

A close-up photograph of a petri dish containing a light-colored agar medium. Several distinct, circular colonies of mold are visible, each covered in a dense, fuzzy layer of blue-green spores. The colonies vary in size and are scattered across the surface of the agar. The background is a soft, out-of-focus light brown color.

MOLD; WILL IT GROW?

The Effect of a Wrapping on the Amount of Mold

QUESTION

Does **aluminum foil**, **beeswax**, or **plastic wrap** wrap cream cheese the best?



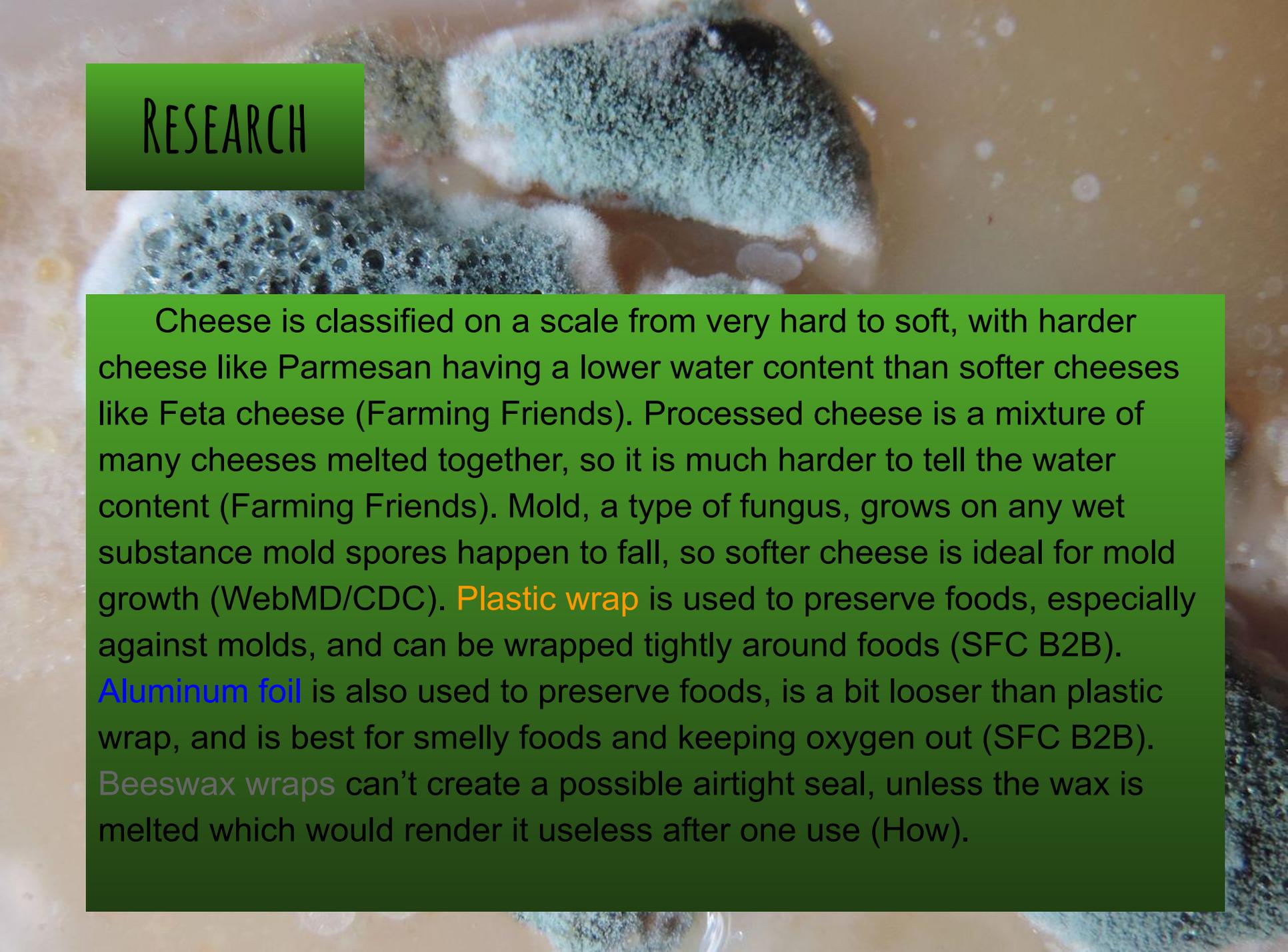
Aluminum foil on a disposable cup of cream cheese.



Beeswax wrap on a disposable cup of cream cheese.

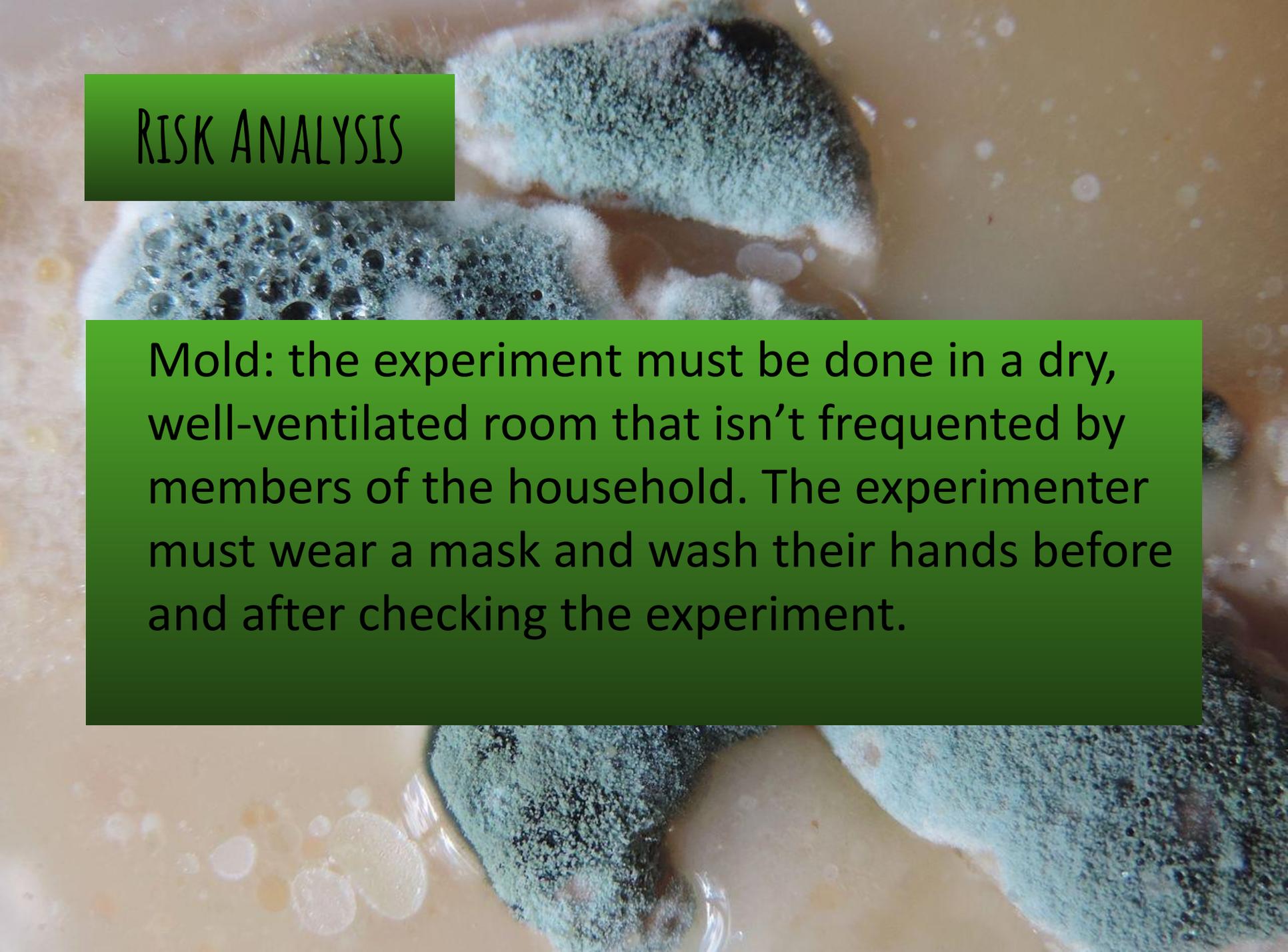


Plastic wrap on a disposable cup of cream cheese.

A close-up, microscopic view of mold growing on a light-colored, porous surface, likely cheese. The mold appears as a dense, fuzzy layer of blue-green spores. The background is a warm, brownish-orange color, possibly the cheese itself or a petri dish. The mold is concentrated in the center and left side of the frame, with some spores scattered on the right.

RESEARCH

Cheese is classified on a scale from very hard to soft, with harder cheese like Parmesan having a lower water content than softer cheeses like Feta cheese (Farming Friends). Processed cheese is a mixture of many cheeses melted together, so it is much harder to tell the water content (Farming Friends). Mold, a type of fungus, grows on any wet substance mold spores happen to fall, so softer cheese is ideal for mold growth (WebMD/CDC). **Plastic wrap** is used to preserve foods, especially against molds, and can be wrapped tightly around foods (SFC B2B). **Aluminum foil** is also used to preserve foods, is a bit looser than plastic wrap, and is best for smelly foods and keeping oxygen out (SFC B2B). **Beeswax wraps** can't create a possible airtight seal, unless the wax is melted which would render it useless after one use (How).

A close-up, high-magnification photograph of a petri dish containing a mold culture. The mold is a fuzzy, blue-green color and is growing in several distinct, irregular patches. The background is a light, yellowish-brown color, likely the agar medium. The mold has a granular, almost crystalline texture. The lighting is bright, highlighting the intricate details of the mold's growth.

RISK ANALYSIS

Mold: the experiment must be done in a dry, well-ventilated room that isn't frequented by members of the household. The experimenter must wear a mask and wash their hands before and after checking the experiment.

VARIABLES

- Independent variable: The type of wrap being used
- Dependent variable: The amount of mold
- Controlled variables (constants): bowls, amount of cheese, size of wrap, and what room they are in



Experiment on day 2.

MATERIALS

- Four 226.8g container of cream cheese
- 825.8 sq cm of **aluminum foil**
- 825.8 sq cm of **plastic wrap**
- Eight individual 10.2cm square beeswax wraps (or a 825.8 sq cm roll)
- Thirty-two 28.4g disposable cups
- Scissors
- Tape measure
- Knife



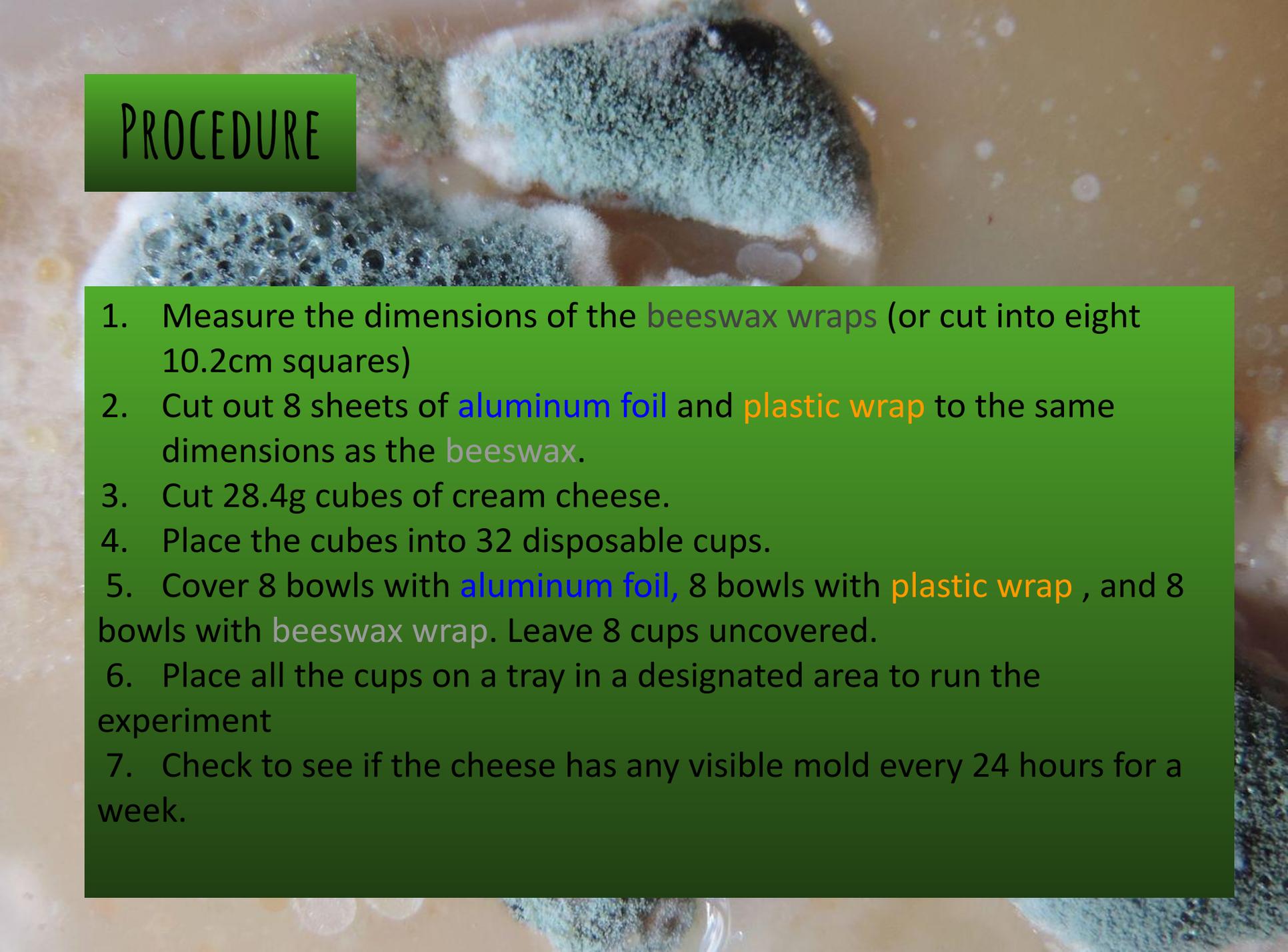
Disposable cups, cream cheese, plastic wrap, aluminum foil, and beeswax wrap on a table.

HYPOTHESIS

If cream cheese is held in **aluminum foil**, **plastic wrap**, and **beeswax wrap**, then the **aluminum foil** will have the least amount of mold growth.



Aluminum foil on a table.



PROCEDURE

1. Measure the dimensions of the beeswax wraps (or cut into eight 10.2cm squares)
2. Cut out 8 sheets of **aluminum foil** and **plastic wrap** to the same dimensions as the beeswax.
3. Cut 28.4g cubes of cream cheese.
4. Place the cubes into 32 disposable cups.
5. Cover 8 bowls with **aluminum foil**, 8 bowls with **plastic wrap** , and 8 bowls with **beeswax wrap**. Leave 8 cups uncovered.
6. Place all the cups on a tray in a designated area to run the experiment
7. Check to see if the cheese has any visible mold every 24 hours for a week.

DATA/OBSERVATIONS

Means							
Wraps	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Aluminum	0	0	0	0	0	0.375	0.875
Plastic	0	0	0	0	0	0	0.625
Beeswax	0	0	0	0	0.125	0.375	1.25
Control	0	0	0	0	0.125	0.25	0.25

Mold scale

0= no mold

1= less than 25% of cube has mold

2= 25% to 50% of cube has mold

3= 50% to 75% of cube has mold

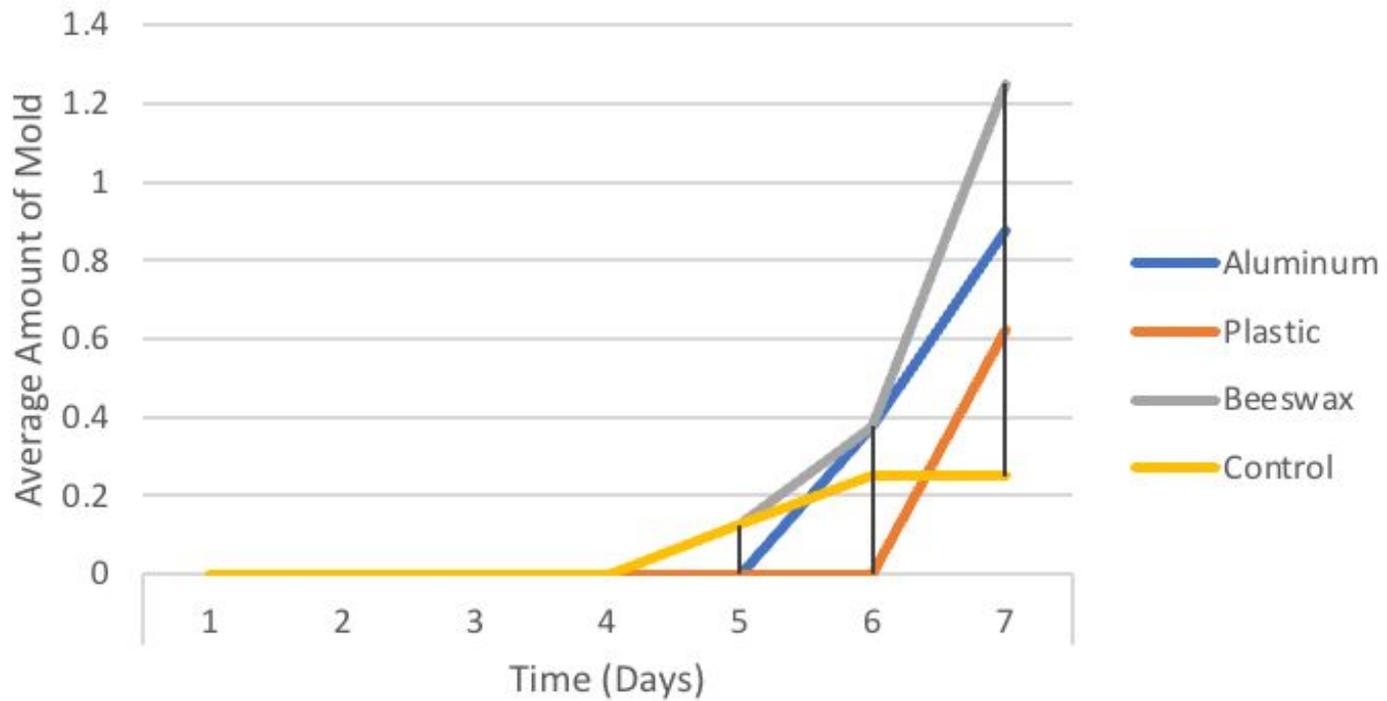
4= greater than 75% of cube has mold

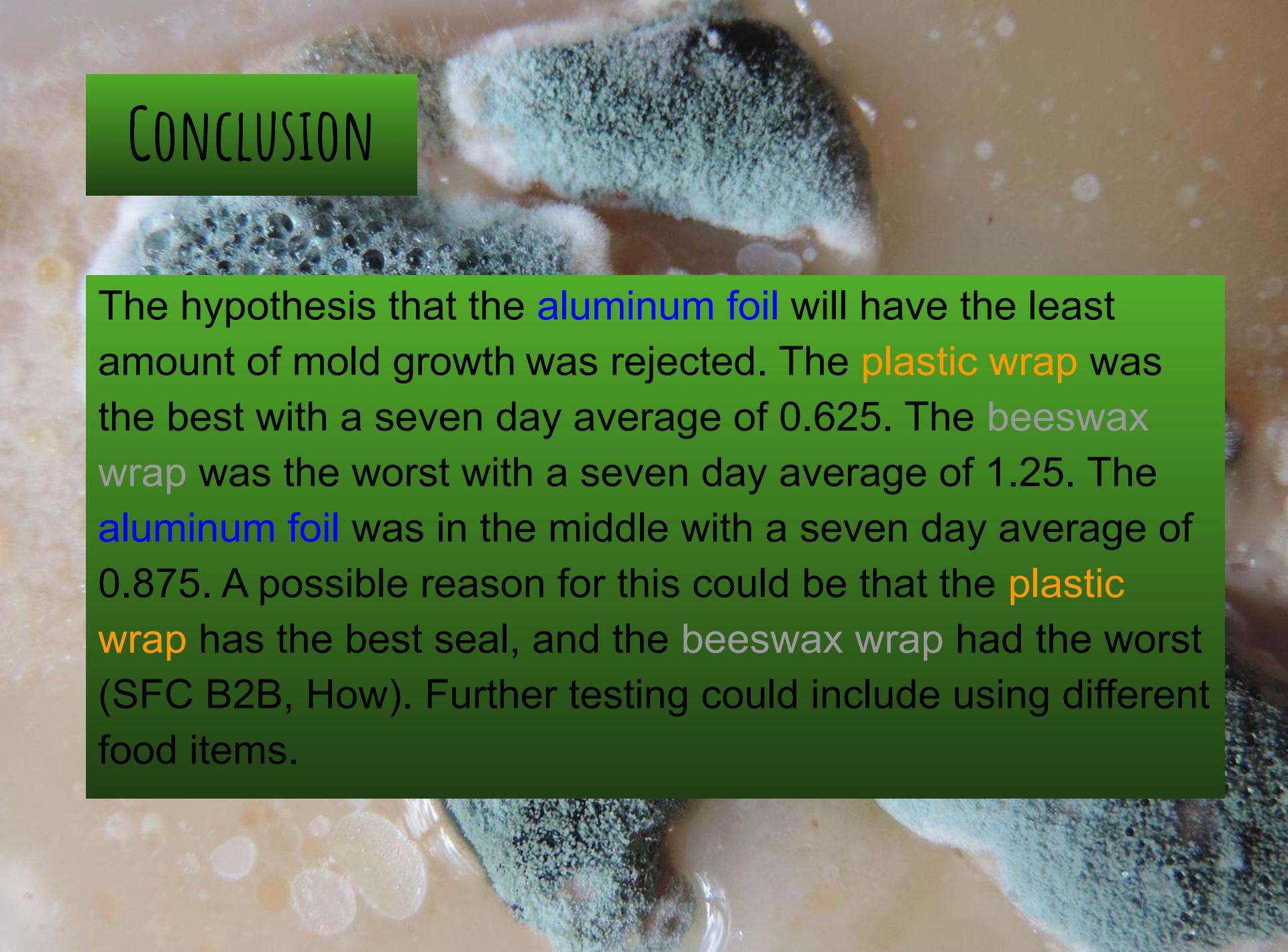


The first sighting of mold on a control on day 5.

GRAPH

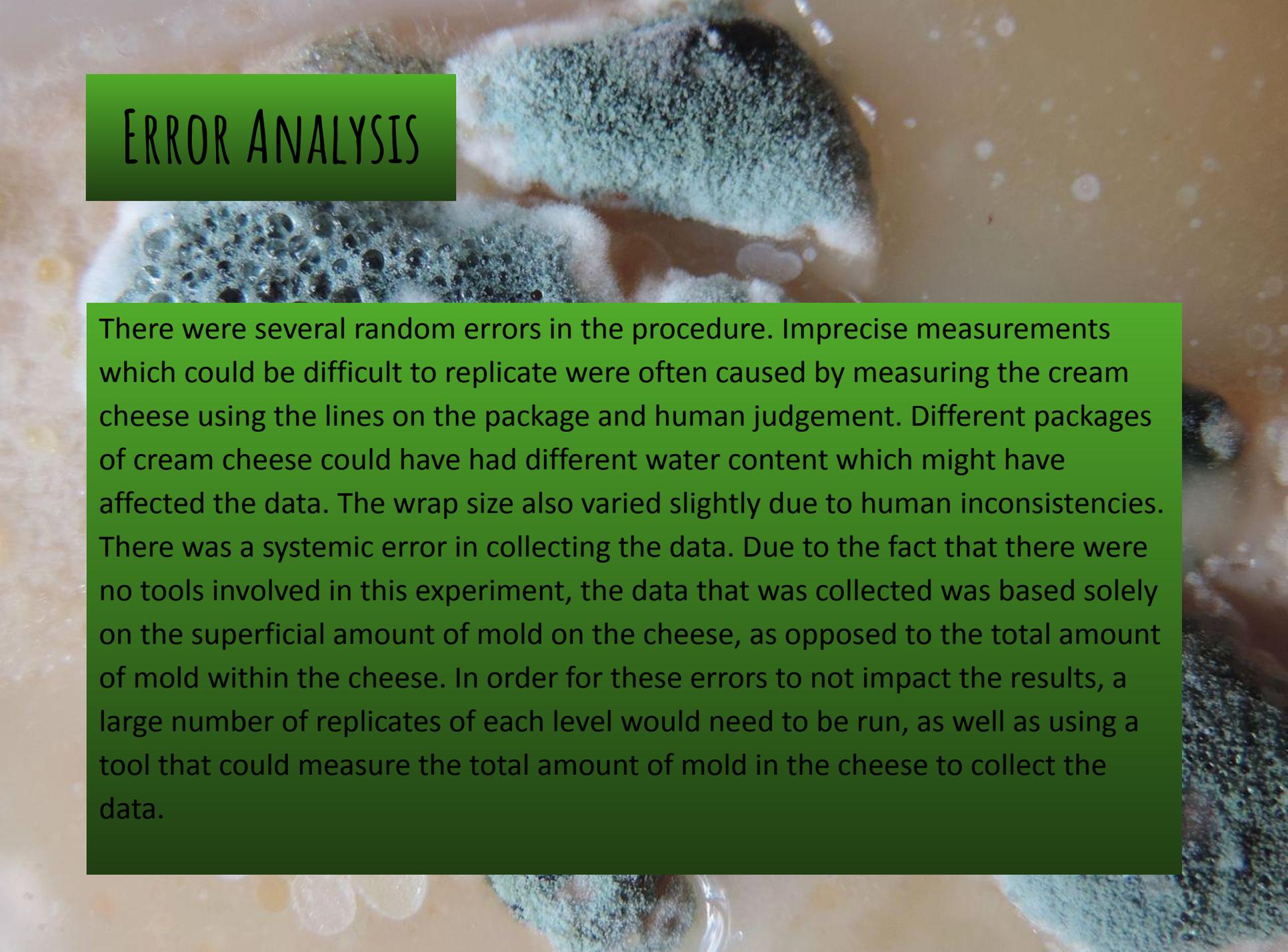
Mold Growth on Cream Cheese



A close-up photograph of a petri dish containing a light-colored agar medium. Several distinct colonies of mold are visible, characterized by their fuzzy, blue-green appearance. The mold is most prominent in the upper and lower right areas of the frame. A semi-transparent green box is overlaid on the left side of the image, containing the word 'CONCLUSION' in white, uppercase letters.

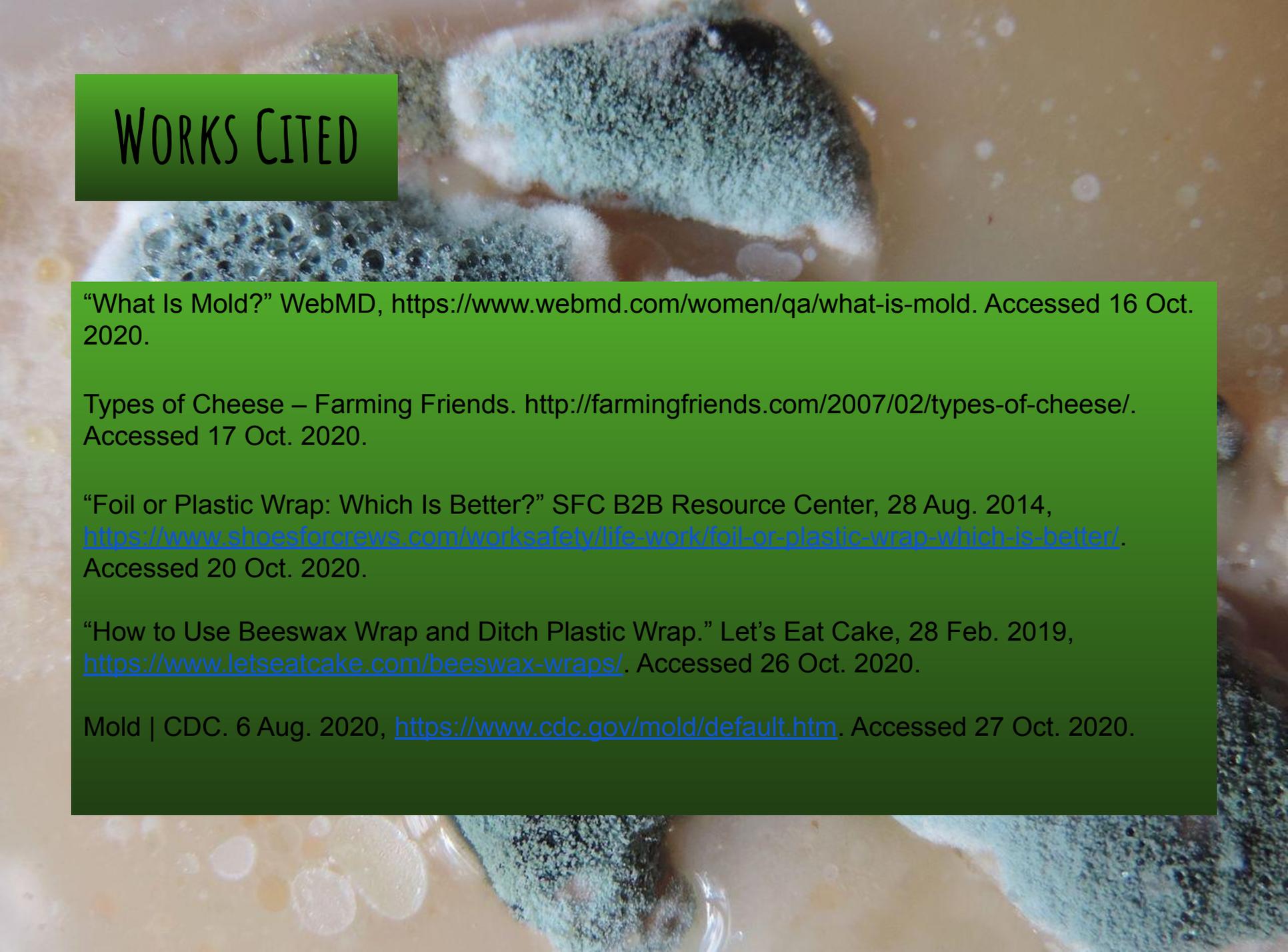
CONCLUSION

The hypothesis that the **aluminum foil** will have the least amount of mold growth was rejected. The **plastic wrap** was the best with a seven day average of 0.625. The **beeswax wrap** was the worst with a seven day average of 1.25. The **aluminum foil** was in the middle with a seven day average of 0.875. A possible reason for this could be that the **plastic wrap** has the best seal, and the **beeswax wrap** had the worst (SFC B2B, How). Further testing could include using different food items.

A close-up photograph of a petri dish containing a culture of mold. The mold is a fuzzy, blue-green color and is growing on a light-colored, possibly agar, surface. The mold is spread across the top and left sides of the dish, with some darker, more dense patches. The background is a soft, out-of-focus light brown color.

ERROR ANALYSIS

There were several random errors in the procedure. Imprecise measurements which could be difficult to replicate were often caused by measuring the cream cheese using the lines on the package and human judgement. Different packages of cream cheese could have had different water content which might have affected the data. The wrap size also varied slightly due to human inconsistencies. There was a systemic error in collecting the data. Due to the fact that there were no tools involved in this experiment, the data that was collected was based solely on the superficial amount of mold on the cheese, as opposed to the total amount of mold within the cheese. In order for these errors to not impact the results, a large number of replicates of each level would need to be run, as well as using a tool that could measure the total amount of mold in the cheese to collect the data.

A microscopic view of mold, showing various structures and colors like blue, green, and white. A green rectangular box is overlaid on the top left, containing the text 'WORKS CITED'.

WORKS CITED

“What Is Mold?” WebMD, <https://www.webmd.com/women/qa/what-is-mold>. Accessed 16 Oct. 2020.

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