



YELLOW #5 EXPERIMENT

FOR SAFETY: This experiment uses raw meat. Please clean and disinfect any surfaces, utensils, or other objects used when the experiment is complete, and dispose of all meat in the trash. Do not consume. Using dye in ways other than specifically described in these instructions may be harmful. Always follow the instructions carefully and exercise caution. Do not consume the dye, apply it to people or animals, or otherwise misuse the materials.

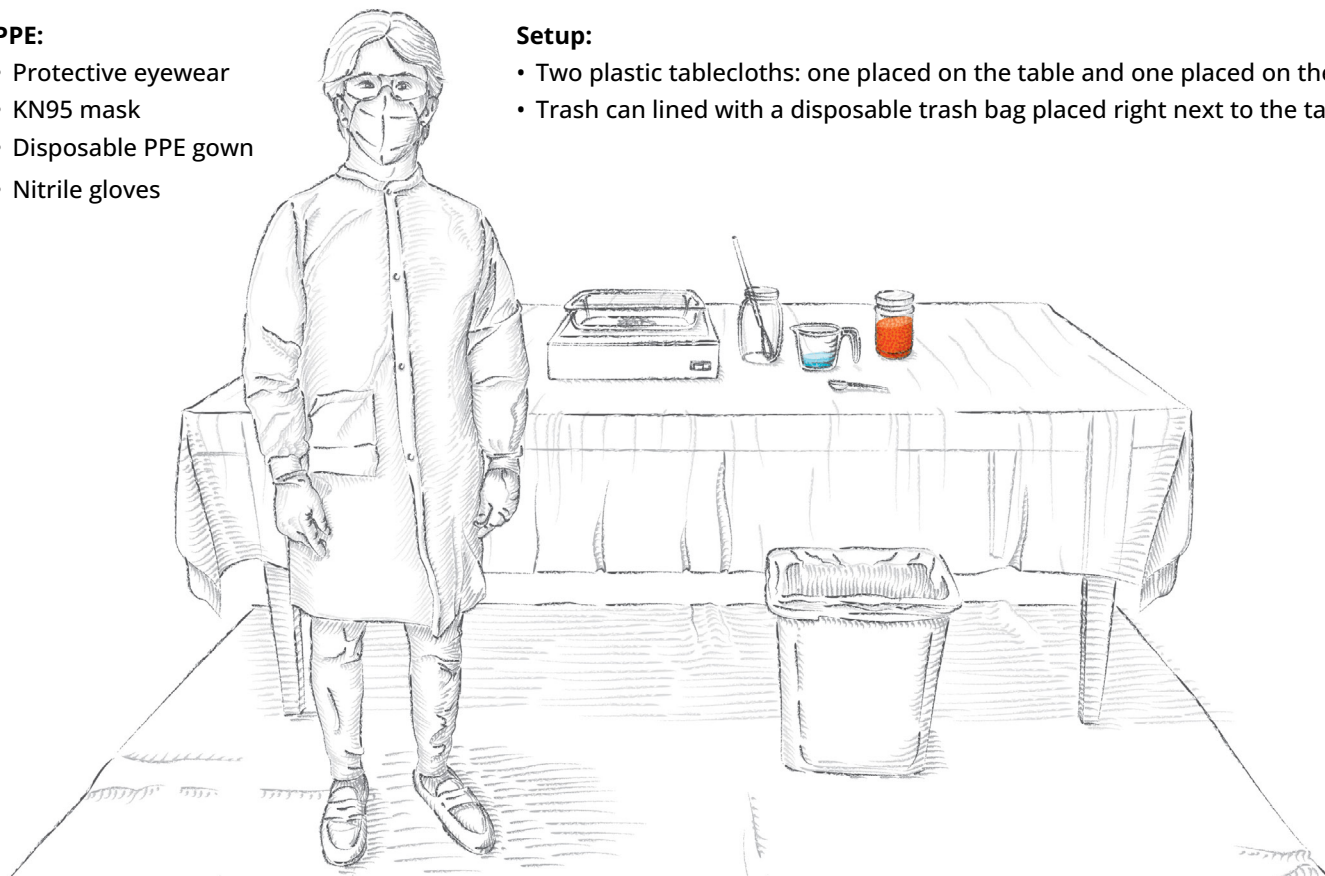
Personal protective equipment (PPE) and experiment setup

PPE:

- Protective eyewear
- KN95 mask
- Disposable PPE gown
- Nitrile gloves

Setup:

- Two plastic tablecloths: one placed on the table and one placed on the floor.
- Trash can lined with a disposable trash bag placed right next to the table.



Experiment materials

- 1 cup (3.69 oz or 105 g) FD&C food color Yellow #5.
- 1 ½ cups water (10.1 oz or 300 mL).
- Printout of an image (preferably not a photo, but a graphic or logo).
- 1 piece of thinly sliced chicken breast up to 3 mm thick and large enough to cover the image on the printout.
- 1 glass dish deep enough to fully submerge chicken in solution (11" L x 7" W or smaller works best).*
- 1 [light table](#).
- 1 glass measuring cup.*
- 1 tablespoon (0.5 oz or 14.8 mL).*
- 1 jar for mixing the dye solution.*
- 1 metal whisk or glass stirrer.*
- Dishwashing liquid, bleach and paper towels for cleanup.
- **Optional:** Resealable plastic bags, extra garbage bags, scotch tape.

*Equipment should be items that can be disinfected.

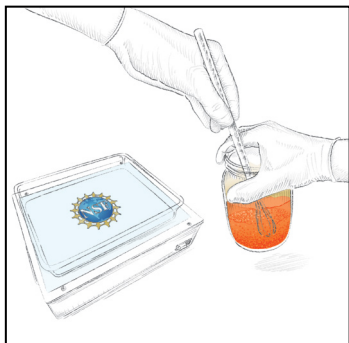


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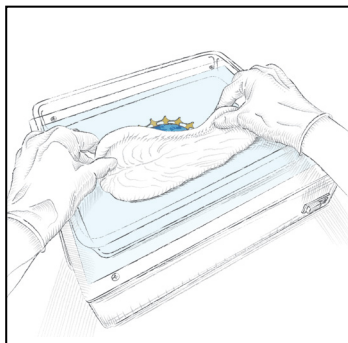
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Experiment steps

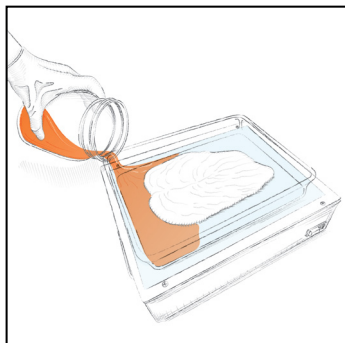
1. Wearing a mask, add 1 cup (3.69 oz or 105 g) of the Yellow #5 granules to the jar. Pour 1 ½ cups water (10.1 oz 300 mL) into the jar. Stir gently until the granules are dissolved. The liquid should become red/orange in color.
2. Tape the printout to the light table's surface and then center the glass dish over the image on the printout. With gloves on, place the chicken in the dish to cover the image on the printout.
3. Slowly pour all the solution into the dish to completely submerge the chicken in the liquid. Allow it to sit for at least one hour with the light table turned off.



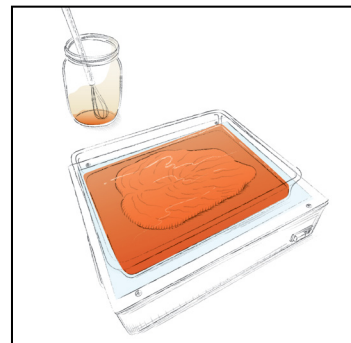
When mixing, cover the opening of the jar with a gloved hand to minimize splash.



Position the chicken to cover the image on the printout.

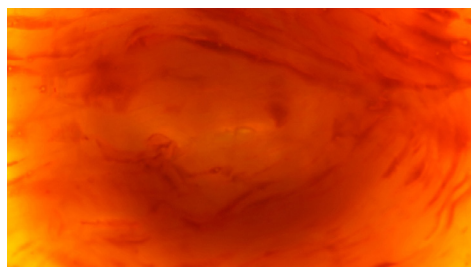


Slowly pour the solution into the dish to minimize splash.

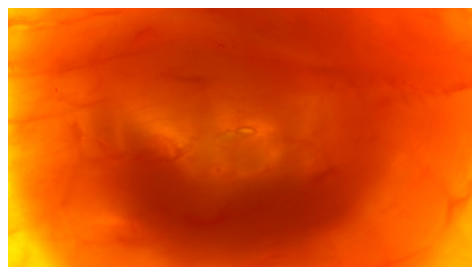


Chicken should be completely submerged in solution.

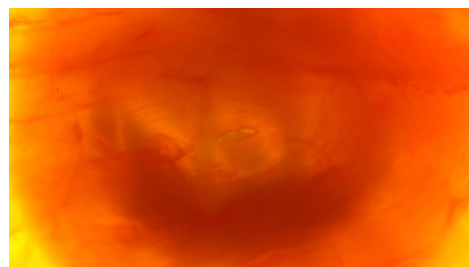
4. The chicken should now be more transparent. Turn the light table on to aid in viewing the image below the chicken.



Time = 0 (5 minutes after application).



Time = 1/2 hour after application.



Time = 2 hours after application.

Results depicted above were obtained when 2 tablespoons (1 oz or 29.6 mL) of the solution was massaged into the surface of a piece of chicken that was thicker than 3 mm. The experiment setup was placed over a powerful light source as well as amply lit from above. The experiment was run for 2 hours, finally revealing the letters in the NSF logo.

Try to reverse the transparency

5. Rinse the chicken in a sink under running water until some of the natural color has returned and the water runs clearer (may take more than 5 minutes, but don't rinse for too long or the chicken will begin to degrade). Wash the glass dish and position the chicken inside it once again so that it covers the image. Check after 15-20 minutes to see if the image is still visible.
6. **Cleanup:** Place the chicken in resealable plastic bags before disposing of in the trash bag. Likewise, place all disposable items that touched the dye solution into the plastic trash bag. Secure the bag tightly before disposing.