

Sterilizing Bacteria

By Soyun Lee (Ally)

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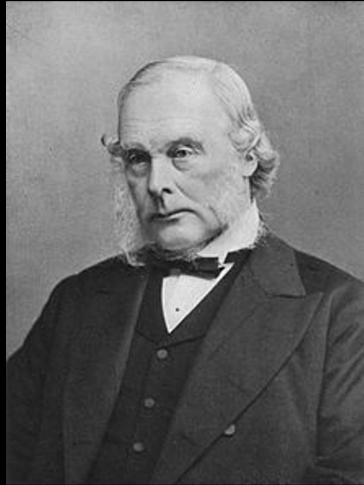
1. Introduction to Sterilizing

Sterilizing is a process of making something free from bacteria or other living microorganisms. In every they lives, we always use sterilization such as detergent in our laundry, toothpaste, soap, or electronic sterilizer for canteen cups. The material that I used to sterilize is the bleach, because it was easy to find around me, and the effect of the bleach is right and strong for the experiment.



2. History of Sterilizing

The thermal sterilization started in 1870s in surgery by Joseph Lister by sterilizing all of the surgery materials. Only by sterilizing the materials of the surgery materials, huge amount of people who got surgeries were saved. Before these sterilizations, people died only from having a surgery on their broken knees. After throughout the time, sterilization was developed and it became our modern sterilization such as bleach or soap that we use in our everyday lives.



Joseph Lister



Surgery in old days



Lister's antiseptic spray

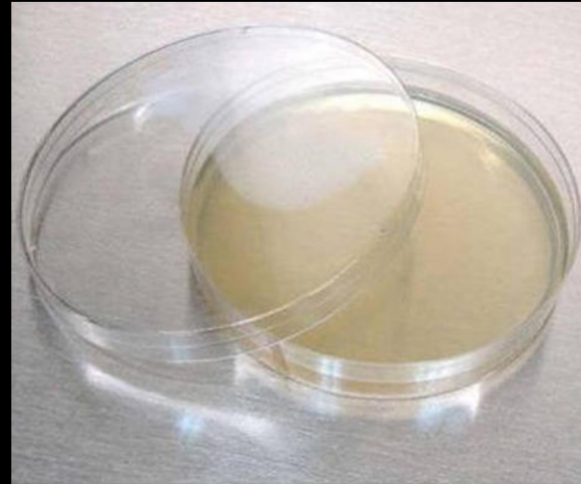
3. My Motivation to this Project

I was interested in medical area when I started to think about what topic would I chose. Also, I wanted to discover the topic that would be helpful for our world. Sterilization was one of them. By finding out the amount of the bleach we need to use for killing bacteria, people can use the least amount of bleach which could be harmful for our body and kill the harmful bacteria as they aimed.



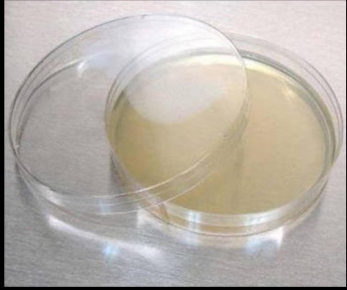
4. *Aim to this Project*

Mt first, my aim was to find out weather the bleach really could kill bacteria in our real life. However, after a while, I recognized that this wasn't appropriate for the question. It could simply come out of the internet, so I tried to set another aim. At last, I chose to set the aim as "What is the least amount of bleach in certain amount of yogurt can kill bacteria effectively?".



5. *About Experiment*

Apparatuses



6 Agar plates



Bleach



5 Glass tubes



5 Pipettes



One yogurt



Cylinder



Water



Nutrient Broth

Method - Glass tube

1. Set up all the materials.
2. To start with nutrient broth, label 6 glass tubes as 1, 2, 3, 4, 5, and 6
3. Pour 7 drops of sterilized water, 9cm³ of nutrient broth, and 6 drops of yogurt.
4. Repeat number 3 for every single glass tube, and drop each 2, 4, 6, 8, and 10 drops of bleach. Leave one as control.
5. Cap it with aluminium foil and leave it in the stand for 1 week.
6. After one week, check the results and analyze the data from it.

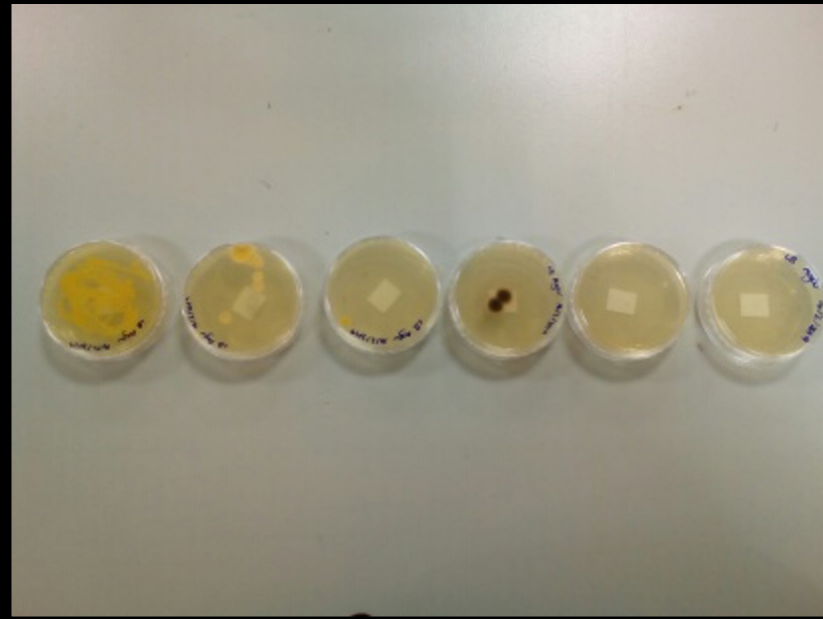


Method - Agar plates

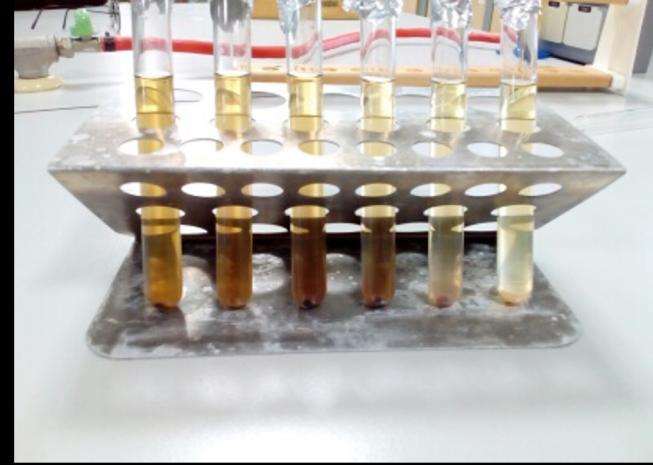
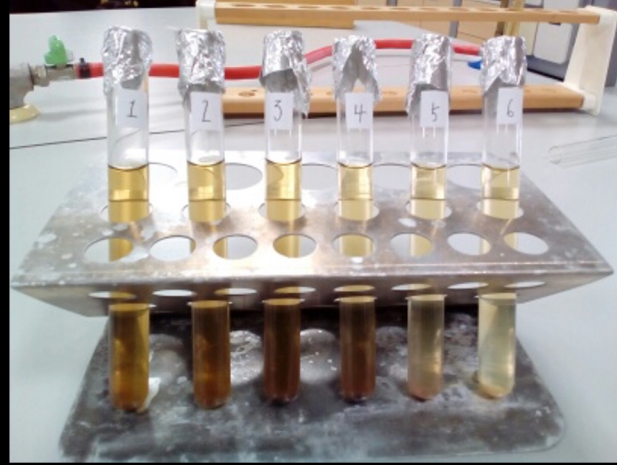
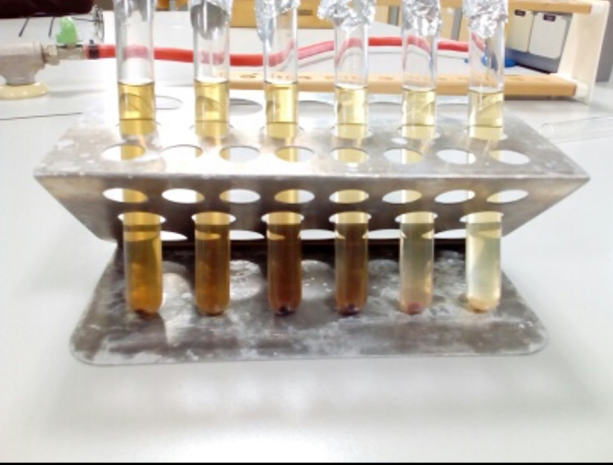
1. Set up all the materials.
2. Next is agar plates, so label 6 glass tubes as 1, 2, 3, 4, 5, and 6
3. Spread 1cm^3 of yogurt over the agar plate with the stick.
4. Repeat number 3 for every single glass tube, and spread each 2, 4, 6, 8, and 10 drops of bleach. Leave one as control.
5. Cap it with the lid and leave it in the stand for 1 week.
6. After one week, check the results and analyze the data from it.



6. Result of the Experiment



Overall, the results were successful enough. In order, the agar plates had different amount of the bacteria like this picture. The plate that had the most was the first plate which I left as a control, and the least was of course the last plate which I spread 10 drops of bleach in it. The only problem was that the 4th plate was contaminated with fungi, but I considered not to think about it too much and leave it only has contamination



The experiment of the glass tube was fortunate. The glass tube that had the most bacteria was the first tube which I left it as control. In ascending order, the amount of the bacteria decreased. The least amount of the bleach that could kill all of the bacteria was 8 drops of bleach per 6 drops of yogurt. This is the least amount of bleach you need to use for cleaning certain amount of area.

7. Impact of My Experiment

My expectation of the impact of the experiment wouldn't be so big, because the experiment itself wasn't in a big scale. However, I want people to think about the least amount of bleach they could use to save the environment easily. They could consider even once, and know the amount of the bleach they could use for cleaning their house, or anywhere in their ordinary lives.



8. WWW, EBI

WWW : The results that came out of the experiments went well without some errors in the experiment. Also, the experiment was prepared well in good time.

EBI : I could've wrote some notes when I do experiments. When I didn't, I had some problems in remembering some of the factors of the experiments. Next time, I could memo in right time and distribute the time of writing crest workbook..

Thank you for listening