An investigation into a factor affecting the rate of bacterial growth essay

Design

An Investigation into a Factor Affecting the Rate ofBacterial GrowthPurpose: To happen out how different trade names of manus sanitizer affect the rate of bacterial growing. Variables: Mugwump: Trade names of Hand Sanitizer (Lifebuoy, Al Kamal, World of Wipes, Dettol)Dependant: The size of the Zone of Inhibition /mm ^{2} Control:

What will be controlled?	How will it be controlled?
How much sanitizer	Use a hole cowboy to make discs
Type of Bacteria	Use the bacteriums provided
Temperature Bacteria Will Grow at	Use brooder for both petri dishes
Time bacteriums turn for	Incubate both dishes for 48 hours
Amount and type of agar	Use the agar provided
Surface are of agar	Use petri dishes of the same size

Hypothesis: If the concentration of intoxicant in a manus sanitizer is increased, the size of the zone of suppression will be greater because

antiseptics like ethyl alcohol and isopropyl alcohol “ kill sources by fade outing their indispensable proteins” (Sherwood) .

Using this information, the Dettol manus gel will kill the most bacteriums because it has the highest concentration of intoxicant (69. 4 %)Equipment set-up: Hole PuncherFilter PaperLatex GlovesHand SanitizersTweezersMarkerTape3 Petri Dishes *E. Coli* BacteriaAgarIncubatorGraph PaperMethod:

1. Punch 8 holes in the filter paper utilizing a hole cowboy.

   Keep the little discs created.

2. Wear Latex baseball mitts for protection and to forestall taint.
3. In a petri dish, use Lifebuoy, Al Kamal, WOW and Dettol sanitizers so that there is adequate of them to cover the paper discs but non plenty for them to touch.
4. Use pincers to submerse 2 filter paper discs in each gel.
5. Turn a petri dish with bacteriums and agar upside down so that the palpebra is on the underside.
6. Raise the base of the petri dish and topographic point a filter paper disc of each gel on the surface utilizing pincers. Arrange them like so:

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7. Near the petri dish and label each disc.
8. Tape the dish and repeat stairss 5-8 for a 2nd petri dish.
9. Place both dishes in an brooder set at 37°C for 48 hours.

10. Take the dishes out and put a graph paper with 1mm squares under the dish.

11. Use the graph paper to number the country of the zone of suppression (where the bacteriums did non turn) for each manus gel in millimeter.

Data Observations: *Table 1: Consequences*

Brand of Sanitizer	Alcohol Percentage (%)	Zone of Inhibition /mm		
		Dish 1	Dish 2	Average
Al Kamal	Unknown	0.0	6.0	3
Dettol	69.4	7.5	8.0	7.75
Lifebuoy	55	6.0	0.0	3

World of Wipes	62	9. 5	6. 0	7. 75

Graph 1: Average Zone of Inhibition Decision: It was predicted that the manus sanitizer with the highest concentration of intoxicant would kill the most bacteriums and therefore created the largest zone of suppression. The consequences prove that this is true. There is a clear positive correlativity that shows that as the concentration of intoxicant additions so does the zone of suppression.

The FDA agrees that 62 % and higher degrees of (ethyl and isopropyl) intoxicant provide for “ safe and effectual antibacterial protection” (Smith) . The information ; albeit a spot limited shows this. Sanitizers with 62 % and above concentration have more than twice the zone of suppression.

This shows that ethyl and isopropyl intoxicants do kill bacteriums and the higher the concentration, the better they kill bacteriums. This is because these types of intoxicant putting to deaths bacteriums by doing the cellular membrane (holds everything together) of the bacteriums more soluble in H2O. This causes it to lose its construction and autumn apart. As this happens, the intoxicant can perforate the cell and denature the proteins. Proteins are complex forms and their construction is linked to the map of that protein. Denatured proteins (such as when they come in contact with these intoxicants) lose their

construction and therefore their map thereby killing the map of the bacteriums. Evaluation:

What went incorrect?	*How could this hold affected the information s?*	*Improvements for following clip:*
The same pincers were used to manage the filter paper discs in the different manus gels	The pincers could hold contaminated the manus gels with other manus gels. This means that the information is non valid.	Wipe and clean the pincers before managing each manus gel
The filter paper discs were curved	The surface country that was in contact with the agar was non the	Use a level portion of filter paper to do the discs

	same across all the tests. This means that the sum of manus gels in contact with the bacterium was inconsistent .	
Lack of tests: the sanitizers were merely tested two times	The information is non be really dependable . The scope of some sanitizers is really large and there can be	Make more tests with more petri dishes

	outliers	
The bacteriums strain could hold been immune to one or more of the sanitizers	The information s would non be valid and it would be an unjust trial	Make more tests with another type of bacteriums
The Al Kamal sanitizer had an unknown concentratio n of intoxicant	If the intoxicant concentrati on in the sanitizer is non as estimated it could skew the consequenc es and the tendency would non be as	Use a sanitizer that states its intoxicant concentrati on

	evident	
Al Kamal and Lifebuoy had the same mean zone of suppression & A ; Dettol and World of Wipes had the same. If the 2nd trial’s informations is switched between Al Kamal and Lifebuoy, the information is more consistent (presently there is a	The tendency and the 2nd graph would be invalid because the norms would even out (like what happened ; the two norms are the same)	Label each filter paper disc as they are placed in the agar

large

scope) .

They could

hold been

labelled

falsely.

Dependability: The method is non really dependable. It is quotable and the consequences seem to be consistent except for what appears to be a switch up between the Al Kamal and Lifebuoy sanitizers. This is shown here:

Al Kamal	0. 6. 0	3
Lifebuoy	6. 0	0. 3 0

The figure of tests is rather low, there were merely two tests for each gel. This means that the consequences are non highly dependable. The 7. 75 norm is besides a small spot undependable because our original consequences merely measure to 1 denary topographic point so the norm can non be any more precise. Cogency: The purpose of this probe was to happen out how different trade names of sanitizers affect bacterial growing and to superfluously happen out which manus gel would be best for mundane usage. As merely one type of bacterium

was used, the consequences are non valid for the secondary purpose of the probe. The cogency is all right because the decision concurs with on-line beginnings such as the 1s mentioned in the bibliography.

On the other manus, there were many things that went wrong that could do the consequences invalid (such as mentioned in the tabular array above) .

Bibliography

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