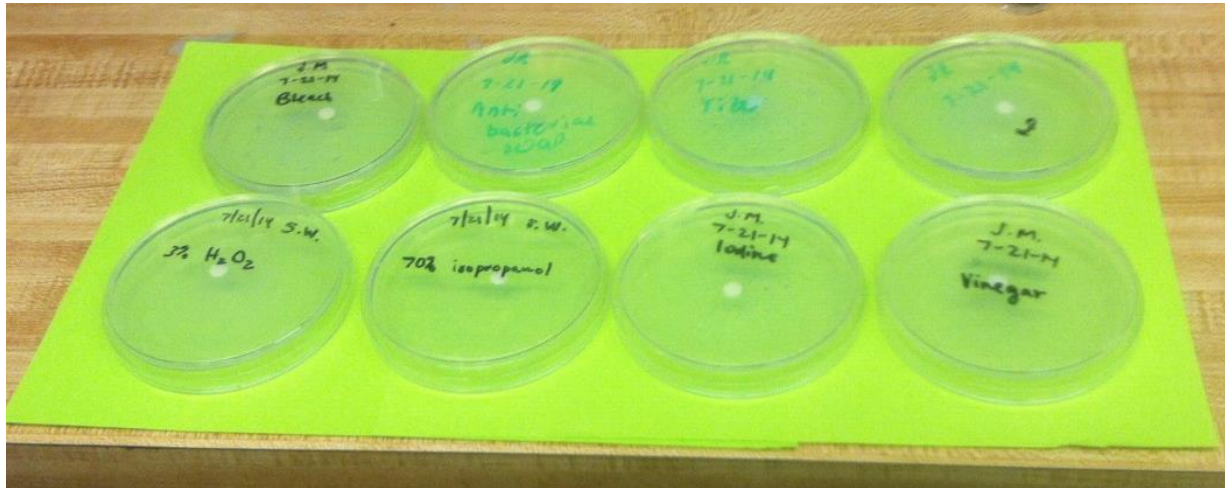




California State University of Bakersfield, Department of Chemistry

## What is the best inhibitor of bacteria growth?



### Standards:

MS-LS1-5. Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.

MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.

### Introduction:

*Bacteria live everywhere, including on our hands from touching various objects and surfaces throughout the day. Bacteria can cause many infections and illnesses if we do not wash our hands before doing certain activities. We know that bacteria are easily transferred and scientists have discovered various ways to kill bacteria and inhibit their growth. This experiment will investigate several different solutions and their ability to inhibit the growth of bacteria.*

### Materials:

- Antibacterial Soap\*
- Bleach\*
- Hydrogen Peroxide\*
- Tide Soap\*
- 70% isopropanol\*
- Iodine\*
- Vinegar\*
- Water
- Paper disks
- Petri Dishes
- Forceps
- Staph epidermis
- Applicator sticks
- Ruler

\*Students may use whatever solutions they think will work. These are just suggestions.

*This material is based upon work supported by the CSUB Revitalizing Science University Program (REVS-UP) funded by Chevron Corporation. Opinions or points of view expressed in this document are those of the authors and do not necessarily reflect the official position of the Corporation or CSUB.*

**Safety:**

- Always have an adult with you to help you during your experiment.
- Always wear eye protection and gloves when doing chemistry experiments.

**Procedure:**

1. Label each petri dish with the name of the solution that is going to be used.
2. Submerge applicator stick in bacteria.
3. Spread bacteria, completely covering agar in each petri dish (use different sticks each time).
4. Let the bacteria sit for five minutes in the petri dishes.
5. Sterilize forceps with either fire or alcohol wipes before using them.
6. Use forceps to submerge disks in different solutions (sterilize forceps between each use).
7. Gently place disk in the middle of the petri dishes and press gently onto agar.
8. Close petri dishes and place upside down.
9. Incubate the bacteria overnight.
10. Measure inhibition made by solution on the bacteria.

**Data and Observations:**

Record your observations in this space.

Type of Solution	Zone of Inhibition (mm)
Antibacterial Soap	
Bleach	
Hydrogen Peroxide (H <sub>2</sub> O <sub>2</sub> )	
Iodine	
Tide Soap	
Vinegar	
Water	
70% Isopropanol	

What did you see? Anything you were not expecting? Describe it here.

**References:**

1. Payton, Gliane. Evaluating the Effectiveness of Different Hand Soaps.  
<http://avoca37.org/13paytong/files/2010/11/Hand-Soap-Evaluation-Lab.pdf>  
(Accessed: July 16, 2014).

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