



TESTING THE EFFECTIVENESS OF DIFFERENT NATURAL ANTIBIOTICS



Name: _____

Date: _____

Age/Grade: _____

QUESTION

How effective are different natural substances at inhibiting the growth of bacteria?

HYPOTHESIS

If I test different natural substances, then _____ will be the most effective because _____.

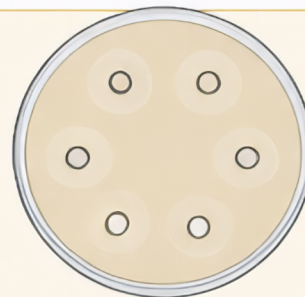
MATERIALS

- Agar plates (pre-poured with safe bacteria such as *Bacillus subtilis*)
- Cotton swabs
- Sterile paper discs (or cut filter paper circles)
- Garlic (crushed)
- Raw honey
- Turmeric powder
- Tea tree essential oil (diluted)
- Oregano oil (diluted)
- Distilled water
- Small bowls or cups
- Droppers or pipettes
- Tweezers (or clean tongs)
- Masking tape
- Marker
- Ruler or calipers

Note: Use safe bacteria provided in agar plates from a science supplier. Do not open the plates.

PROCEDURE

1. Label the bottom of each agar plate with the test substances and a control (water).
2. Using sterile technique, place one sterile paper disc in the center of each section/plate.
3. Add the test substance to each disc:
 - Garlic, Honey, Turmeric, Tea Tree Oil, Oregano Oil, and Distilled Water (control)
4. Allow the substances to soak into the discs for 5–10 minutes.
5. Place the discs gently onto the surface of the agar (one disc per plate or spaced apart on one large plate).
6. Seal the plates with tape to keep them closed.
7. Incubate the plates at room temperature (20–25°C / 68–77°F) for 24–48 hours.
8. Measure the diameter of the clear “zone of inhibition” around each disc in millimeters (mm).
9. Record your results in the data table below.



CONTROLS & VARIABLES

- **Independent Variable:** The type of natural substance used on the disc.
- **Dependent Variable:** The size of the zone of inhibition (mm) around the disc.
- **Control:** Distilled water (should show little to no inhibition).
- **Constants:** Same type of bacteria, same size discs, same amount of substance, same incubation time and temperature.

DATA TABLE

Substance Tested	Zone of Inhibition Diameter (mm) Trial 1	Zone of Inhibition Diameter (mm) Trial 2	Average Diameter (mm)
Garlic			
Raw Honey			
Turmeric			
Tea Tree Oil (diluted)			
Oregano Oil (diluted)			
Distilled Water (control)			

OBSERVATIONS

What did you notice during the experiment?

CONCLUSION

Which natural substance was the most effective? Why do you think it worked best?



- Wash hands before and after the experiment.
- Do not open agar plates.
- Handle all materials with clean tools.
- Clean your workspace after the experiment.