



# Are You Bready for Some Mold?

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# Abstract

- This science project was done to figure out what bread would mold the fastest with liquids that were put on the bread. My hypothesis was that if I moistened the bread with sugary drinks, I think the mold will like the one with the most sugar and it will grow faster. The experimental results did not support my hypothesis because no mold was growing on any of the eighteen breads I had used. My data also shows that the days were almost completely the same while I checked throughout each day.

# Question, Variable, and Hypothesis

- Question - Which bread will mold the fastest in a period with the liquids that are used?
- Variables - Independent Variable- Liquids Dependent Variable- Mold
- Hypothesis - If I moisten the bread with sugary drinks, I think the mold will like the sugar and it will grow mold faster.

# Background Research

Mold grows from tiny spores that float around in the air. When spores fall onto pieces of damp food, or any other materials, they will start to grow mold. The mold begins to produce chemicals that make the food breakdown and start to rot. Spores begin to take root; it starts to spread and create more spores. It develops quickly on the surface of the food.

Mold is a type of fungi which grows in multicellular structures called hyphae. The hyphae produce mold spores that can be found indoors and outdoors. Mold spores can be found everywhere, but for mold to grow it will require moisture. Therefore, mold can be general in refrigerators, shower rooms, and many other places that are moist. Although when mold grows in a home or business, it can be harmful causing property damage and health issues.

When mold first starts growing it feeds on materials it grows on, which results in irreversible damage. The mold releases tiny spores and byproducts in the air which can irritate or cause many illnesses. If the byproducts or spores are breathed in, they can lead to respiratory problems. There are many ways to tell how mold grows in a business or home. Smell and sight are simple and practical ways to identify mold growth indoors.

Different type of molds can take over food in a time of 12 to 24 hours, but other molds may take some weeks for the mold to form. However, if a food is wet the mold can grow on the damp surface within 24 to 48 hours. Some molds grow best in warm, humid condition, but can grow at refrigerator temperatures. The molds can tolerate salt and sugar and can survive on high acid foods for example like jams, pickles, fruit, tomatoes and some cured salty meats like ham, bacon, bologna, and many more. The reason sugar attracts mold faster is because the sugar is food for the yeast cells. The additional sugar there is, the more active the yeast cells are. Yeast cells eat down on the sugar molecules, which results in the sugar breaking them apart in a chemical reaction and turn them into simpler element and compounds including carbon dioxide.

Some tips to control mold is by keeping everything clean. The mold spores from moldy food that can build up in refrigerators, dishcloth, and other cleaning utensils, If you see moldy food, do not smell or sniff it. Throw the food out by putting in a small paper bag or wrap in plastic and throw away in covered trash can away from children and animals. Clean pantry and refrigerator where food was stored and check items nearby that mold has touched.

# Material List and Experimental Procedure

## Experimental Procedure

1. Put one bread in a Ziploc bag. (You should have 18 bags and breads)
2. Label bags with Dry Bread, Bread + Water, and with other liquids that will be experimented with.
3. Put individual liquids in their labeled bags. (All over, in middle and four corners of bread)
4. Place Ziploc bags in a place where they will be untouched/undisturbed.
5. Notify parents/people about experiment so nothing will be thrown in trash.
6. Check on bread daily and make observations about bread.
7. Graph results.
8. Throw away bread after experiment is completed.

## Materials List

- Ziploc Bags
- Wheat Bread
- Caprisun                      60 calories    13g sugar
- Water                            0 calories    0g sugar
- Ramune (Japanese Soda)    90 calories    17g sugar
- Green Tea Bag                2 calories    each mug/small amount of sugar
- Fresca                            0 calories    39g sugar

# Data Analysis

- I observed that from the bread I soaked with liquids in the different areas is that each bread responded differently. Most of the bread did not grow mold, they had decreased in size, or they were folded in different areas. Only one bread had completely deformed, and the bread was the caprisun that had the liquid all over it. Another thing I observed was that the breads that had tea on it had started bloating all over the place.

# Conclusions

My hypothesis was that if I moisten the bread with sugary drinks, I think the mold will like the sugar and it will grow mold faster. My results do not support my hypothesis.

I think that the results didn't support my hypothesis is because my experiments that I tested none of the breads had gotten mold. The breads sat in the liquid, however one bread completely deformed.

I still don't know why the tests did not run smoothly. I put the Ziploc bags next to a humid area which it did not grow mold. Next, I tried putting it under my bed where there was no light, unfortunately it did not also work to grow the mold.

In the future, I would like to start this project earlier and put it in humid or colder places. I would like to do this because my bread did not grow any mold and if I had put it in different areas for example a place where no light was coming or being put onto the bread. If I tested different areas the bread may have grown mold and I could have a better experiment so I could answer my hypothesis and question.