VARIATIONS IN BACTERIAL INHIBITION RATES BETWEEN VARIOUS HOUSEHOLD CLEANERS ON *ESCHERICHIA COLI*

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("What", 2005)
PROBLEM – WHICH CLEANER SHOULD ONE USE?

- Variety of options available – invasive, family-friendly, organic
- Hypothesis based on scientific literature, limitations of experiment

![Cleaning Products]

- Sodium Hypochlorite 1-5% (How, 2013)
- Triclosan 1-2% (Wasserman, 2017)
- Carvacrol (Nostro, 2007) ~65% (Group, 2014)
METHODS

- Measuring zone of inhibition
- Bleach, Hand Soap, Oregano Oil, and Sterile Water
- 5 µL, 10 µL, 15 µL applications
- Three discs, two trials, six total discs
RESULTS

![Figure 1](image)

**Figure 1**

Average Zones of Inhibition for Various Cleaners

<table>
<thead>
<tr>
<th>Volume of Trial Amount (μL)</th>
<th>Dial Liquid Hand Soap</th>
<th>Oregano Essential Oil</th>
<th>Clorox Bleach</th>
<th>Sterile Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>1.2</td>
<td>1.45</td>
<td>1.35</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>0.25</td>
<td>0.3</td>
<td>0.25</td>
<td>0</td>
</tr>
<tr>
<td>15</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Figure 1** shows the average radii of the bacterial zones of inhibition across the four cleaners tested over the three volumes applied.
CONCLUSION

- Dial Liquid Hand Soap performed the best
- Amount applied had little effect
- Deviations from initial hypothesis due to:
  - Concentrations of active ingredients
  - Unequal spread of bacteria
- Changes for future tests:
  - Testing other cleaners
  - Improvement of lab techniques
  - Concentration-based testing
REFERENCES


