



ALL AGES

MAGIC TRICKS



Use fun science experiments to introduce campers to fruits and vegetables!

These activities should pique their interest and help them learn about fruits and vegetables.

Be creative to get campers from your group involved in experiments based on their age, skill level, and interests.

EXPERIMENTS



EXPERIMENT 1:
Red cabbage's superpower!



EXPERIMENT 2:
Lemon volcano!



EXPERIMENT 3:
Fruit explosion!



EXPERIMENT 4:
Invincible apples!





ALL AGES
DURATION: 30 MINUTES

EXPERIMENT 1

RED CABBAGE'S SUPERPOWER!

Did you know you can color rice vermicelli using the pigment in a red cabbage? Have fun transforming the vermicelli and then...bon appétit!



MATERIALS

- About 300 g dry rice vermicelli
- About 300 ml (1¼ cup) lemon or lime juice
- 6 red cabbage leaves
- 1.5 L (6 cups) water
- 2.5 ml (½ tsp) baking soda
- 1 large pot
- 1 colander
- 1 pair of tongs
- 5 big bowls or plates
- 5 spray bottles

** Make sure you have access to a hotplate.*

DESCRIPTION

1 Prepare

- Split up the campers from your group into 5 teams.
- Assign a workspace to each team.
- Put 60 ml (¼ cup) lemon or lime juice in each spray bottle and give one bottle to each team.

2 Start the experiment

- Bring the cabbage leaves to a boil in water, then cover and let sit for 5 minutes.
- Take the cabbage leaves out of the water using tongs.
- Add the baking soda to the pot and stir thoroughly. The water should be blue.
- Add the rice vermicelli to the colored water and let it soak for 5 minutes.
- When the vermicelli is cooked, drain it thoroughly and rinse it in cold water.
- Put equal portions of cooked vermicelli on each of the 5 plates.
- Ask the campers to return to their seats in teams.

Go through these steps as a demonstration. If your group has older kids, get them involved.

You can reuse the cabbage leaves! To learn to make tie dye with red cabbage leaves, check out the [Discovering local fruits and vegetables](http://portail.treplinsante.ca/en) activity on the Power Up portal (portail.treplinsante.ca/en).





EXPERIMENT 1 RED CABBAGE'S SUPERPOWER!

DESCRIPTION (CONTINUED)

3 Continue the experiment in teams

- Give a plate of vermicelli to each team.
- Ask the campers to take note of the current color of the vermicelli.
- Ask them to spray the vermicelli with lemon or lime juice. It should instantly change color.

The kids can try the vermicelli if they want, and you can also reuse it in a recipe!

*Check out the Power Up portal (portail.trempainsante.ca/en) for two vermicelli recipes: **Tofu spring rolls**, **Pork & edamame vermicelli salad**. Colored vermicelli will add a colorful touch to your dishes!*



4 Review the activity

- **Ask the campers** to describe what they see and what they think happened.
- **Explain what happened:**
 - › Red cabbage has anthocyanins, pigments that can change color if they come in contact with an acid or a base.



Can you give examples of acidic and basic foods?

For instance, lemons, oranges, strawberries, vinaigrettes, and soft drinks are acidic, while baking soda, broccoli, cucumbers, potatoes, carrots, bananas, and dark chocolate are basic.

- › When red cabbage is boiled, anthocyanins dissolve in the water. When an acid is added, the water turns blue. If a base is added, it turns pink.
- › The vermicelli absorbs anthocyanins when placed in the water, giving it the same power as red cabbage (i.e., to change color on contact with an acid such as lemon juice).
- **Ask questions to see what the campers have learned:**
 - › Could you redo the experiment with something other than vermicelli (e.g., other types of pasta like spaghetti, macaroni, etc.)? What foods could you use?
 - › Did you know about red cabbage before this? What recipes can you make with it?
 - › If you tried the vermicelli, did you like it? How would you describe the taste?
 - › What have you learned from this activity?



ALL AGES
DURATION: 15 MINUTES

EXPERIMENT 2

LEMON VOLCANO!

Turn a lemon into a volcano!



MATERIALS

- Lemons (1 for every 2 campers)
- Knives (1 for every 2 campers)
- Bottles of red food coloring (roughly 1 for every 4 campers)
- Small bowls (roughly 1 for every 4 campers)
- Baking soda
- Spoons (1 per camper + 1 for each small bowl)
- Plates (1 per camper)

DESCRIPTION

1 Prepare

- Assign a workspace to each camper.
- Ask the campers to pair up with the person next to them, and then hand out the lemons, knives, spoons, and plates.
- Ask each team to remove both ends of the lemon and then cut it in half so every camper has half a lemon.
- Prepare small bowls of baking soda and place a spoon in each bowl.
- Place bottles of food coloring and bowls of baking soda throughout the workspace so each camper has access to them.

2 Do the experiment

- Ask each camper to dig out a little of the inside the lemon with the spoon.
- Ask them to put 5 drops of food coloring in the hole.
- Ask them to then put a spoonful of baking soda in the hole, stir it a bit with the spoon, and watch what happens.

The lemons containing baking soda can be reused to kill odors (in the fridge, etc.).

3 Review the activity

- Ask the campers what they think happened.
- Explain what happened: When the lemon (acid) came into contact with the baking soda (base), an acid-base reaction created carbon dioxide gas, which caused small bubbles to form.



*Where can carbon dioxide be found?
In the air and in carbonated water (it's what makes it fizzy)!*

- Ask questions to see what the campers have learned:
 - > Would you like to do this experiment again at home?
 - > What other fruits could you use to do this experiment? (e.g., citrus fruits like limes, oranges, etc.)
 - > What have you learned from this activity?





ALL AGES
DURATION: 30 MINUTES

EXPERIMENT 3

FRUIT EXPLOSION!

Make fruit juice droplets that burst in your mouth!



MATERIALS

- Powdered unflavored gelatin* (about 4.5 g or 6.5 ml per camper**)
- Oranges (1 for every 2 campers in order for each camper to have about 30 ml of orange juice)
- Cold water (15 ml or 1 tablespoon per camper)
- 1.25 L (5 cups) canola oil
- Small bowls (1 per camper)
- Spoons (1 per camper)
- 10 glasses
- 5 kitchen squeeze bottles or pipettes
- 5 strainers
- 1 knife
- 1 fork
- 2 large bowls (of which 1 is microwavable)
- 1 funnel
- 1 measuring cup with a capacity of 500 ml (2 cups)

** You can also use agar-agar.*

*** Multiply this quantity by the number of campers in your group to see how much gelatin in total your group will need. Gelatin powder is usually sold in 7 g packets, so a group of 15 campers would require about 10 packets.*

DESCRIPTION

1 Prepare

- Pour one cup canola oil into each of the five glasses, then put the glasses in the freezer to cool the oil.
- Split up the campers from your group into five teams and assign a workspace to each team.
- Cut the oranges in half. If the campers are old enough, they can help cut the oranges.
- Place half an orange, a spoon, and a small bowl in front of each camper.





EXPERIMENT 3 FRUIT EXPLOSION!

DESCRIPTION (CONTINUED)

2 Do the experiment

- Ask the campers to squeeze the juice from their orange halves into the small bowls. They can use their spoons to help with this.
- Take the large microwavable bowl around to each camper and ask them to pour their orange juice into it.
- In the other large bowl, use a fork to mix the gelatin thoroughly with cold water (you can use the measuring cup to add the proper amounts of water and gelatin) and then let the mixture set or gelatinize for 3 minutes.
- While the mixture is setting, heat the orange juice in the microwave for about a minute until it's very hot but not boiling. If needed, reheat it a bit more until it's the right temperature.
- Pour the heated juice over the gelatin mixture and stir with a fork until the gelatin is fully dissolved. Let the mixture cool for 5 to 10 minutes until it's lukewarm.
- While waiting for the mixture to cool, give an empty glass and a strainer to each team.
- Once the juice/gelatin mixture is lukewarm, use the funnel to pour equal parts of it into the five squeeze bottles.
- Give one squeeze bottle and one glass of cooled oil to each team.
- The campers will then put small drops of juice in the glass of cooled oil. The droplets should solidify on contact with the oil.
- Once they've created the juice drops, the campers will pour the oil through the strainer into the empty glass.
- They can then gently rinse the solidified drops in cold water and sample them with their spoons.

3 Ask the campers for feedback

- Would you like to do this experiment again at home?
- Would you like to try a different flavor? If so, which?
- What foods could you eat this fruit caviar with (ice cream, fruit salad, yogurt, etc.)?
- Why do you think the juice drops need to go in oil instead of water?
A: Because the juice/gelatin mixture is made with water, and oil and water don't mix. If you put the juice drops in water they'll dissolve.
- What have you learned from this activity?



Do you know what caviar is? It is salted sturgeon eggs that you can eat! They look like small beads, a bit like the fruit juice drops you made.

You can also do this experiment with fruit-flavored or herbal water! Just make sure the flavors are concentrated enough.





ALL AGES
DURATION: 30 TO 45 MINUTES

EXPERIMENT 4

INVINCIBLE APPLES!

Explore different ways to keep apples from turning brown!



MATERIALS

- 300 ml (1¼ cup) vinegar
- 900 ml (3¾ cup) water
- 300 ml (1¼ cup) lemon juice
- 125 ml (½ cup) honey
- 5 ml (1 teaspoon) salt
- 300 ml (1¼ cup) carbonated water
- 250 ml (1 cup) baking soda
- 5 apples*
- 5 knives
- 5 pencils
- 40 small bowls or glasses
- 40 Post-it notes

** Be sure not to use Cortland apples because they don't brown when exposed to air. Granny Smith apples shouldn't be used either because they brown very slowly*

DESCRIPTION

1 Prepare*

- Split up the campers from your group into 5 teams and assign a workspace to each team.
- Prepare 5 bowls of vinegar, 5 bowls of water, 5 bowls of lemon juice, 5 bowls of water and honey, 5 bowls of salt water, 5 bowls of carbonated water, and 5 bowls of baking soda. Each of the 35 bowls should have enough of the ingredient to cover an apple wedge.
- Give a bowl of each ingredient, an empty bowl, a knife, and an apple to each team.

**If the campers are old enough, they can help you prepare.*

2 Do the experiment

- Ask each team to cut its apple into 8 wedges and put one wedge in each bowl.
 - Let the apples react for at least 15 to 30 minutes, during which you can ask the campers to guess what ingredient will best keep them from turning brown. You can also ask if they think the ingredients will affect how the apples taste.
- Check out the [Discover Local Fruits and Vegetables kit on the Power Up portal \(portail.tremplinsante.ca/en\)](http://portail.tremplinsante.ca/en) for apple-themed activities to keep kids busy.*
- When the time is up, ask the campers to observe the apple wedges.



EXPERIMENT 4 INVINCIBLE APPLES!

DESCRIPTION (CONTINUED)

3 Review the activity

- Ask the campers what they think makes apples turn brown.
- Explain the phenomenon of apple browning:
 - › Apples have molecules called polyphenols.
 - › When you bite or cut into an apple, polyphenols are exposed to the air and this causes an oxidizing reaction.
 - › When polyphenols mix with oxygen, a new molecule called orthoquinone is produced.
 - › When orthoquinone molecules are created in apples, they bind to form a compound called melanin.
 - › Melanin is a pigment that gives the apple its brown color.
- Which ingredient worked best to keep the apples from browning? Why?
- Explain how we can keep apples from turning brown:
 - › Acids (lemon juice, vinegar, soft drinks, etc.) and bases (baking soda, etc.) reduce browning by slowing oxidation.
 - › Water prevents browning by keeping oxygen away from polyphenols in the apple.
 - › Salt can also reduce browning by slowing oxidation.
- Which piece of apple tasted best? Which was the worst? Why?
- What have you learned from this activity?



*Did you know our bodies also have melanin?
It's what colors our skin and our hair!*

Check out the Taster activity on the Power Up portal (portail.tremplinsante.ca/en) for fun, instructive ways to enjoy apples using all five senses.

