OCR (B) Biology GCSE

PAG 07: Microbiological techniques

Practical Notes

Microbiological techniques

Aim

Investigate the effects of antimicrobial agents (using a plant extract) on microbial growth using aseptic techniques.

Equipment

- Bacterial stock
- Petri dishes with growth medium
- Plastic spreader
- Syringes
- Bunsen burner
- Heat proof mat
- Disinfectant
- Marker pen
- Mortar and pestle
- Forceps
- Sterile filter paper discs
- Sterile water
- Contaminated waste disposal method

Method

1. Perform all the steps below in close proximity to a Bunsen flame (set on a blue flame to stop contamination of the media).
2. Swirl the bacterial stock to mix.
3. Remove the lid to the bottle of bacterial stock and flame the mouth of the bottle.
4. Use a syringe to transfer 0.1 cm^3 of bacterial from the bottle to the petri dish. Apply the bacteria to the petri dish holding the syringe 10 cm above the agar.
5. Dispose the syringe safely.
6. Spread the bacteria over the agar using a plastic spreader.
7. Place the lid on the petri dish.
8. Dispose the spreader safely.
9. Label the base of the petri dish (not the lid) by dividing it into 4 sections (or however many antimicrobial agents are tested). One of the sections should be used as a control.
10. Incubate at a temperature which does not encourage the growth of pathogens.
11. Obtain a suitable plant and grind the plant using a pestle and mortar.
12. Add 10 cm^3 of sterile water to the pestle.
13. Soak the filter paper discs in the liquid.
14. Place the filter paper discs onto the petri dish.
15. Label the petri dish base with the agent applied.
16. Repeat steps 10-15 with any other plant selected.
17. Incubate the petri dishes upside down for 48 hours.
18. Measure the diameter of the clear zone surrounding each disc.

Sources of Error

Contamination of the petri dish may occur.
The shape of the clear zones may not be regular so it would be difficult to find a suitable diameter.

Risk Assessment

Exercise caution around blue bunsen flame - tie back all long hair.
Make sure to wash your hands thoroughly before and after the experiment.
Make sure to disinfect all work surfaces after the experiment.
Make sure to safely dispose of any equipment that had come into contact with bacteria.