

Natural antibiotics

Many natural products are known to kill bacteria.

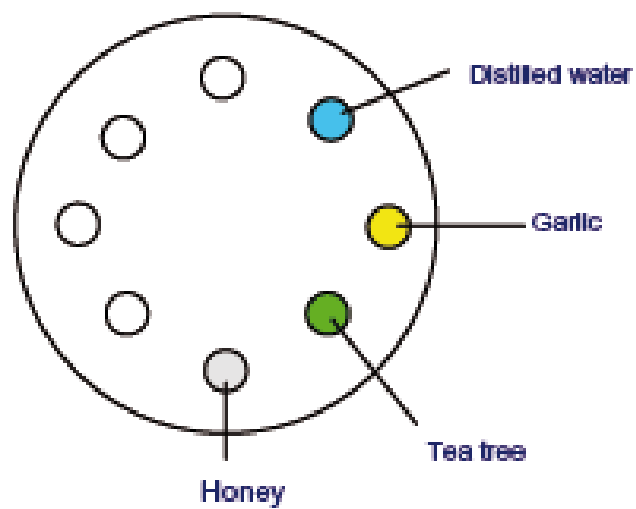
In this activity, you will test a range of natural products to find out how effectively they do this. You will need to be familiar with the microbiological techniques to be used. You must make sure that you take great care to avoid contamination with bacteria or substances that are not a part of the test.

You will need:

- a sterilised petri dish containing sterilised full nutrient agar inoculated with *E. coli* or other suitable bacterium (these plates will be prepared by your teacher)
- 10 filter paper discs cut by using a paper hole punch
- natural products dissolved or mashed in distilled water, for example eucalyptus oil, tea tree oil, garlic, horseradish, mint, aloe vera, mustard seed, honey
- an incubator

What to do:

1. Using forceps, dip a piece of filter paper into sterilised distilled water and place this on the surface of the agar as shown in the diagram below.



2. Dip a separate piece of filter paper into each of the natural products to be tested, and again place these on the agar surface.
3. Write a label on the outside of the bottom half of the Petri dish to indicate what is on each disc.
4. Seal the Petri dish with sticky tape and place it upside down in an incubator at 27 °C for 2 or more days.
5. Examine the plate without opening it. The agar will be cloudy where *E. coli* has successfully multiplied. Look for a clear patch around any disc. This indicates that the material that soaked into that disc has antibiotic properties.
6. Collect all the results for the class in a table.
7. Devise a way of representing the results to clearly show which substances were the most effective antibiotics.
8. In your group discuss:
 - the reason for including the disc dipped in distilled water
 - any differences between your results and those of other groups in the class
 - aspects of the experimental method that may have lead to differences in results
 - which of the natural substances tested was an effective antibiotic.

For further investigation

- Devise an experiment to compare the effectiveness of one or two of the natural substances with a commercially available antiseptic or disinfectant.
- Have other cultures made use of these sorts of natural antibiotics over time?
- Find out if any of these substances are being researched for use in western medicine, or if they are already in clinical use.