcohol, the alcohol acts as a solvent, meaning it can dissolve and carry the pigments. As the alcohol moves through the leaf, it extracts the pigments from the leaf cells. Each pigment has different solubilities, so it will move at different rates with the alcohol, resulting in different colored bands on the paper.

Step 1: Gather leaves

Collect a variety of fresh leaves from different plants. Choose leaves with vibrant colors to get more interesting results. Make sure the leaves are healthy and not damaged.

Step 2: Prepare leaf extracts

Place each leaf in a separate small cup or container. Add a small amount of rubbing alcohol or isopropyl alcohol to each cup, covering the leaf. Gently crush the leaves using a spoon or pestle to release the pigments.

Step 3: Observe the colors

Allow the leaves to soak in the alcohol for about 30 minutes to extract the pigments. You will notice the alcohol taking on the colors of the pigments from the leaves.

Step 4: Paper Chromatography

Take a strip of coffee filter paper or chromatography paper and dip one end into each of the leaf extract solutions. Observe and compare the different pigments present in each leaf extract.