Antibiotic Cup-plate Assay - Data Analysis

Experiment 11 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To evaluate supplied standard and test zone data.

Principle

A microbial assay estimates antibiotic activity by comparing response with a reference standard under a validated common test design. Zone response depends on assay conditions.

Requirements

- Instructor-prepared fixed slides, labelled images, demonstration records or coded teaching data for this practical.
- Activity form, microscope for prepared slides where applicable and calculator.

Procedure

1. Identify the teaching material

Record the slide, image or data code, method name and the assigned comparison. Use prepared material and supplied results for this exercise.

2. Read the design

Identify the standard, test dilution basis, replicate positions and response measurements supplied.

3. Assess response pattern

Plot the assigned standard response against the prescribed concentration or log-concentration scale.

4. Estimate activity

Apply the supplied validated calibration/model and dilution factor; do not treat a single zone diameter as a universal concentration conversion.

5. Assess validity

Check replicate agreement and model suitability before reporting activity in the assigned units.

6. Assess controls and limitations

Confirm the meaning of the positive, negative, blank or process controls supplied. State which conclusions the results support and which require additional evidence.

7. Complete the record

Enter observations separately from interpretations. Record units, method conditions given with the data and the instructor-reviewed conclusion.

Observations and Record

Record component	Entry
Reference standard / units	_____
Assigned calibration equation	_____
Test mean response	_____
Dilution-corrected activity	_____
Validity / replicate assessment	_____

Worked Example

The numbers below are illustrative; enter your own observations in the record.

- If the supplied calibration is y = a + b log10(C), then C = 10^((y − a)/b); apply the recorded dilution factor.
- Illustration only: a = 10, b = 5 and y = 20 give C = 100 assigned units before dilution correction.

Result

Material / data code: ____. Observed result: ____. Control assessment: ____. Interpretation and limitation: ____.

Precautions

- This activity uses prepared material and data interpretation; it is not a live microbial culture or pathogen-handling procedure.
- Keep morphological, quantitative and clinical interpretations separate.
- Use the method-specific assigned quality controls and current interpretive criteria where relevant.

Viva Questions and Answers

1. Why compare with a reference standard?

Activity is defined against a specified reference in the same assay system.

2. Why check the response model?

A poor or unsuitable fit makes an estimated potency unreliable.

First Hope

COMPLETE NOTES

Click here to visit our website

PHARMACY PRACTICAL NOTES

Complete subject and semesters are available on FirstHope app only.

Scan or click here

Click here to get the app >

Available on Google Play

JOIN THE FIRSTHOPE COMMUNITY

Join our Telegram channel

Click here to join Telegram >

Scan or click here

@FirstHopeNotes

Instagram

@firsthope.official

Click here to follow >

YouTube channel

FirstHope-Pharmacy / Live streams

Click here to watch >

WhatsApp channel

Follow FirstHope on WhatsApp

Click here to join >

FirstHope website

firsthope.co.in

Click here to visit >

B.Pharm / D.Pharm / M.Pharm / Pharm.D

Complete subjects and semesters are available in the FirstHope app.