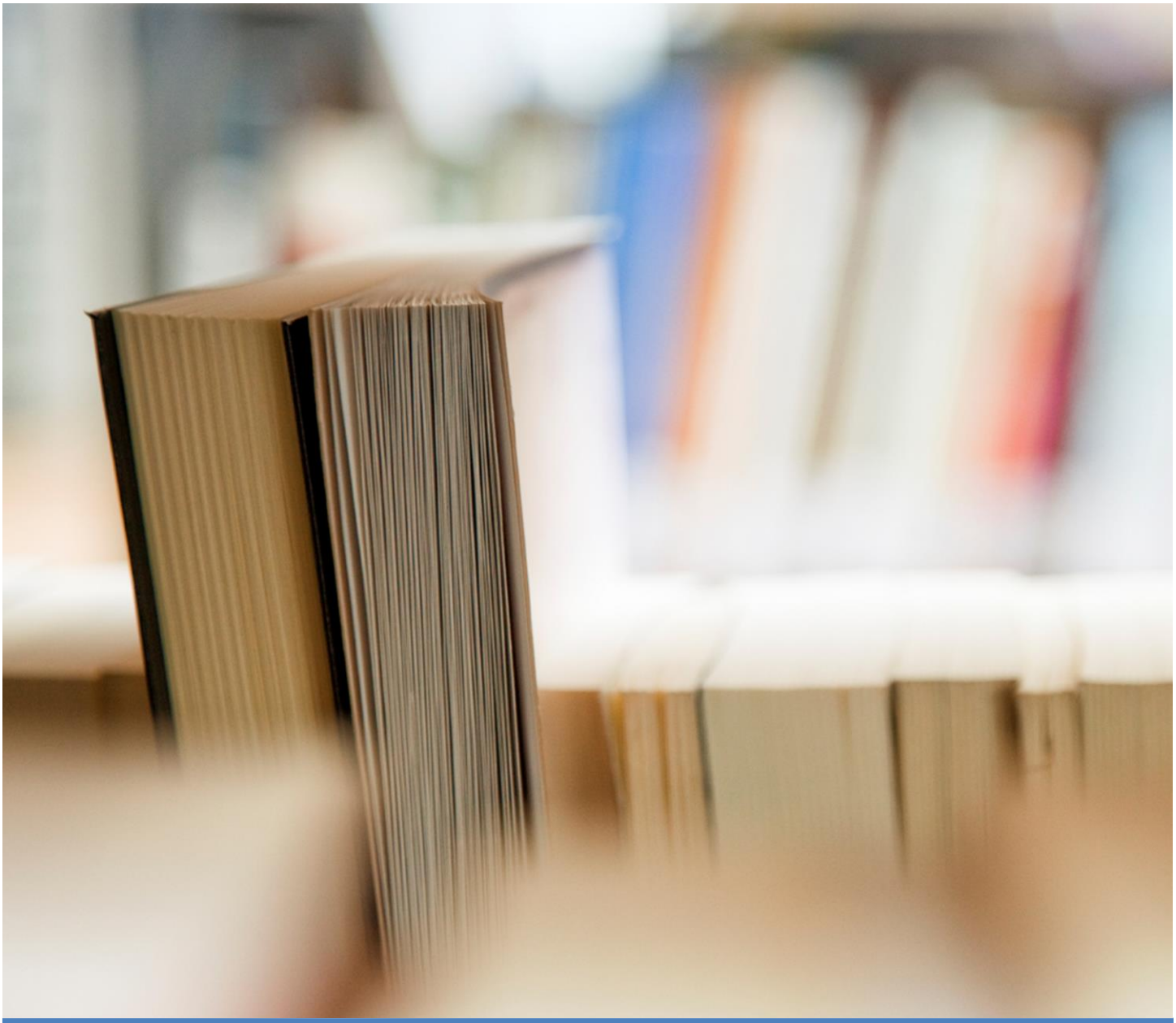

Research Plan: Edible Food Coating to Keep Fruits Fresh

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a. Selection of Problem and Background Information

Fruits are a healthy and important part of our diet. However, after a few days, many fruits begin to spoil. They may turn brown, become soft, smell bad, or even grow mold. This happens because fruits are exposed to air, bacteria, and moisture. Once a fruit's skin is broken or bruised, it spoils even faster.

To reduce food waste and keep fruits fresh longer, scientists and companies sometimes use **food coatings**. These are layers placed around the fruit to protect it. In stores, we may see shiny apples — they are often coated with wax. But some of these coatings are not edible and may not be safe to eat.

In this project, I want to test **natural edible coatings** that we can find at home, such as honey, aloe vera gel, and cornstarch. These coatings are safe to eat and might help fruits stay fresh for a longer time.

If we can find a simple, safe way to coat fruits at home, we can save money, reduce food waste, and eat healthier snacks.

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b. Problem

The question I want to answer is:

Can natural edible food coatings help fruits like apples and bananas stay fresh longer than fruits without any coating?

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c. Hypothesis

I think the fruits with edible coatings will stay fresh longer than the fruits without any coating.

Hypothesis Statement:
If apples and bananas are coated with edible coatings like honey, aloe vera gel, or cornstarch solution, then they will stay fresher (look better, smell good, and stay firm) for a longer time than fruits that are not coated.

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d. Procedure

Materials Needed:

- 4 apples and 4 bananas
- Honey
- Aloe vera gel (fresh or store-bought)
- Cornstarch and water (to make a solution)
- Spoons and brushes for applying coatings
- Paper towels
- Labels or masking tape
- Plates or trays
- Observation sheet or notebook
- Camera (optional, for pictures)

Steps:

1. Wash all fruits carefully and dry them with paper towels.
2. Label each fruit as follows:
    - **Fruit A**: No coating (Control)
    - **Fruit B**: Coated with honey
    - **Fruit C**: Coated with aloe vera gel
    - **Fruit D**: Coated with cornstarch solution
3. Prepare the coatings:
    - Honey: Use as-is
    - Aloe vera: Use a small amount of gel
    - Cornstarch solution: Mix 1 tablespoon of cornstarch with 1 cup of water and heat it on the stove (with adult help) until it becomes slightly thick. Let it cool.
4. Apply each coating to the fruits using a brush or spoon. Cover the skin completely.
5. Place each fruit on a separate plate or tray. Make sure they are not touching.
6. Store all plates at room temperature (in the same room with similar light and air conditions).
7. Every day, observe the fruits for changes in:
    - Color

- Texture (hard/soft)
- Smell
- Mold or brown spots

8. Record your observations in a chart for **7 days**.
9. At the end of the week, compare all fruits and decide which one stayed fresh the longest.
10. Take pictures of the fruits daily if possible to see the changes better.

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e. Risk and Safety

- Ask an adult for help when using the stove to prepare the cornstarch solution.
- Wash your hands before and after handling fruits.
- Do not eat the fruits after the experiment, especially if mold grows.
- Keep the experiment in a clean, safe place away from pets or small children.

This experiment is safe as long as proper hygiene and adult supervision are followed.

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f. Data Analysis

Each day, I will give the fruits a score from **1 to 5** in different areas to measure freshness.

Freshness Criteria	**5 (Best)**	**1 (Worst)**
Color	Very fresh looking	Very brown/black or moldy
Texture	Firm and smooth	Very soft or mushy
Smell	Fresh fruit smell	Bad or rotten smell
Overall Appearance	Looks fresh	Looks spoiled

I will total the scores each day and compare them. The fruit with the highest total score at the end of 7 days will be the **best preserved**.

Here is a sample observation table:

Day	**Fruit A (No coating)**	**Fruit B (Honey)**	**Fruit C (Aloe Vera)**	**Fruit D (Cornstarch)**
1	20	20	20	20

Day	Fruit A (No coating)	Fruit B (Honey)	Fruit C (Aloe Vera)	Fruit D (Cornstarch)
2	18	20	19	20
...	...	...	...	...
7	5	16	17	18

(These are sample numbers. Actual scores will be written based on real observations.)

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g. Bibliography

1. Science News for Kids – “How Fruits Rot and How to Keep Them Fresh”
2. Book: *The Everything Kids' Science Experiments Book* by Tom Robinson
3. Article: “Natural Edible Coatings in Food Preservation” – Kids Science Journal
4. Website: www.sciencekids.co.nz (Accessed with parent supervision)
5. Kitchen knowledge and help from parents