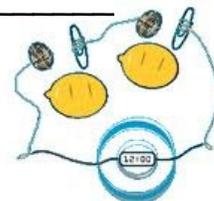


Name: _____ Class: _____ Date: _____

Fruity Cells - Featuring the Electric Lemon



Learner Outcomes:

- Investigate and evaluate the use of different electrodes, electrolytes and electrolytic concentrations in designing electrical storage cells.

Key Terms:

Electrode	Dry cell	Secondary cell
Electrolyte	Wet cell	Rechargeable cell
Electrochemical cell	Primary cell	Voltage

Background Information: An electrochemical cell is a device that produces a steady electrical current from chemical reactions. The electrochemical cell forces the movement of electrons through a conducting electrolyte and between two conducting metals, called electrodes. One type of electrochemical cell is called a wet cell. This type of cell uses a liquid electrolyte that is usually an acid. Many of the earliest cells were wet cells that used electrolytes from simple materials such as seawater and fruits and vegetables.

Research Question: How effective are fruits and vegetables as electrolytes in a simple wet cell?

Materials:

zinc (Zn) metal strip	2 wires with alligator clamps	Various Fruits / veggies
copper (Cu) metal strip	Voltmeter	

Procedure:

1. Predict which fruit or vegetable will produce the largest voltage.
2. Choose one fruit or vegetable. Insert the two different electrodes into the fruit about 1 cm apart. Use the connecting wires to connect the electrodes to the voltmeter. Record the voltmeter reading.
3. Repeat step 2 with different fruits and vegetables to test your prediction.

This investigation / activity has been adapted from:

Mah K, Martha J, McClelland L, et al. *Science in Action 9*. Toronto, ON: Addison Wesley.

Observations:

Analysis:

1. Which were better electrolytes, fruits or vegetables? Why?
2. What do you think would happen if you reversed the connections on the electrodes? Explain.
3. What do you think would happen if you used the same type of metal for both electrodes? Why?

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4. Would it be possible to use two or more fruits linked together to produce a battery of higher voltage? Draw a diagram to illustrate how this might look, and predict the voltage you would expect.

Conclusion:

Extension:

Try different configurations to get the maximum voltage from the materials supplied by your teacher.

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