Drug Effects on Ciliary Motility - Simulation

Experiment 17 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To compare a virtual ciliary-movement endpoint.

Principle

The software represents coordinated ciliary motion as a defined transport or movement measurement. The selected agent and model determine the programmed response.

Hypothetical Dataset

These original figures illustrate analysis only. They are not live observations or dosing instructions.

Virtual record	Distance, mm	Time, s
Control	10	5
Treatment	10	8

Requirements

- Institution-approved pharmacology simulation such as ExPharm
- Predefined virtual control and treatment records
- Worksheet or spreadsheet for graphing and calculation

Procedure

1. Open the exercise

Select the named virtual model and read its endpoint and default settings.

2. Review controls

Record the baseline, vehicle/control and comparator entries supplied by the software.

3. Run the simulation

Use the instructor-assigned virtual treatment option; record the output and units.

4. Compare

Compare the defined endpoint between control and treatment; repeat a virtual run only if the exercise requires it.

5. Analyse

Use the supplied calculation or response trend and state possible confounders.

6. Record

Save the virtual results and write an interpretation that identifies them as simulated.

Interpretation Guide

Longer time over the same distance indicates slower transport. Do not infer a receptor mechanism until the software's selected agent and model are identified.

Observations and Record

Group / run	Endpoint: Transport time over fixed virtual distance	Student record
Control	Control movement	_____
Treatment	Teacher-assigned virtual test agent	_____
Software / setting	Assigned virtual exercise	_____

Worked Example

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

- Speed = distance / time. Control = 2.0 mm/s; treatment = 1.25 mm/s.
- Percentage speed reduction = (2.0 - 1.25) / 2.0 × 100 = 37.5%.

Result

In the software exercise, _____ changed from _____ to _____. The result _____ supports the stated model effect. Confounders/limits: _____.

Precautions

- Use software only; no live animal, tissue collection or drug administration is performed.
- Do not alter safety or validity settings to make a desired result.
- A virtual output demonstrates the model's programmed response and is not a patient treatment recommendation.

Viva Questions and Answers

1. Why keep distance constant?

Time comparisons require the same travel distance.

2. Is slower transport the same as fewer cilia?

No; the endpoint reflects movement or transport, not a structural count.

3. Why identify the data as simulated?

It prevents a programmed result from being represented as a real experimental observation.

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