Edible Gel Electrophoresis

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In devel.

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ABSTRACT

This protocol is designed for use with food-safe materials. It may be used to illustrate principles of gel electrophoresis for children, or as a party novelty for scientifically-minded adults. It is currently a work in progress and will be updated as necessary. Currently different colors of food dye will run for different times but will not form distinct bands.

PROTOCOL STATUS

In development

We are still developing and optimizing this protocol - currently time for electrophoresis and gel/buffer concentration need modification.

MATERIALS TEXT

- 1 pack edible gelatin (jelly/Jell-O). Preferably a light color; colorless “make your own flavor” variants are best
- Heat-safe bowl
- Hot water
- Rectangular plastic takeaway container
- Refrigerator
- Butter knife
- 2x D batteries
- Aluminum/aluminium foil
- Sticky tape
- Food dye
- Carbonated beverage of choice (clear lemonades are best)

SAFETY WARNINGS

This protocol uses hot water. Handle safely.

Gelatin Preparation

1 Prepare gelatin in heat-safe bowl by adding only the quantity of hot water recommended on the packet to the gelatin. This should be approximately half of the required water depending on gelatin brand. Stir until dissolved.

2 Pour gelatin into takeaway container until 1.5cm/0.5 inches deep.

3 Place in refrigerator until set.

4 Remove from refrigerator.

Food Dye Setup

5 Take butter knife. Make wells by gently pushing down with the tip of the butter knife at one end of gel. Wells should go approximately halfway into the “agar”.

6 Place one or two drops of food dye into each well. Put different colors in each well.

Electrophoresis setup

7 Take two strips of foil. They should be as long as the roll is wide and should themselves be about an inch wide. Fold them into flat, thin strips.

8 Tape one foil strip to the positive terminal of one battery and the other foil strip to the negative terminal of the other battery.

9 Lay the strips down at either end of the gel. The negative end should be at the end with the wells and the positive at the end without.

Run the gel!

10 Pour buffer carbonated beverage into container. Water line should be 1cm above the gel.

11 Allow gel to run. Do not allow gel to over-run. 10 minutes should be sufficient, but you will see the color travel.

12 Remove gel carefully. Place on white paper or fondant and observe results.

13 Be tidier than the author of this protocol and post photos to Instagram (@eleutherophobia.h and @mingy2310) or Twitter (@h_zurcher and @realMingChia)