**AQA Biology- *Separate ONLY***

**Required Practical 2- Microbiology**

***Aims:***

* To investigate the effect of antiseptics or antibiotics on bacterial growth using agar plates and measuring zones of inhibition.
* To use appropriate apparatus to measure length and area, including circles.
* To use problem solving techniques to explain which antiseptic or antibiotic is most appropriate.



Which antibiotic worked best? How do you know?

…………………………………………………………………………………………..

Write down the formulae we could use to calculate this area.

…………………………………………………………………………………………

**Glossary**

Antiseptic-

Antibiotic-

Zone of inhibition-

Aseptic-

Sterilised-

Culture Medium-

**Method**

1. Spray the bench where you are working with disinfectant spray. Then wipe with paper towels.

2. Mark the underneath of a nutrient agar plate (not the lid) with the wax pencil/ marker pen as follows (make sure that the lid stays in place to avoid contamination):

• divide the plate into three equal sections and number them 1, 2 and 3 around the edge

• place a dot into the middle of each section

• around the edge write your initials, the date and the name of the bacteria (E. coli)

3. Wash your hands with the antibacterial hand wash.

4. Put different antiseptics onto the three filter paper discs. This can be done by either soaking them in the liquid or spreading the cream or paste onto them.

5.​Carefully lift the lid of the agar plate at an angle. Do not open it fully.

6. Use forceps to carefully put each disc onto one of the dots drawn on with the wax pencil.

7. Make a note of which antiseptic is in each of the three numbered sections of the plate.

8. Secure the lid of the agar plate in place using two small pieces of clear tape.

**Do not seal the lid all the way around as this creates anaerobic conditions. Anaerobic conditions will prevent the E. coli bacteria from growing and can encourage some other very nasty bacteria to grow.**

9. Incubate the plate at 25 °C for 48 hours.

**Results**

***Measure the diameter of the clear zone around each disc by placing the ruler across the centre of the disc. Measure again at 90° to the first measurement so that the mean diameter can be calculated.***

****

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Type of Antibiotic/ Antiseptic** | **Diameter 1 (mm)** | **Diameter 2 (mm)** | **Mean Diameter (mm)** | **Area of zone of inhibition (mm2)** |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**Conclusion- *Which antibiotic/ antiseptic should be used for this bacteria type and why? Why are there differences? How might this apply to real life situations e.g. in hospitals?***

……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………..………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………..…………………………………..………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………..

**Exam Question**

1. List A gives four actions carried out by the student. List B gives five possible effects of these actions.

Draw a straight line from each action in List A to its effect in List B. Draw **only one** line from each action.

