



Water Solutions and Evaporation

JZ



Question

If I add different substances to the same amount of water, will there be a difference in the rate of evaporation?

Hypothesis

My hypothesis is that out of pure water, salt water, sugar water, vinegar water, and flour water the pure water will evaporate the fastest.

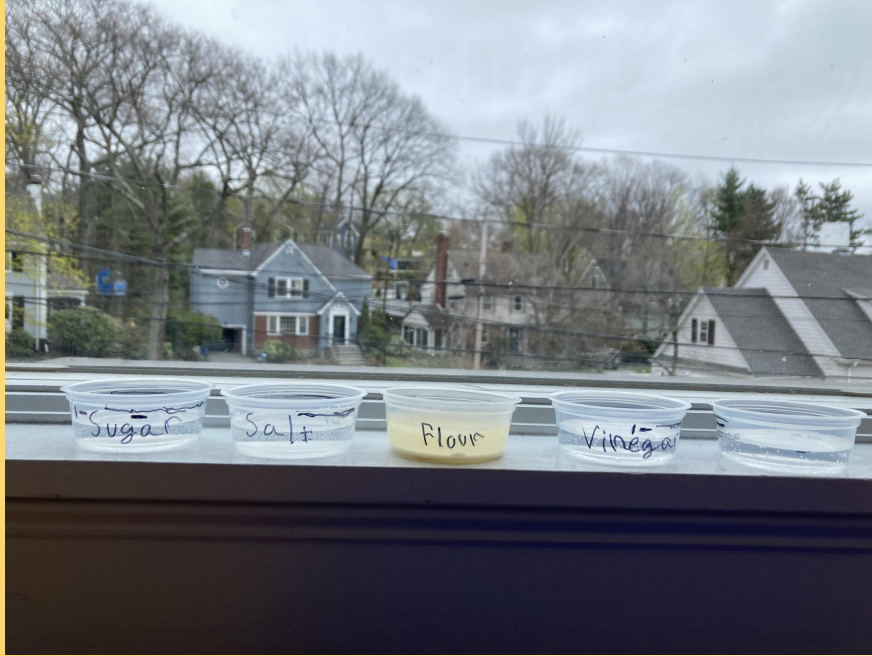
Experiment Design

MATERIALS (what I used): I will need 5 identical cups, 250 ml of water, a teaspoon of salt, sugar, vinegar, and flour, a measuring cup, a marker, a teaspoon, and a ruler.

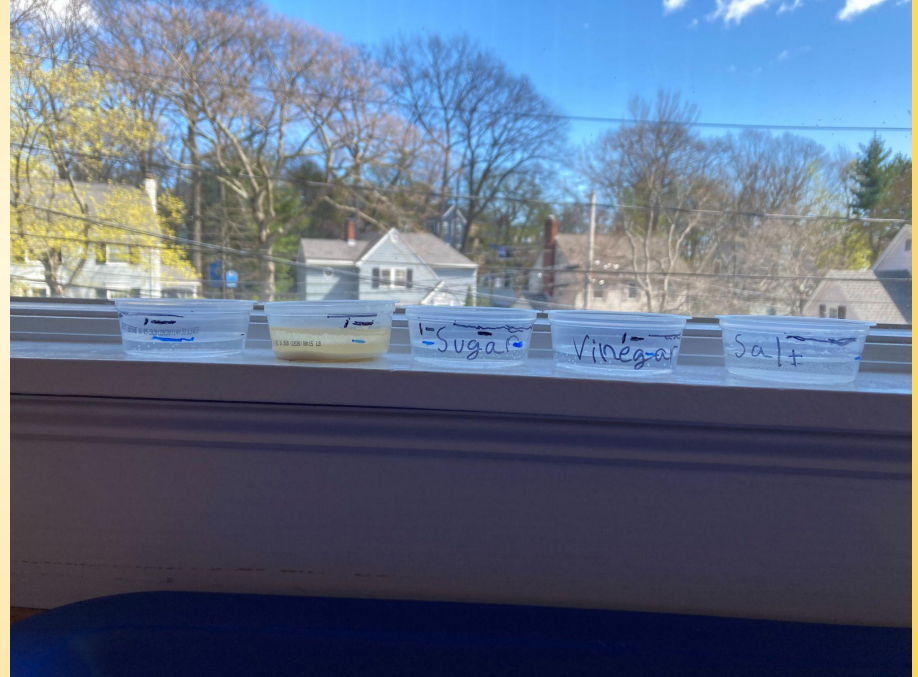
SETUP (how I assembled everything together): I am going to take 5 cups and add the same amount (50 ml) of water to each cup. Then I will add one teaspoon of salt in the first cup, one teaspoon of sugar in the second cup, one teaspoon of vinegar in the third cup, and one teaspoon of flour to the fourth cup. I will leave the last cup alone. I will mix the water well with their substances before proceeding with my experiment.

PROCEDURE (how I ran the experiment): I will mark the level of water with a marker for each cup at the beginning and put them all in the same spot where there is direct sunlight and see what happens. I will mark the level of water every couple of days. I will leave the cups there for 8 days.

Results - Images



Day 4 - 4/11/21

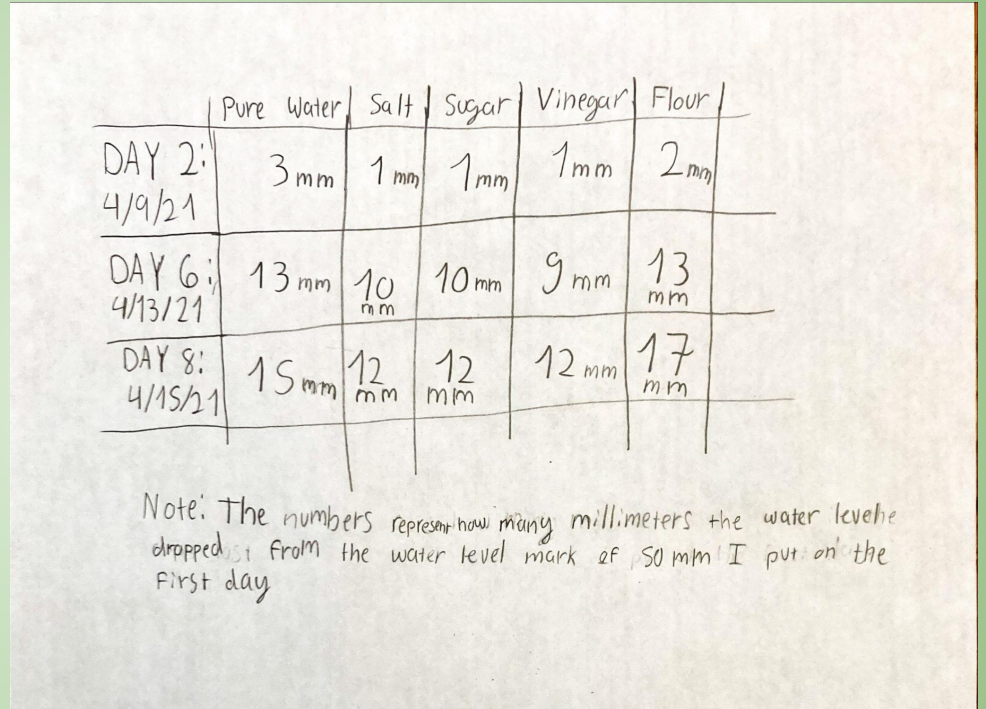


Day 6 - 4/13/21

Results - Images (continued)



Day 8 - Last day - 4/15/21



Graph of data

Results - Description

On the first day (day 1, 4/8/21) I set everything up. Every cup was the same size and all of them contained 50 milliliters of water. I marked how tall the water level was at the first day (that was my reference point). The next day, (day 2, 4/9/21) the pure water was in the lead with 3 mm evaporated. Then I realized that I would have to wait a couple of days to see more significant change. On the fourth day, (day 4, 4/11/21) I took a photo to keep track, but I didn't measure it because there still wasn't much change. On the sixth day (day 6, 4/13/21) the pure water and the flour water were tied with 13 mm evaporated. On the 8th day, (day 8, 4/15/21) I measured the final results. From the first day, the flour water had evaporated the most, at 17 mm. (I later found out something about the flour water. See on the conclusions.) (All of this information is on the chart. See it on the slide before this one.)

Conclusions

My project did confirm my hypothesis. The three solutions: the salt, sugar, and vinegar water evaporates slower than the pure water. The flour water did not follow that trend because it is a mixture. This means that the flour stayed separate from the water. Flour also sucks up water so it could have been possible that the flour water didn't evaporate as fast as the pure water. It just looked as if it did because it sucked up the water. However, we do not know that. The flour water could have still evaporated as fast as the pure water.

Throughout my experiment, I learned that salt, sugar, and vinegar dissolve in water creating a solution. I also learned that solutions evaporate slower than pure water. Another thing I learned is that flour does not dissolve in water, creating a mixture. Finally, I learned that flour sucks up water.



Thank you for reading these slides!

