

Drug Effects on Isolated Heart - Simulation

Experiment 16 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To compare at least two virtual drug effects on cardiac recordings.

Principle

A virtual isolated-heart trace separates rate and contraction-amplitude responses. Adrenergic and muscarinic examples can produce different effects.

Hypothetical Dataset

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

Virtual option	Rate, beats/min	Relative amplitude
Baseline	60	1.00
Adrenaline	80	1.30
Acetylcholine	45	0.80

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.

Pharmacology

6. Record

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

Interpretation Guide

The two programmed responses illustrate positive versus negative chronotropic tendencies; baseline recovery and receptor context must be considered.

Observations and Record

Group / run	Endpoint: Rate / relative contraction amplitude	Student record
Control	Baseline trace	_____
Treatment	Adrenaline and acetylcholine virtual options	_____
Software / setting	Assigned virtual exercise	_____

Worked Example

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

- Adrenaline rate change: +20 beats/min; acetylcholine: -15 beats/min in this hypothetical record.
- Compare relative amplitudes separately from rate.

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. What is chronotropy?

An effect on heart rate.

2. What is inotropy?

An effect on contractile force, represented by an assigned trace endpoint here.

3. Why identify the data as simulated?

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

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