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# COMPARISION OF DISINFECTANT BY PHENOL COEFICIENT METHOD

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## ABSTRACT

The study of comparision of disinfectant by phenol coefficient method is doing for the disinfectantant capability of phenol and Lysol by using various flavours of disinctanct such as neem flavour, shoe flavour, milk flavour, and some others. The method use here is suspension method, in this method, a loopful of bacterial suspension was carried into contact with the disinfectant and again a loopful of this blend tones was refined for an enduring living being. The outcome was communicated as growth or no growth. In quantitative strategies, the quantity of of serviving life forms is tallied and contrasted with the sub-atomic size. By taking away the logarithm of the previous from the logarithm of the last mentioned, the decimal log lessens or microbial impact (ME) is gotten. Loopful of bacterial suspension was carried into contact with the disinfectant and again a loopful of this blend tones was refined for an enduring living being. The outcome was communicated as growth or no growth. By observing all the result get that**,** a coefficient of less than 1.0 implies that the disinfectant is less successful than phenol and more prominent than 1.0 is more powerful than phenol.

**KEYWORDS:** lysol, phenol, staphylococcus aureus.

## INTRODUCTION

Disinfectants are antimicrobial operators that are applied to non-living articles to decimate microorganisms that are living on the items. Sanitization doesn't really execute all microorganisms, particularly safe bacterial spores; it is less compelling than disinfection, which is an extraordinary physical as well as concoction process that slaughters a wide range of life. Disinfectants are not the same as other antimicrobial operators, for example, anti-

infection agents, which wreck microorganisms inside the body, and germicides, which pulverize microorganisms on living tissue. Disinfectants are additionally not quite the same as biocides the last are proposed to wreck all types of life, not simply microorganisms. Disinfectants work by devastating the phone mass of organisms or meddling with the digestion. Sanitizers are substances that at the same time clean and purify. Disinfectants are as often as possible utilized in medical clinics, dental medical procedures, kitchens, and restrooms to slaughter irresistible living beings. Bacterial endospores are generally impervious to disinfectants, however, some infections and microscopic organisms additionally have some tolerance.ln wastewater treatment, a sterilization step with chlorine, ultra-violet (UV) radiation, or ozonation can be incorporated as tertiary treatment to expel pathogens from wastewater, for instance, in the event that it is to be reused to flood greens. An elective term utilized in the sanitation part for the cleansing of waste streams, sewage, ooze, or fecal slop is disinfection or purification. The Phenol coefficient is presented to a great extent of has chronicled intrigue, in spite of the fact that the standards whereupon it is based are as yet utilized. It is a proportion of the bactericidal action of a concoction compound according to phenol-When recorded numerically, the figure communicating the purifying intensity of a substance by relating it to the sanitizing intensity of phenol might be an element of the state-administered test performed. For instance, the Rideal-Walker technique presented in 1903 gives a Rideal-Walker coefficient and the U.S. Office of Agriculture technique gives a U.S. Division of Agriculture coefficient. To figure the phenol coefficient, the grouping of phenol at which the compound kills the test creature shortly, anyway not in a brief timeframe. Is parcelled by the gathering of the test compound that kills the living being under comparable conditions (or, in all probability continuously typical) isolating the weakening element at which they tried substance shows movement by the weakening component at which phenol shows tantamount action). The Rideal-Walker test was broadly utilized, yet the test conditions picked were unreasonable, and inconceivably high qualities for the coefficient were asserted by disinfectant makers. Recognized bacteriologist Sir Ashley Miles, assessing the subject, portrayed the test as"...at best a terribly over-streamlined response to a troublesome issue and, even under the least favorable conditions minimal shy of bacteriological prostitution". Alterations were made by Woman Harriette Chick and Sir Charles James Martin in 1908. [41 They utilized increasingly reasonable conditions, remembering 3% sterile excrement to mirror the conditions for which numerous disinfectants were utilized. The Chick-Martintest was then broadly utilized until supplanted by progressively appropriate tests not dependent on phenol and mirroring the

conditions wherein present-day disinfectants are utilized. Counts by Harriette Chick indicated that the executing of microscopic organisms by disinfectants followed first-request energy. In this way, the bactericidal action of a specific disinfectant at a given focus can be communicated as a constant (k) determined by utilizing the recipe k = N/C T where N is the quantity of enduring cells, C is the convergence of specialist applied and T is the ideal opportunity for which the operator is applied, so it is conversely corresponding to a portion (C T is by and large called portion). One approach to contrast disinfectants is to think about how well they do against a known disinfectant and rate them as needs are utilizing the Phenol coefficient. The disinfectant to be tried is contrasted and phenol on a standard microorganism (for the most part Salmonella typhi or Staphylococcus aureus). Disinfectants that are more compelling than phenol has a coefficient more noteworthy than 1; those that are less viable to have a coefficient under 1.

## METHOD AND MATERIAL

### Suspension test

In these tests, an example of a bacterial culture is suspended into the disinfectant arrangement and after the introduction, it is confirmed by subculture whether this inoculums is murdered or not suspension tests are performed to transporter tests as the microscopic organisms are consistently presented to the disinfectant. There are various types of suspension test. The subjective suspension tests, the test for the assurance of the phenol coefficient (Rideal and Walker, 1903) and the quantitative suspension tests. At first, this was done in a subjective way. A loopful of bacterial suspension was carried into contact with the disinfectant and again a loopful of this blend tones was refined for an enduring living being. The outcome was communicated as growth or no growth. In quantitative strategies, the quantity of of serviving life forms is tallied and contrasted with the sub-atomic size. By taking away the logarithm of the previous from the logarithm of the last mentioned, the decimal log lessens or microbial impact (ME) is gotten. A ME of 1 equivalent of the murdering of 90% of the underlying number of microbes, a ME of 2 methods 99% executed. For the most part, acknowledged necessity is a ME that rises to or is more noteworthy than 5. at At least 99.999% of the germs is slaughtered. Despite the fact that these tests are commonly all-around normalized, their methodology is less commonsense.

**Assurance phenol coefficient**

Phenol coefficient of a disinfectant is determined by partitioning the weakening of test disinfectant by the weakening of phenol that sanitizes under a foreordained condition.

**Disinfectants: - lysol**

**Technique**: - Plan supplements stock according to the examination. Take an 18-test cylinder and include 7mI supplements stock in each test tube and sanitized it via autoclaving at 15 lbs pressure for 15-20 minutes. Take 6 diverse tapered carafes and get ready 1:70, 1:90, 1:100 weakening of phenol in 3 distinctive cone-shaped flagons, and named them. Get ready 1:70, 1:90, 1:100 weakening of Lysol in 3 distinctive cones like jars, and named them, presently sanitized all the weakening of disinfectant alongside 6 ace cylinders. 6) After cleansing takes 4.5 ml of every phenol weakening in 3 distinctive disinfected test tubes and named them as 1:70, 1:90, and 1:100. At that point take 4.5 m of every Lysol weakening in 3 distinctive test tubes and marked them as 1:70, 1:90, 1:100. These test tubes are ace test tubes. After cleansing of glucose stock test tubes partition into two sets, each set containing 9 test tubes, 1 set marked for

**a) Set 1-phenol lebelled as a test tube as under**

i. Phenol = 1:70-5 min, 1:70-10 min, 1:70-15 min
ii. Phenol = 1:90-5 min, 1:90-10 min, 1:90-15 min
iii. Phenol = 1:100-5 min, 1:100-10 min, 1:100- 15 min

**b) Set 2 b) Lysol lebelled as a test tubes as under**

i. Lysol = 1:70-5 min, 1:70--10 min, 1, 70- 15 min
ii. Lysol = 1:90-5 min, 1:90--10 min, 1, 90- 15 min
iii. Lysol = 1:100-5 min, 1:100 --10 min, 1:100-15 min

Presently include 0.5 ml societies in the ace-cylinder (1:70) of phenol and after 5 min move 0.1 ml from these cylinders into stock test tubes and named them as phenol supplements 1:70 for 5 minutes. After 5 min move 0.1ml of culture from 1:70 ace cylinders into 1:70 - 10 min.

Test tubes and again after 5 min move 0.1 ml societies of 1:70 ace cylinders into 1: 70 - 15- ace cylinder test tube. Rehash a similar technique for all weakening of phenol just as Lysol.

Brood all the test tubes at $37^0$C for 24 hours. Watched the development based on turbidity.

**Rehash the procedure**

**Strategy for the accompanying disinfectant**

Phenol — Dermatol flavor disinfectant

Phenol — Jasmin flavor disinfectant

Phenol — Shoe flavor disinfectant

Phenol — Milk flavor disinfectant

Phenol — Neem flavor disinfectant

Phenol — Rose flavor disinfectant

Phenol — Green flavor disinfectant

Phenol – Lemon flavour disinfectant

Phenol and other set named for given disinfectant (Lysol)

**Computation:-** Phenol coefficient = Equal of the most elevated weakening of given disinfectant that executes Microorganism in 10 min yet not in 5 min/Proportional of the most elevated weakening of phenol that murders the microorganism in 10 min Yet not in 5 Min. = 1:100/1:100 = - 1

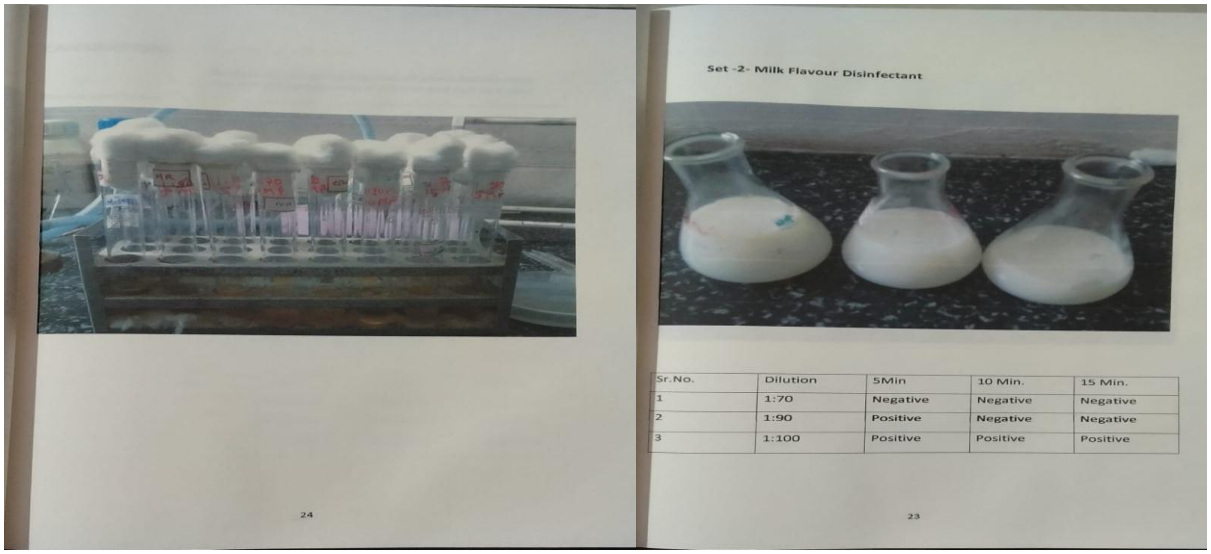
Phenol coefficient of Lysol is 1

## RESULT AND DISCUSSION

**Phenol-Lysol Disinfectant**

The phenol coefficient of Lysol is 1. It implies the Lysol has a similar impact as that of phenol. As set 1 phenol for the weakening 1:70, 1:90 for the timeframe 5 minutes, 10 minutes, 15 minutes the outcome is negative that is the development of Staphylococcus aureus isn't watch. The weakening 1:100 for 5 minutes shows the development of staphylococcus is watching implies the outcome is sure however a similar weakening for the time span 10 and 15 minutes show a negative outcome as the development of Staphylococcus aureus isn't found As set 2 Lysol for the weakening 1:70,1: 90 for the timeframe 5 minutes, 10 minutes, 15 minutes the outcome is negative that is the development of Staphylococcus aureus isn't watched. The weakening 1:100 for 5 minutes shows the development of staphylococcus is watching implies the outcome is certain yet a similar weakening for the time span 10 and 15 minutes shows negative outcomes as the development of Staphylococcus aureus isn't discovered Joseph Lister Presents phenol carbolic corrosive as a disinfectant in 196. It has been the standard disinfectant to which different disinfectants are analyzed under

similar conditions. The after effect of this examination is the phenol coefficient. Salmonella Typhi, a pathogen of the stomach related framework, and staphylococcus aureus, a typical injury pathogen, are normally used to decide the phenol coefficient. A disinfectant with a phenol coefficient of 0.1 has similar viability as phenol. A coefficient of less than 1.0 implies that the disinfectant is less successful than phenol and more prominent than 1.0 is more powerful than phenol.



Set -2- Milk Flavour Disinfectant

| Sr.No. | Dilution | 5Min | 10 Min. | 15 Min. |
|---|---|---|---|---|
| 1 | 1:70 | Negative | Negative | Negative |
| 2 | 1:90 | Positive | Negative | Negative |
| 3 | 1:100 | Positive | Positive | Positive |

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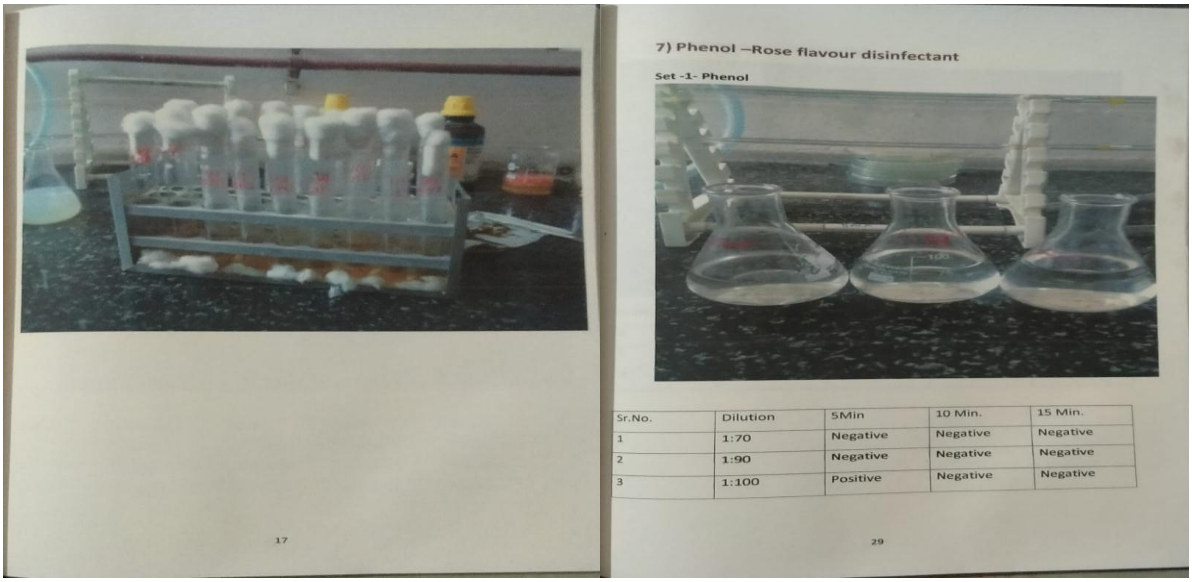

7) Phenol –Rose flavour disinfectant

Set -1- Phenol

| Sr.No. | Dilution | 5Min | 10 Min. | 15 Min. |
|---|---|---|---|---|
| 1 | 1:70 | Negative | Negative | Negative |
| 2 | 1:90 | Negative | Negative | Negative |
| 3 | 1:100 | Positive | Negative | Negative |

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Set -2- Sandal Flavour Disinfectant

| Sr.No. | Dilution | 5Min | 10 Min. | 15 Min. |
|---|---|---|---|---|
| 1 | 1:70 | Positive | Negative | Negative |
| 2 | 1:90 | Positive | Positive | Negative |
| 3 | 1:100 | Positive | Positive | Positive |

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Set -2- Germitol

| Sr.No. | Dilution | 5Min | 10 Min. | 15 Min. |
|---|---|---|---|---|
| 1 | 1:70 | Negative | Negative | Negative |
| 2 | 1:90 | positive | Negative | Negative |
| 3 | 1:100 | Positive | positive | Negative |

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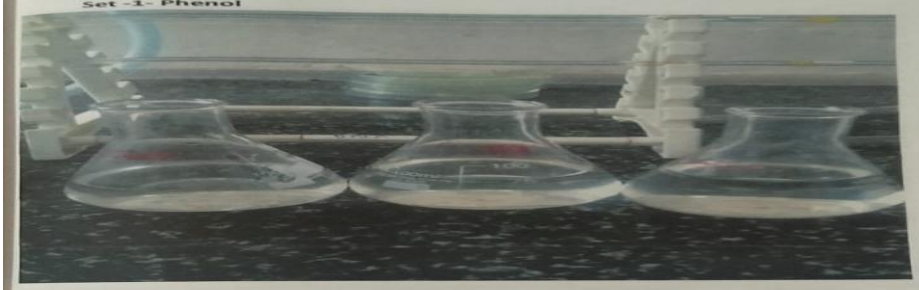
*3) Phenol – Jasmine flavour disinfectant*

Set -1- Phenol



| Sr.No. | Dilution | 5Min | 10 Min. | 15 Min. |
|---|---|---|---|---|
| 1 | 1:70 | Negative | Negative | Negative |
| 2 | 1:90 | Negative | Negative | Negative |
| 3 | 1:100 | Positive | Negative | Negative |

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*5)Phenol –Milk flavour disinfectant*

Set -1- Phenol

| Sr.No. | Dilution | 5Min | 10 Min. | 15 Min. |
|---|---|---|---|---|
| 1 | 1:70 | Negative | Negative | Negative |
| 2 | 1:90 | Negative | Negative | Negative |
| 3 | 1:100 | Positive | Negative | Negative |

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*4) Phenol – Sandal flavour disinfectant*

Set -1- Phenol

| Sr.No. | Dilution | 5Min | 10 Min. | 15 Min. |
|---|---|---|---|---|
| 1 | 1:70 | Negative | Negative | Negative |
| 2 | 1:90 | Negative | Negative | Negative |
| 3 | 1:100 | Positive | Negative | Negative |

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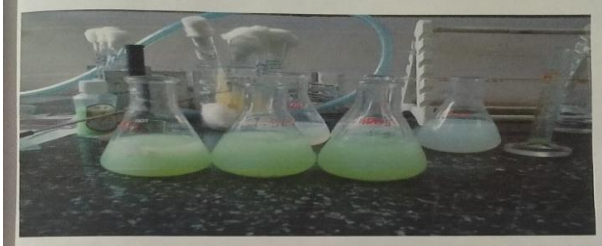
Set -2- JasmineFlavour Disinfecatant



| Sr.No. | Dilution | 5Min | 10 Min. | 15 Min. |
|---|---|---|---|---|
| 1 | 1:70 | Positive | Negative | Negative |
| 2 | 1:90 | Positive | Negative | Negative |
| 3 | 1:100 | Positive | Positive | Negative |

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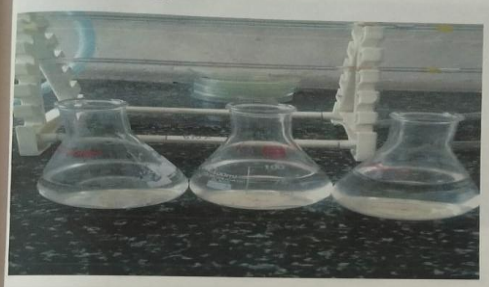
6) Phenol – Neem flavour disinfectant

Set -1- Phenol



| Sr.No. | Dilution | 5Min | 10 Min. | 15 Min. |
|---|---|---|---|---|
| 1 | 1:70 | Negative | Negative | Negative |
| 2 | 1:90 | Negative | Negative | Negative |
| 3 | 1:100 | Positive | Negative | Negative |

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Set -2- lyzol

| Sr.No. | Dilution | 5Min | 10 Min. | 15 Min. |
|---|---|---|---|---|
| 1 | 1:70 | Negative | Negative | Negative |
| 2 | 1:90 | Negative | Negative | Negative |
| 3 | 1:100 | Positive | Negative | Negative |

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8) Phenol –Lemon flavour disinfectant

Set -1- Phenol

| Sr.No. | Dilution | 5Min | 10 Min. | 15 Min. |
|---|---|---|---|---|
| 1 | 1:70 | Negative | Negative | Negative |
| 2 | 1:90 | Negative | Negative | Negative |
| 3 | 1:100 | Positive | Negative | Negative |

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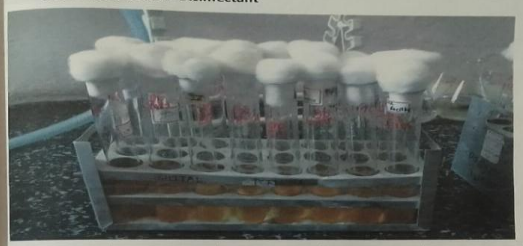
Set -2-Rose Flavour Disinfectant



| Sr.No. | Dilution | 5Min | 10 Min. | 15 Min. |
|---|---|---|---|---|
| 1 | 1:70 | Positive | Negative | Negative |
| 2 | 1:90 | Positive | Negative | Negative |
| 3 | 1:100 | Positive | Positive | Negative |

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Set -2- Neem Flavour Disinfectant

| Sr.No. | Dilution | 5Min | 10 Min. | 15 Min. |
|---|---|---|---|---|
| 1 | 1:70 | Negative | Negative | Negative |
| 2 | 1:90 | Positive | Negative | Negative |
| 3 | 1:100 | Positive | Positive | Negative |

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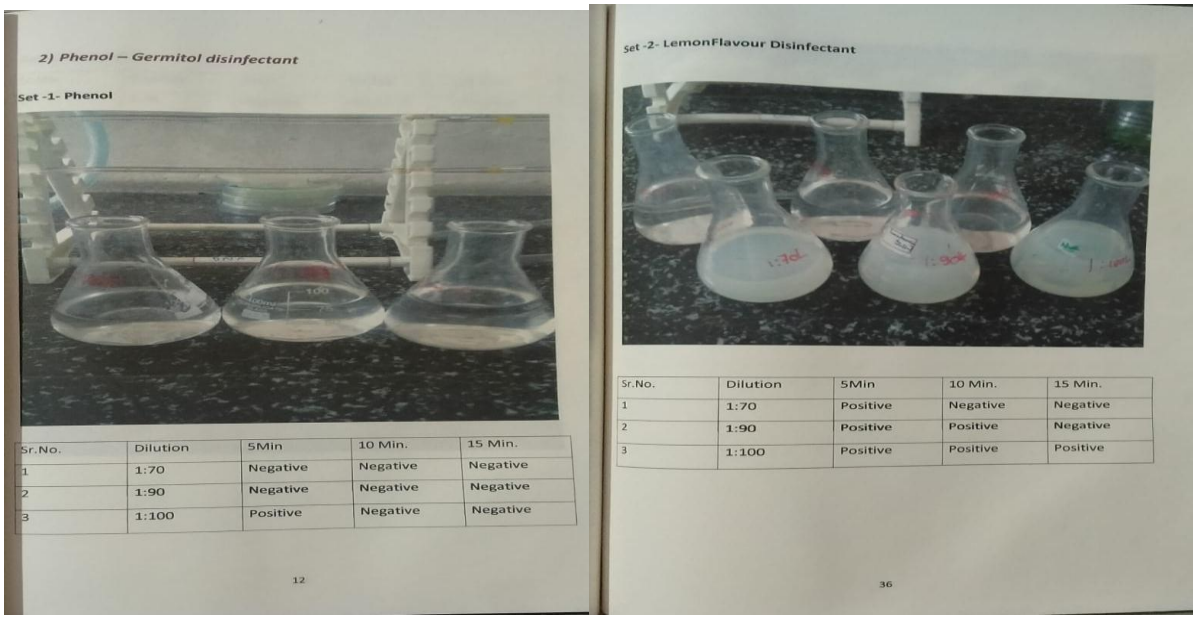

2) Phenol – Germitol disinfectant

Set -1- Phenol

| Sr.No. | Dilution | 5Min | 10 Min. | 15 Min. |
|---|---|---|---|---|
| 1 | 1:70 | Negative | Negative | Negative |
| 2 | 1:90 | Negative | Negative | Negative |
| 3 | 1:100 | Positive | Negative | Negative |

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Set -2- LemonFlavour Disinfectant

| Sr.No. | Dilution | 5Min | 10 Min. | 15 Min. |
|---|---|---|---|---|
| 1 | 1:70 | Positive | Negative | Negative |
| 2 | 1:90 | Positive | Positive | Negative |
| 3 | 1:100 | Positive | Positive | Positive |

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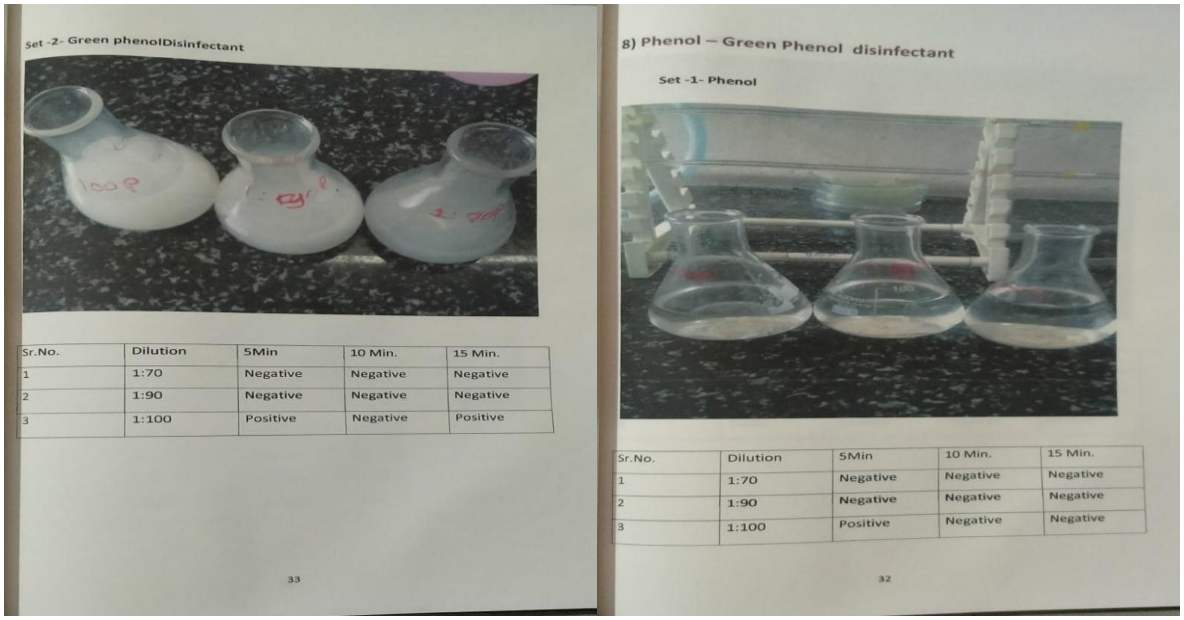

Set -2- Green phenolDisinfectant

| Sr.No. | Dilution | 5Min | 10 Min. | 15 Min. |
|---|---|---|---|---|
| 1 | 1:70 | Negative | Negative | Negative |
| 2 | 1:90 | Negative | Negative | Negative |
| 3 | 1:100 | Positive | Negative | Positive |

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8) Phenol – Green Phenol disinfectant

Set -1- Phenol

| Sr.No. | Dilution | 5Min | 10 Min. | 15 Min. |
|---|---|---|---|---|
| 1 | 1:70 | Negative | Negative | Negative |
| 2 | 1:90 | Negative | Negative | Negative |
| 3 | 1:100 | Positive | Negative | Negative |

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## CONCLUSION

Lysol is contrasting and phenol, Lysol is a similar impact as phenol in light of the fact that the phenol coefficient is 1.

Germitol is contrasted and phenol, germitol is less powerful than phenol in light of the fact that the phenol coefficient is 0.9.

Jasmine flavor disinfectant is comcomparedth phenol; jasmine flavor disinfectant is less powerful than phenol in light of the fact that the phenol coefficient is 0.7.

Milk kind of disinfectant is contrasted and phenol-milk flavor disinfectant is less powerful than phenol in light of the fact that the phenol coefficient is 0.9.

Shoe kind of disinfectant is contrasted and phenol shoe flavor disinfectant is less powerful than phenol in light of the fact that the phenol coefficient is 0.7.

Neem kind of disinfectant is contrasted and phenol neem flavor disinfectant is less powerful than phenol in light of the fact that the phenol coefficient is 0.7.

Rose kind of disinfectant contrast and phenol, rose flavor disinfectant is less powerful than phenol in light of the fact that the phenol coefficient is 0.7.

Green phenol disinfectant is contrasted and phenol, green phenol is a similar impact as phenol in light of the fact that the phenol coefficient is 1.

Lemon kind of disinfectant-contrasted pare and phenol-lemon flavor disinfectant is less viable than phenol on the grounds that the phenol coefficient.

**REFERENCES**

1. Clinical microbiology made ludicrously straightforward auth.mark gladwin *bill trattler and c. scott mahan.
2. Prescotts microbiology auth. joanne willey, Linda Sherwood and christoher j. woolverton.
3. Jawetzmeinick & adelbergs clinical microbiology Auth. geo. Creeks, karen c. carroll, janet butel and Stephen.
4. Morse region research facility practice in tropical countriesauth. monica cheesbrough.
5. Medical microbiology auth-patrick r. murray, ken s.rosenthal and michael a. pfaller.
6. Microbiology research facility hypothesis and application auth. Michael j. lebo pplication auth. Michaell.