

Investigation of the effect of antibiotics on bacterial growth

Introduction

Antimicrobials are agents that are able to kill bacteria or halt their growth. They are widely used in medicine to treat bacterial infections. In this experiment you will test different antimicrobial agents to assess how they affect bacterial growth.

Apparatus

Bunsen burner

1 × pre-prepared agar plate seeded with bacteria

4 × antimicrobial agents, labelled A, B, C and D

4-8 × paper discs (Whatman antibiotic assay paper discs/ or new filter/ chromatography paper cut with a hole punch then sterilised by autoclaving)

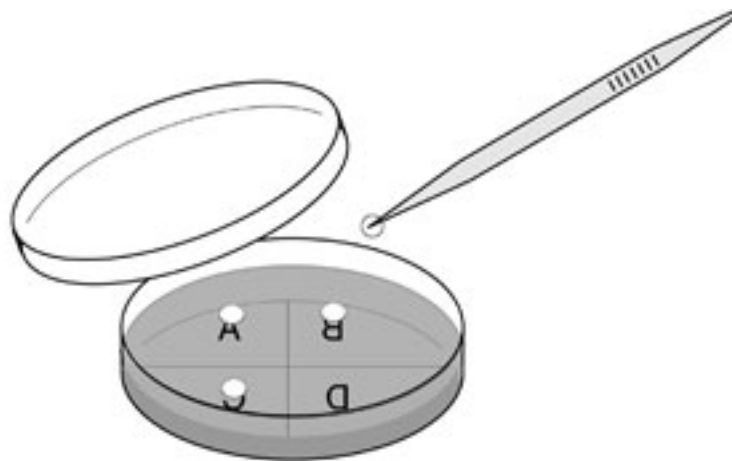
sterile forceps

adhesive tape

marker pen

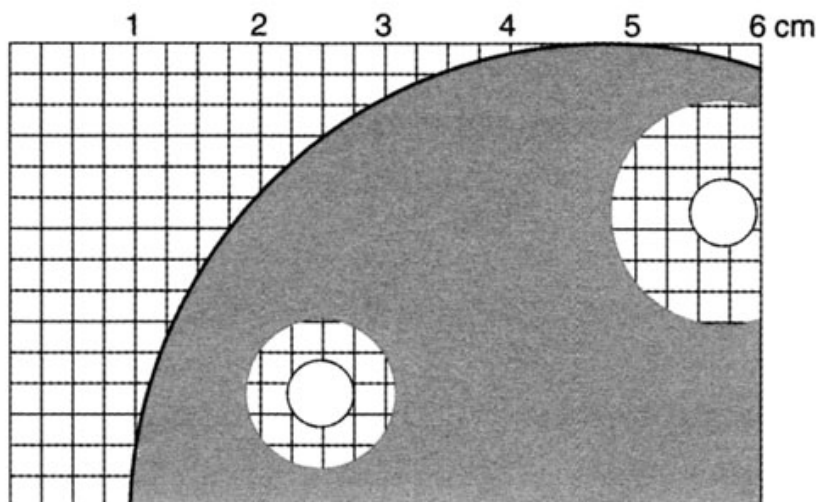
disinfectant solution and cloth

Diagram of Apparatus



Method

1. Wash your hands with the soap or handwash. Wipe down the working area thoroughly with the disinfectant.
2. Work very close to a lit Bunsen burner. Flame the forceps and use them to pick up a filter paper disc and dip the disc into antibiotic A.
3. Allow them to dry for 5 minutes on an open, sterile Petri dish, next to a lit Bunsen burner.
4. Repeat step 3 for antibiotics B, C and D.
5. Use the agar plate that has already been prepared and seeded with bacteria.
6. Turn the dish upside down. Divide the base into four sections by drawing a cross with the marker pen. Label the sections A, B, C, D.
7. Flame the forceps and then use them to pick up antibiotic disc A. Raise the lid of the Petri dish at an angle and place the disc onto the agar in the centre of section A.
8. Repeat step 5 for the other 3 discs. Make sure the discs are placed in the centre of each section.
9. Label the agar plate with your name and date. Tape the lid securely. Incubate inverted for 2-3 days at 20-25 °C.
10. Observe the plates without opening them.
11. Record the width of the clear zone around each antimicrobial. A piece of squared paper under the agar plate might be helpful here.



Analysis

1. Which antimicrobial agent was the most efficient in your investigation? Give reasons for your answer.