Lab Activity Title:	Just Before the Leaves Turn Color in the Fall
Submitted by:	Pat Shaw
Recommended Grade Level:	Pre-School – Grade 5
Discipline:	Life Science
Торіс:	First Day of Fall, Living Systems
Time Requirement:	90-120 minutes

Required Materials:

- A variety of fresh green leaves as described
- One small jar for each student
- Ethanol (rubbing alcohol)
- Hot water in a flat pan
- Strips of filter paper

National Science Standards Alignment

Can be used to address the following National Science Content Standards in life science: K-5 Abilities necessary to do scientific inquiry and Understanding about scientific inquiry; 5–8 Structure and Function in Living Systems and 5–8 Regulation and Behavior.

Procedure

What is hiding behind the green?

- 1. Just before leaves turn colors in the fall, my students go out and get a variety of green leaves –I try to steer them in their choices (assuring all colors will be represented). In the classroom, the children are divided into teams: RED i.e.maple (anthocyanins), BROWN i.e. oak (tannins), ORANGE i.e. sassafras (carotinoids), and YELLOW i.e. ginkgo (xanthophylls).
- 2. Shred the leaves and place them into small jars with lids. Add enough alcohol to just cover the leaves. Loosely cover the jars and set them into a shallow pan containing an inch or so of hot tap water.
- 3. Let the jars sit in the hot water for at least a half hour. Replace the hot water as it cools and swirl the jars from time to time. The jars are 'done' when the alcohol has picked up color from the leaves. The darker the color, the brighter the chromatogram will be.
- 4. Place one strip of filter paper or chromatography paper into each jar, with one end in the alcohol and the other outside of the jar.
- 5. As the alcohol evaporates, it will pull the pigment up the paper-- separating them.
- 6. After 30-90 minutes (or until the desired separation is obtained), remove the strips of paper and allow them to dry.

*Note: This lab activity was submitted to Ward's Science by a third party educator for the sole purpose of sharing content and ideas with other educators. Ward's Science is not affiliated with the author of this lesson plan. All product recommendations made by Ward's Science are suggestions for completion or extension of the activity or topics addressed, but are not required to complete the activity.

7. Identify which pigments are present for each team. Why does everybody have a green pigment?

Recommended Ward's Science Materials

<u>Ethanol</u>	<u>Item No. 8183501</u>
<u>Student Filter Paper</u>	<u>Item No. 6165512</u>
<u>Altay® Monocot Leaf Model</u>	<u>Item No. 813370</u>
<u>Why Do Leaves Change Colors? Book</u>	<u>Item No. 4728913</u>
Sun and Shade Leaves, Microscope Slide	<u>Item No. 919930</u>

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