Estimation of SGOT and SGPT Enzyme Activity

Experiment 24 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To calculate AST and ALT activity from supplied kinetic teaching records.

Principle

SGOT is the older name for AST; SGPT is the older name for ALT. Coupled kinetic methods commonly follow NADH absorbance change at 340 nm. The actual method supplies the activity factor and conditions.

Reaction Overview

- AST transfers an amino group from aspartate to alpha-ketoglutarate, forming oxaloacetate and glutamate.
- ALT transfers an amino group from alanine to alpha-ketoglutarate, forming pyruvate and glutamate.
- The coupled detection system links these products to the measured kinetic signal.

Requirements

- Simulated serum or supplied kinetic records
- Assigned AST and ALT kits, controls and photometer
- Product-specified temperature, timing and factor

Procedure

1. Review

Record enzyme name, reaction conditions, interval and activity factor.

2. Run

Use the product's preparation and timed readings; assess controls.

3. Calculate slope

Determine the method-approved absorbance change per minute.

4. Calculate activity

Multiply by the kit's factor and any required dilution.

5. Interpret

Report U/L and distinguish enzyme activity from enzyme mass or a stand-alone diagnosis.

Observations and Record

Time / activity	AST	ALT
Initial absorbance	_____	_____
After 1 minute	_____	_____
After 2 minutes	_____	_____
Change per minute	_____	_____
Factor / activity, U/L	_____	_____

Worked Example

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

- Illustrative kinetic record: absorbance 0.800, 0.780 and 0.760 at 0, 1 and 2 minutes gives a decrease of 0.020/min.
- With an instructor-supplied factor 1,746, activity = 0.020 × 1,746 = 34.92 U/L. This factor is not universal.

Result

Record the observed outcome and calculated value, with units. State whether the stated laboratory specification was met; do not copy the worked example as your result.

Precautions

- Match the defined temperature and timing.
- Do not use one kit's factor with another method.
- Haemolysis, matrix interference and nonlinearity may invalidate interpretation.

Viva Questions and Answers

1. What are AST and ALT?

Aminotransferase enzymes measured through an activity assay.

2. What does U/L express?

Enzyme activity per litre under the defined assay conditions.

3. Can an isolated rise diagnose a cause?

No; clinical context and other findings are needed.

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