Which Hand Cleaner is Best?

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Introduction

Due to Coronavirus, we all know that hand hygiene is more important than ever. At school and out in the community, we have had to wash and sanitise our hands constantly. It got us thinking about which soap or hand sanitiser is the best at actually killing the germs and keeping our hands clean. For this investigation, we compared a range of different hand washes – including sanitisers, soaps and wipes, to find out which was the most effective at killing germs. For comparison, we also tested the amount of germs on our hands after doing different activities, such as working in the garden and using a computer, without washing our hands afterwards. The results of our investigation highlight the importance of making sure that we all wash our hands regularly!

Aim

To find out which hand cleaner kills germs the best.

Hypothesis

If 70% alcohol hand sanitiser is used, then it will clean your hands the best because alcohol is very effective at killing germs.

Variables

Independent variable: Type of hand cleaner

Dependent variables:

- Time for mould to appear
- Total mould coverage (percentage of bread area)

Controlled variables:

- Bread
- Location of experiment
- Method of testing bread and application of hand wash (minimum of 3 tests for each experiment)
- Time
- Bag size

Resources

- Different types of sanitisers.
- Different types of hand wash.
- Different types of wipes.
- Soap bar.
- 1 Piece of bread per test.
- Zip lock bag per test.
- Permanent marker to write dates on bags.

Risk Assessment

- Allergic reaction to soap, hand sanitiser or hand wash.
- Breathing in the mould.

Method

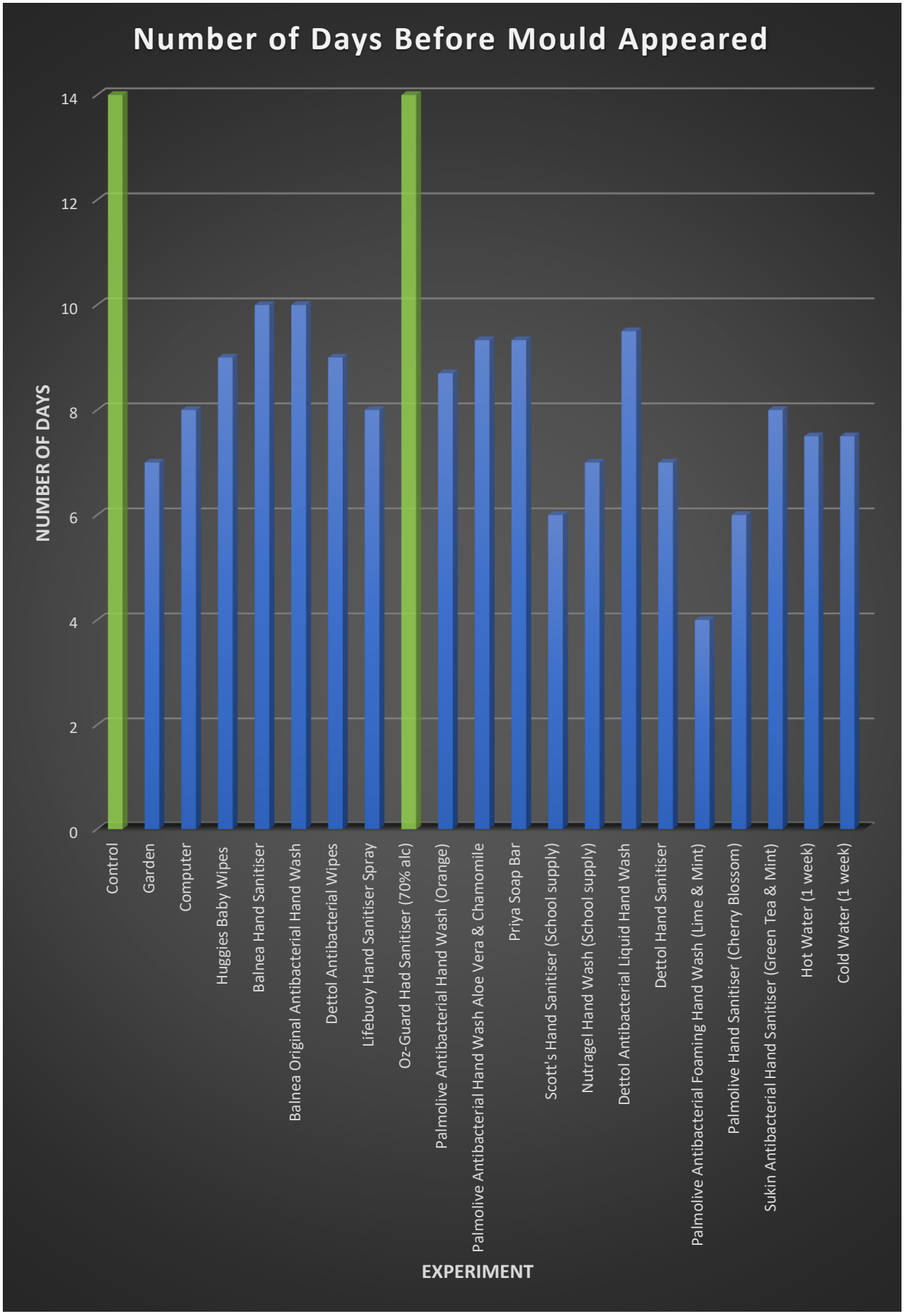
1. Remove three slices of bread, being careful not to touch them, and place them into zip lock bags as controls.

   Date and label the bags.

   Put the hand on the bread
2. Place the samples on the windowsill. Check the bread every day for mould, for two weeks.

Results

Experiment	Days before mould appeared (average of 3 tests)	Percentage of mould coverage (average of 3 tests)
Control	14+ (no mould after 2 weeks)	0
Garden	7	98.33
Computer	8	66.67
Huggies Baby Wipes	9	5.67
Balnea Hand Sanitiser	10	34
Balnea Original Antibacterial Hand Wash	10	13
Dettol Antibacterial Wipes	9	40.33
Lifebuoy Hand Sanitiser Spray	8	78.33
Oz-Guard Had Sanitiser (70% alc)	14+ (no mould after 2 weeks)	0
Palmolive Antibacterial Hand Wash (Orange)	8.7	56.33
Palmolive Antibacterial Hand Wash Aloe Vera & Chamomile	9.33	55.67
Priya Soap Bar	9.33	33.33
Scott's Hand Sanitiser (School supply)	6	4.33
Nutragel Hand Wash (School supply)	7	5
Dettol Antibacterial Liquid Hand Wash	9.5	22.33
Dettol Hand Sanitiser	7	2
Palmolive Antibacterial Foaming Hand Wash (Lime & Mint)	4	13.33
Palmolive Hand Sanitiser (Cherry Blossom)	6	3
Sukin Antibacterial Hand Sanitiser (Green Tea & Mint)	8	0.67
Hot Water (1 week)	7.5	1
Cold Water (1 week)	7.5	1


Number of Days Before Mould Appeared
NUMBER OF DAYS
0
2
4
6
8
10
12
14
Control
Garden
Computer
Huggies Baby Wipes
Balnea Hand Sanitiser
Balnea Original Antibacterial Hand Wash
Dettol Antibacterial Wipes
Lifebuoy Hand Sanitiser Spray
Oz-Guard Had Sanitiser (70% alc)
Palmolive Antibacterial Hand Wash (Orange)
Palmolive Antibacterial Hand Wash Aloe Vera & Chamomile
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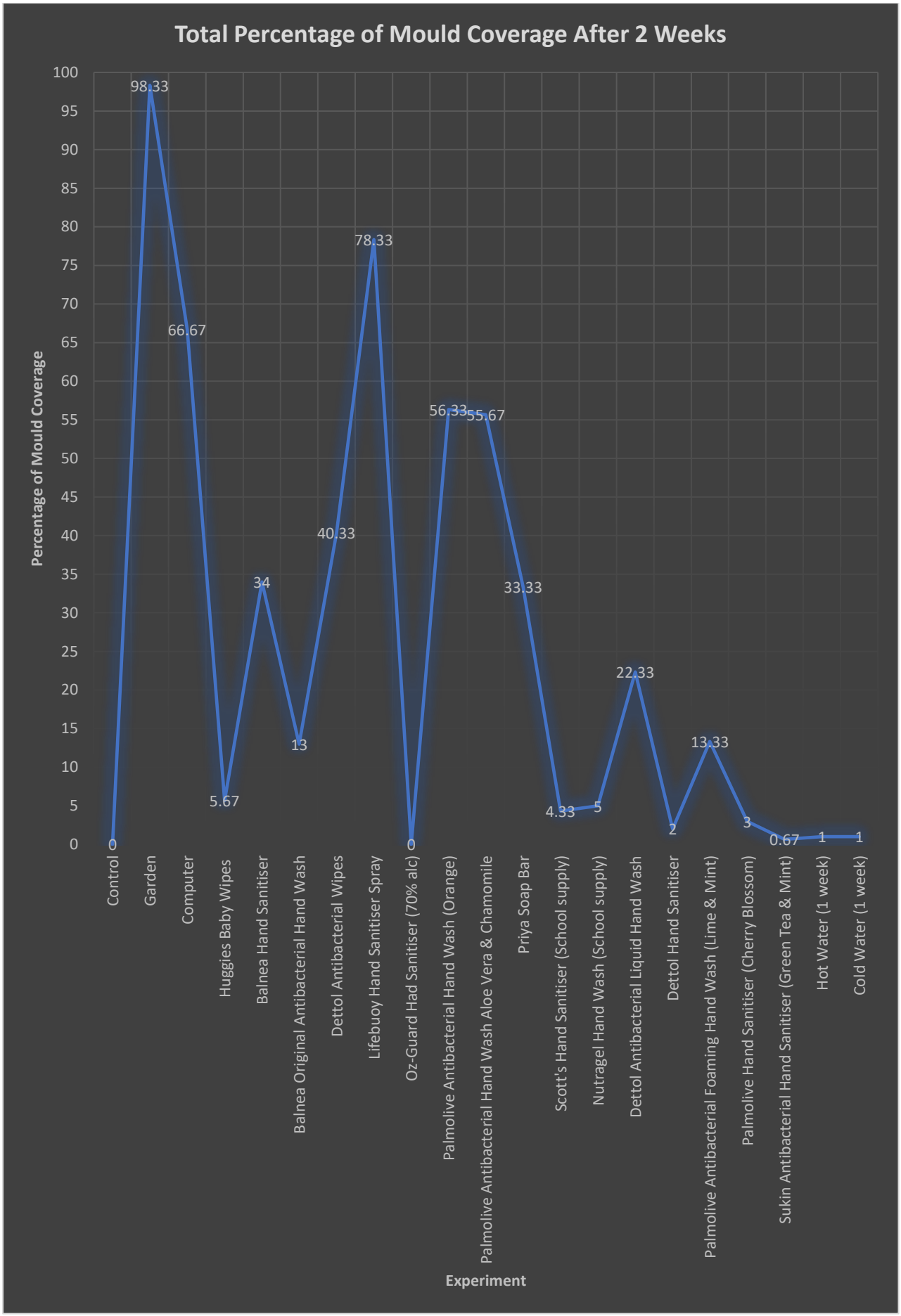
Palmolive Hand Sanitiser (Cherry Blossom)
Sukin Antibacterial Hand Sanitiser (Green Tea & Mint)
Hot Water (1 week)
Cold Water (1 week)
EXPERIMENT


Total Percentage of Mould Coverage After 2 Weeks
Percentage of Mould Coverage
Experiment
0
98.33
66.67
5.67
34
13
40.33
78.33
0
56.33
55.67
33.33
4.33
5
22.33
2
13.33
3
0.67
1
1
Control
Garden
Computer
Huggies Baby Wipes
Balnea Hand Sanitiser
Balnea Original Antibacterial Hand Wash
Dettol Antibacterial Wipes
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Sukin Antibacterial Hand Sanitiser (Green Tea & Mint)
Hot Water (1 week)
Cold Water (1 week)

Discussion

Washing your hands with anything is much better than not washing your hands at all. Sanitiser gels killed more germs than the other hand washes. We noticed that Sanitiser with high alcohol percentages were most effective. In the future, we would like to investigate the same brand of sanitiser but different alcohol percentages to further explore the impact of alcohol percentage on killing germs.

Conclusion

Oz Gard was the best of killing germs because of the high alcohol percentage (70% - hospital grade formula). Our hypothesis was proven correct.

References

Which is better: Soap or hand sanitizer? - Alex Rosenthal and Pall Thordarson: https://www.youtube.com/watch?v=x7KKkElpyKQ

DOES HAND SANITIZER REALLY WORK? SCARY RESULTS: https://www.youtube.com/watch?v=_0hSFCeOZdE

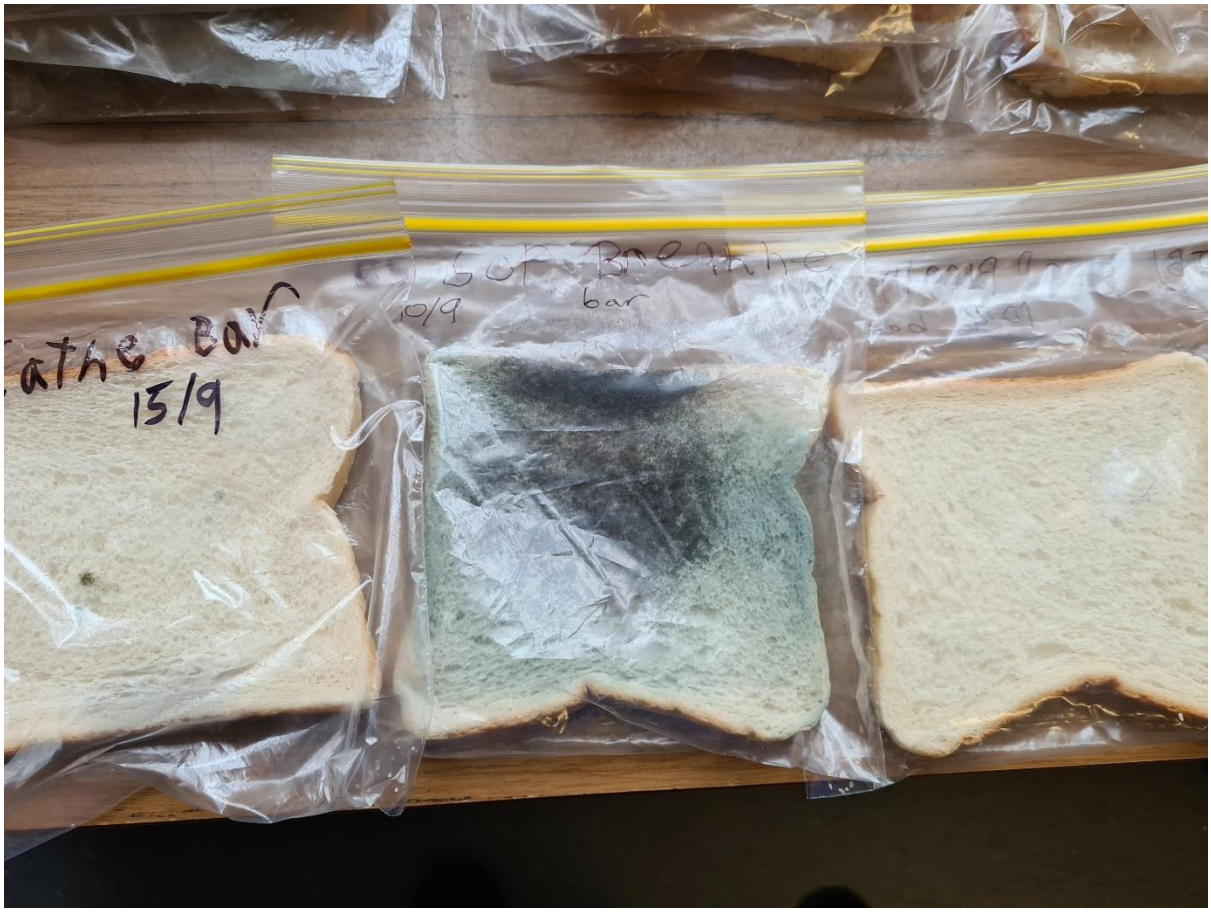
Hand Sanitizers and Soaps Put to the Test: https://www.youtube.com/watch?v=OMZZIlkkPZg

Acknowledgements

Thanks to Mr Edwards for providing the materials and supporting us in our investigations.

Appendix

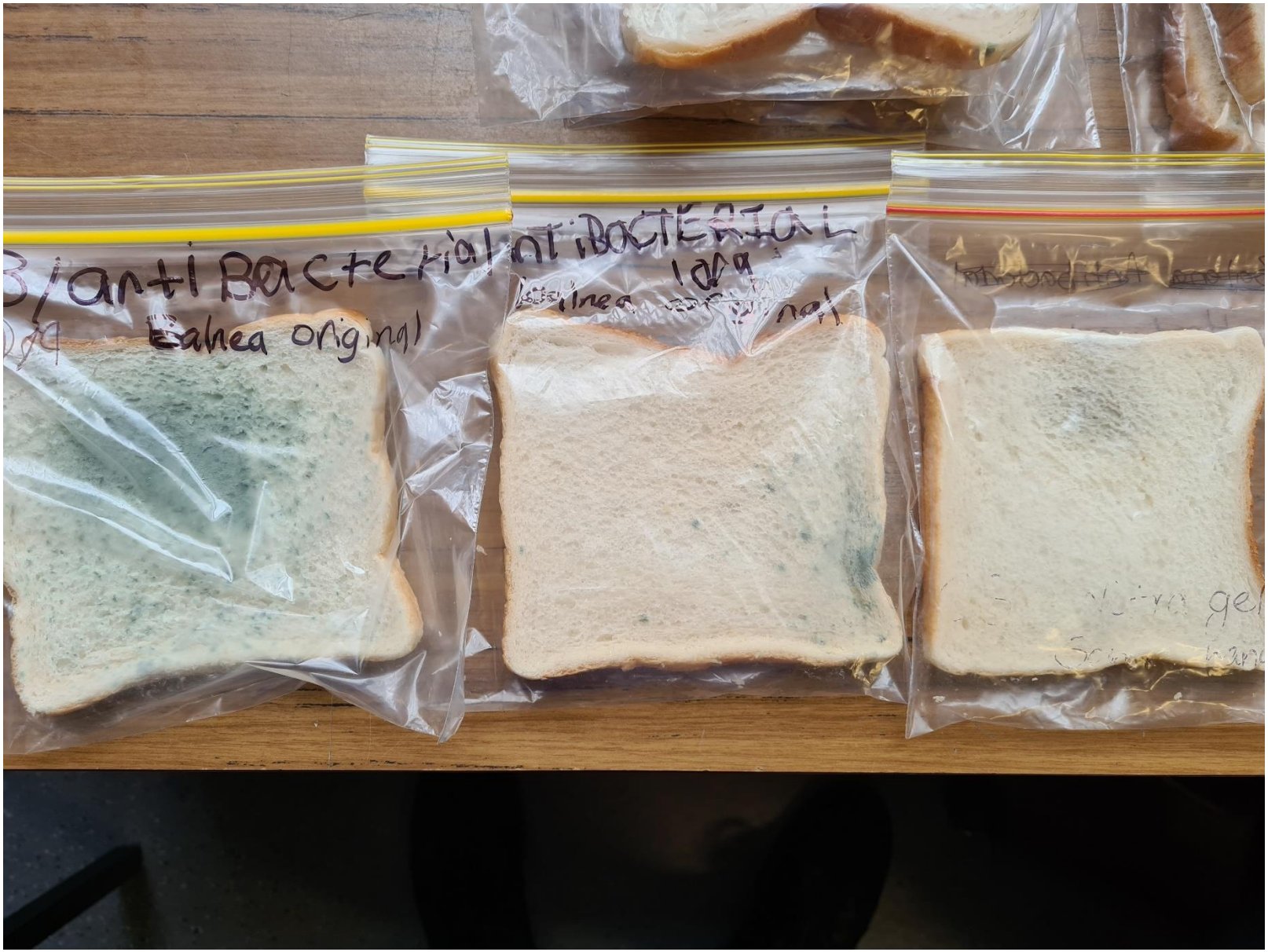
Water
Hot

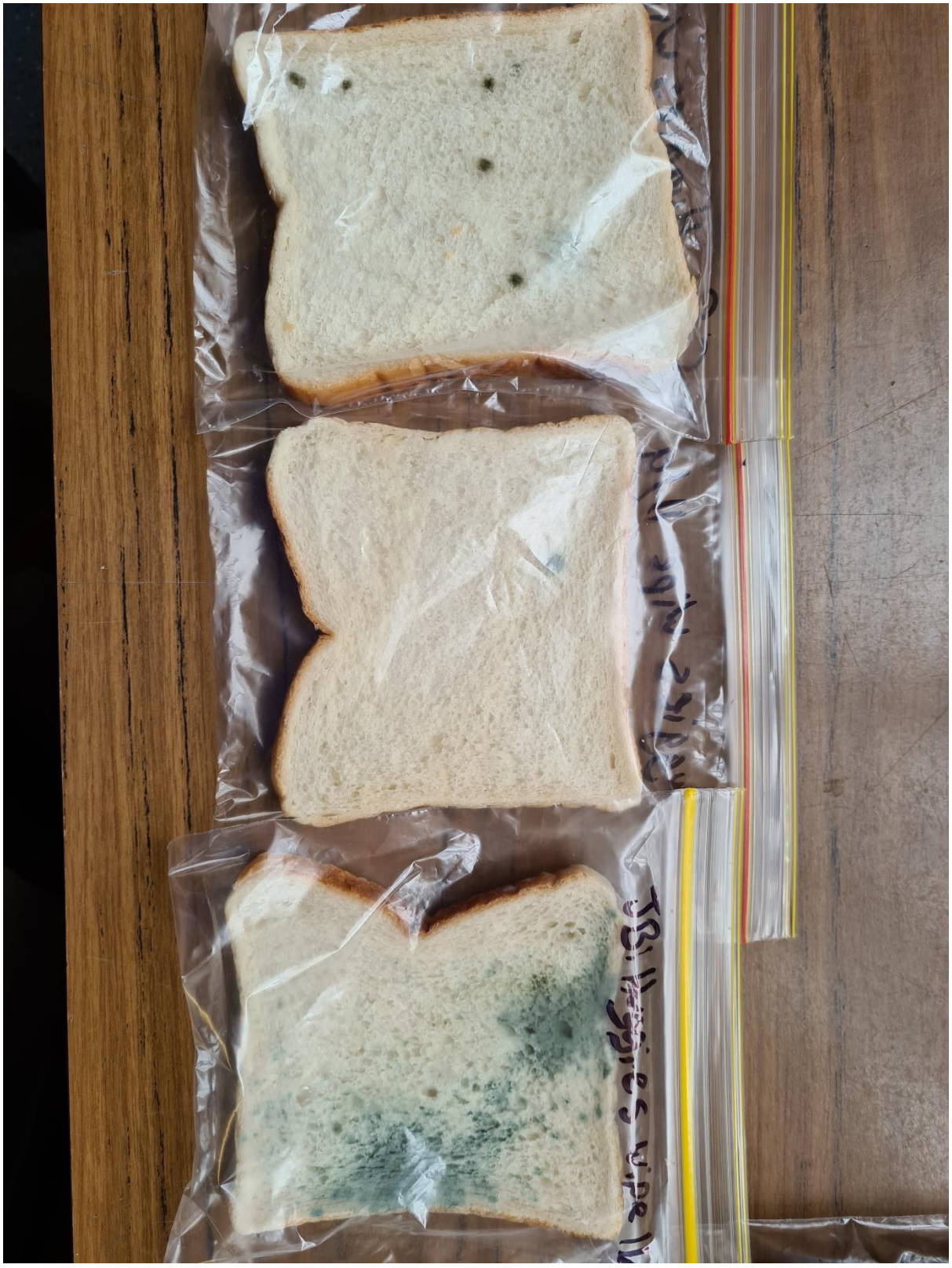

15/9
10/9
bar

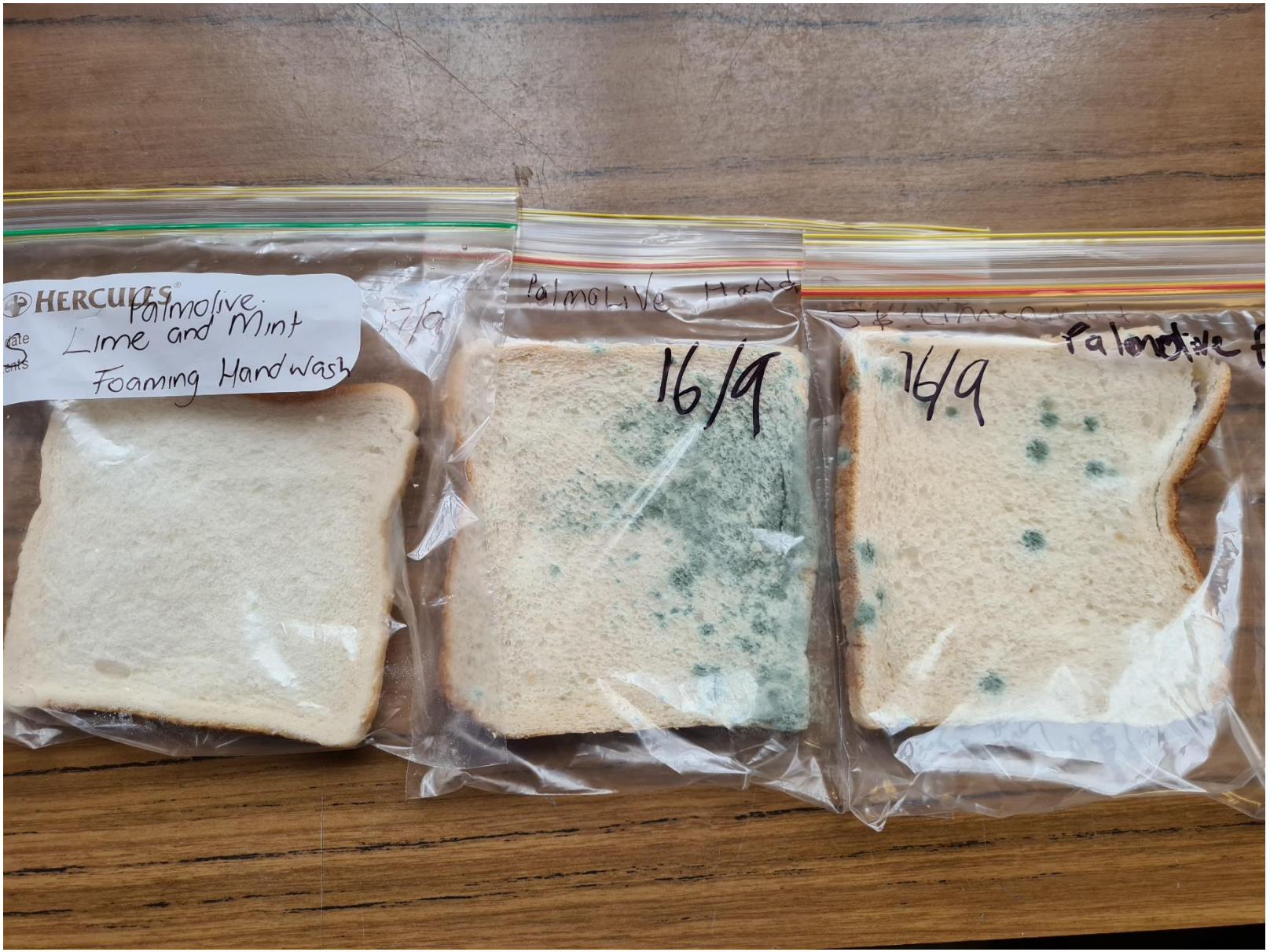
15/9
CD: School sanitiser
15/9
6/9

Palmolive orange
P/P
Palmolive
P
Palmolive
P19

Day 1 Hand Wipe
Day 1 dettol handwipes

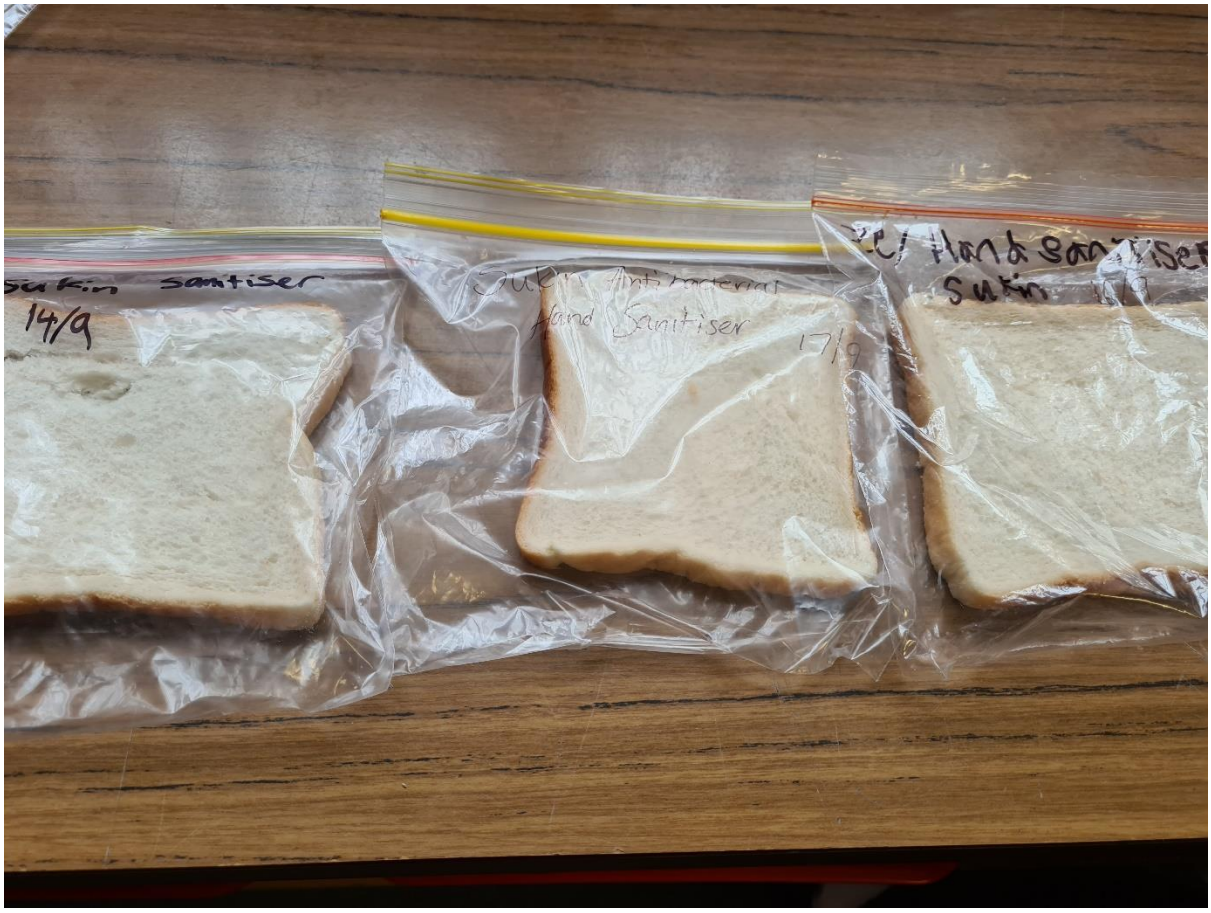

3/anti Bacterial
Eahea original
anti BACTERIAL




HERCULES
Palmolive
Lime and Mint
Foaming Hand wash
16/9
16/9

HERCULES
Dettol
Hand
Sanitiser
HERCULES
Dettol
Hand
Sanitiser
17/9
SB/P#01

HERSHEY'S
Figural
handwash
JE: dettol liquid handwash
10/9
2:1 Dettol liquid
hand wash

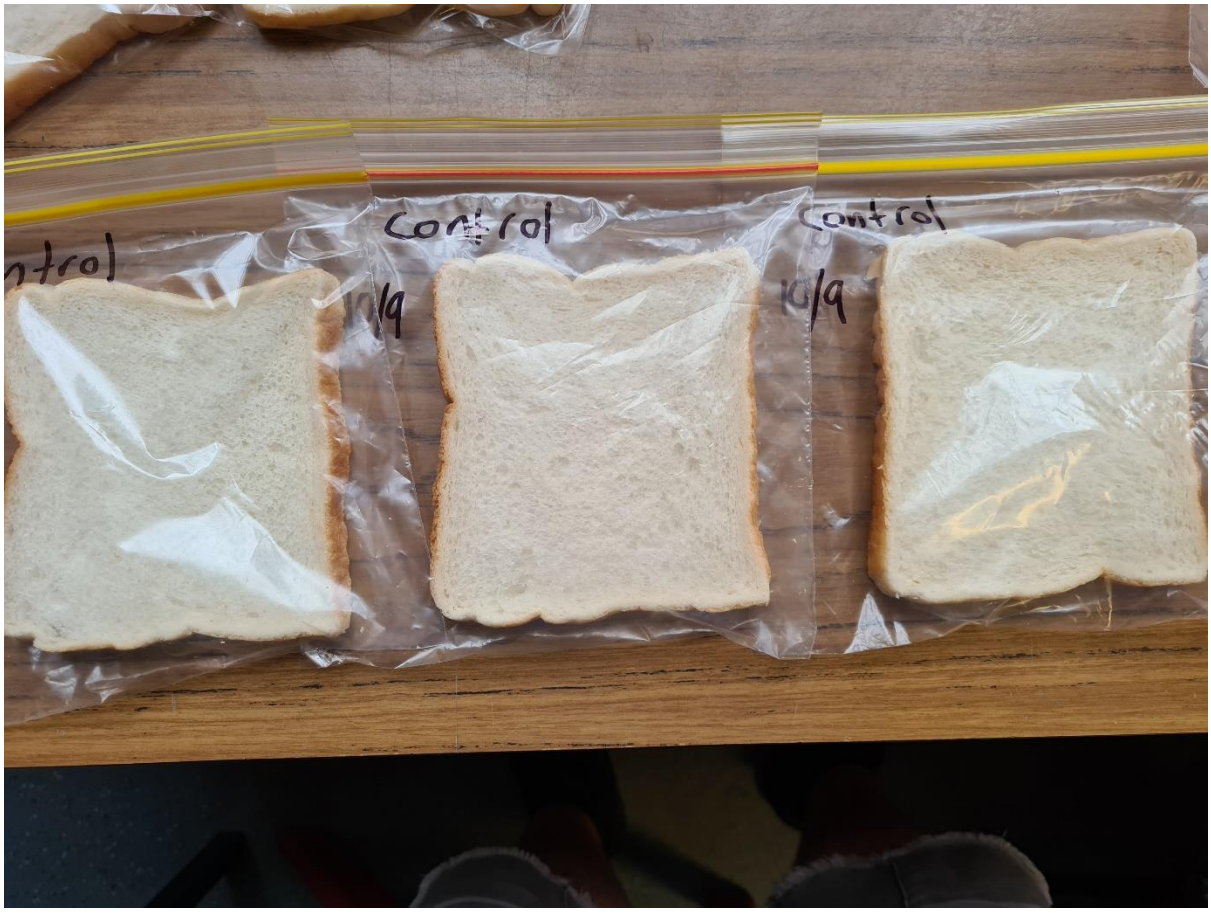

14/9
Antibacterial
Hand Sanitiser
17/9


14/9
Antibacterial
Hand Sanitiser
17/9

Control
Control


Guard Sanitizer
11/9
JB: 02 Guard
11/9


2C. Computer
9/9


ntrol
Control
10/9
Control
10/9

Each photo taken on 25/9/2020, showing mould growth between 1-2 weeks. Refer to writing on bags for experiment and start date.