Title: Bar Or Liquid Soap?

Inquiry: What kills more bacteria, liquid hand soap or bar hand soap?

Independent Variable: The type of soap - liquid hand soap and bar hand soap

Dependent Variable: What kills more bacteria?

Control Variables: Same person's hand, they were both in the incubator, they were both in petri dishes, I kill them both, I swab them both, I used the same sharpie, same fountain

Hypothesis: If I try to kill bacteria using liquid soap and bar soap, then the liquid soap will kill more bacteria, because more people use liquid soap to wash their hands.

Materials: Bar soap, liquid soap, petri dish, swabs, incubator, sharpies, Jeremy's hand , fountain, table, agar gel, computer, Ipad

Procedure:

1. *Get my petri dishes*
2. *Mark the petri dishes with my name and soap*
3. *Get 3 swabs*
4. *Wet the swabs*
5. *Swab Jeremy's hand*
6. *Swab the petri dish*
7. *Close the petri dish and put it in the incubator*
8. *Then see which killer prevents more*
9. *Repeat the procedure, but add the soap at the beginning to see which prevents more bacteria growth.*

Observations:

*Day **1** Observations*

48 hours of incubation = 2 Days

Liquid Soap:
Sample 1 - 39 bacteria colonies, white/beige, round/bumpy spots
Sample 2 - 41 bacteria colonies, white/beige/light gray, round/ bumpy spots (One was a perfect circle.)
Sample 3 - 37 bacteria colonies, white/beige, round/bumpy

Bar Soap:
Sample 1 - 50 bacteria colonies, white/beige and gray, round/bumpy, starting to combined
Sample 2 - 40 bacteria colonies, white/beige, round/bumpy, some groups
Sample 3 - 49 bacteria colonies, white/beige, round/bumpy, growing some groups

Day 2 Observations
216 Hours Of Incubation = 9 Days

Liquid Soap:
Sample 1 - 39 bacteria colonies, brown/yellow, round spots
Sample 2 - 47 bacteria colonies, white/beige/light gray, round/ bumpy spots
Sample 3 - 37 bacteria colonies, white/beige, round/bumpy

Bar Soap:
Sample 1 - 39 bacteria colonies, white/beige/gray/brown, round/bumpy, the petri dish broke
Sample 2 - 32 bacteria colonies, white/beige/brown, round/bumpy
Sample 3 - 46 bacteria colonies, white/beige/brown, round/bumpy

Day 1 Observations For Killers
72 Of Incubation = 3 Days

Liquid Soap:
0 bacteria colonies

Bar Soap:
1 Big colony, beige, bumpy

Control:
3 big colonies and 1 small one, yellow/beige/white

Analysis:

On day 1 (after 48 hours of incubation) there were many colonies on both bar and liquid soap. they were light and bumpy, but to my surprise only after 48 hours there were 30 - 50 colonies. On day 2 (after 216 hours of incubation) there were less colonies than day 1. There were also 30 - 50 colonies, but less than day 1. They were gray and brown. On bar soap sample 1 there was a big crack in the petri dish, so there were probably more colonies. With the killers (72 hours of incubation) there were no colonies with liquid soap, 1 big colony with bar soap, and 4 with control. With bar soap it was big beige and bumpy. With control there were 3 big colonies and 1 small one.

Conclusion:

Real World Application:
Wash your hand every day and after you use the bathroom.

Errors:

- *I was sick and had 2 doctors appointments*
- *I dropped my petri dish*
- *My petri dish cracked*
- *Jeremy's hand might have been dirtier or cleaner at different times.*
- *There was no internet, so I could not get my day 1 observation pictures*

Hypothesis - Correct or Incorrect

My hypothesis was correct, liquid soap kills more bacteria than bar soap.