

This package insert must be read carefully prior to use.

Alanine aminotransferase assay kit
(Classification No.: 38556000)

Pureauto S ALT-L

General Precautions

1. This product is for in vitro diagnostic use, and must not be used for any other purposes.
2. Clinicians should make a comprehensive clinical decision based on assay results in conjunction with clinical symptoms and other examination results.
3. This product should be used only as directed in this package insert. Reliability of results cannot be guaranteed if there are any deviations from the instructions in this package insert.
4. If the reagent accidentally comes in contact with eyes and/or mouth, rinse immediately with ample water as first aid, and consult the doctor if required.
5. Carefully read the operating instructions for each type of automated analyzers prior to using this product. Parameters for each type of analyzers are available, and can be requested from SEKISUI MEDICAL CO., LTD. if required.
6. Perform a quality control test prior to assay to ensure accuracy.

Description (Kit Components) **

Component : Ingredients

ALT-L Enzyme Solution 1:

Lactate dehydrogenase
Nicotinamide adenine
dinucleotide (reduced form)
L-alanine

ALT-L Substrate Solution 2:

L-alanine
 α -Ketoglutaric acid
2-Amino-2-hydroxymethyl-1,3-
propanediol buffer

Intended Use

Measurement of alanine aminotransferase (ALT) in serum or plasma

ALT is an enzyme (aminotransferase) that catalyzes the transfer of amino groups between amino acids and α -keto acids. It is widely distributed in myocardium, liver, and brain.

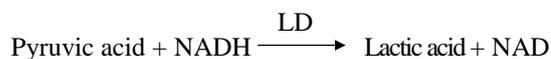
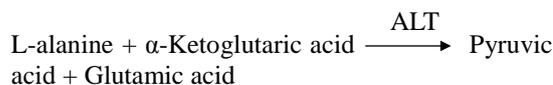
ALT activity in the blood is markedly elevated in hepatic and biliary tract diseases, particularly acute hepatitis. It is also elevated in myocardial infarction.

Assay Principle

1. Assay Principle

ALT catalyzes a reaction producing pyruvic acid and glutamic acid from L-alanine and α -ketoglutaric acid. Pyruvic acid generated is converted to lactic acid and NAD by lactate dehydrogenase (LD) in the presence of NADH. The reaction also converts NADH to NAD, and

its absorbance at 340 nm decreases. ALT activity is determined by measuring the velocity of the decrease in NADH.



2. Features

- 1) Final concentration of the principal ingredient matches with the final concentration stipulated in the JSCC Recommendation for Enzyme Activities.
- 2) Applicable to various automated analyzers.

Procedural Precautions **

1. Properties of Samples and Sampling Methods

1) Samples

Serum and plasma (heparin plasma, EDTA plasma, citrated plasma and NaF-EDTA plasma) may be used.

2) Storage of samples

If the isolated serum or plasma sample cannot be tested on the same day, specimens should be stored as follows⁷⁾:

2–10°C: for tests within 2 weeks

≤ -20°C: for tests after more than 2 weeks

Bring samples to room temperature (15–30°C) before use.

2. Interfering substances

Assay results are not affected by free bilirubin (up to 20 mg/dL), conjugated bilirubin (up to 20 mg/dL), hemoglobin (up to 500 mg/dL), formazin turbidity (up to 2000 FTU), or ascorbic acid (up to 50 mg/dL).

3. Others

- 1) Always use Enzyme Calibrator Plus “Daiichi” for calibration.
- 2) Precautions for assay range
If the activity of sample exceeds assay range, dilute the sample with saline and repeat the measurement.

Dosage/Administration (Assay Procedure) **

1. Preparation of reagents

Reagent (1): ALT-L Enzyme Solution 1 is ready to use.

Reagent (2): ALT-L Substrate Solution 2 is ready to use

2. Assay Procedure

This product is compatible with various types of automated analyzer. An example of the assay procedure is indicated below.

Sample	+	Reagent	$\xrightarrow{37^\circ\text{C}}$	
11 μL		(1)	5 min	
		Reagent	$\xrightarrow{37^\circ\text{C}}$	
		(2)	60–300 sec	Measurement
				(Absorbance ^{**})
				→ Calculation of activity

- * Absorbance: The difference in absorbance between 546 nm and 340 nm
 Calibration material: Enzyme Calibrator Plus "Daiichi" (Manufacture's assigned value)
 Reagent blank: Purified water or saline

Assessment of Assay Results **

1. Reference standard range ⁸⁾

Male: 10–42 U/L

Female: 7–24 U/L (\leq 45 years);

9–32 U/L ($>$ 45 years)

2. There may be reactions or interfering reactions with non-target substances. If assay results appear to be unreliable, repeat the measurement (if necessary, after dilution) or try another analytical methods.

Performance *

1. Sensitivity

1) Reagent blank: change in absorbance being equal to or lower than 0.012/min

2) Sensitivity: The change of absorbance is 0.017–0.024/min per 100 U/L of ALT activity.

2. Accuracy: 90–110% of the expected assay value

3. Within-run reproducibility:

Coefficient of variation \leq 5%

(Test methods used for 1. –3. are in-house methods.)

4. Measurement Range⁹⁾: (On Hitachi 7170 automated analyzer)

3–1500 U/L

5. Correlation ⁹⁾

1) Serum N=55 $r=0.999$ $y=0.99x-0.62$

Control method: using an already approved in vitro diagnostic product with method in line with the JSCC Recommendation for Enzyme Activities.

2) Plasma N=60 $r=0.999$ $y=0.98x+0.54$

Control method: using an already approved in vitro diagnostic product with method in line with the JSCC Recommendation for Enzyme Activities.

6. Standard Material

Enzyme Calibrator Plus, the calibration material used for this product, is in line with the Japanese Standard for Certified Enzyme Reference Materials.

Precautions for Use or Handling **

1. Precautions for Handling (to Ensure Safety)

- 1) All samples used in the test should be handled as a material possibly infected with HIV, HBV, HCV, or other viruses. To prevent infection, use disposable gloves and avoid mouth pipetting during the test.
- 2) Sodium azide is added as an antiseptic agent in the ALT-L substrate solution 2. Therefore, if the reagent comes in accidentally contact with eyes, mouth or skin, rinse immediately with ample water as first aid, and consult the doctor if required.

2. Precautions for use

- 1) This product should be stored as directed, avoid freezing. Freezing can cause deterioration of the reagents, leading to inaccurate results.

Therefore, do not use the product if it has been previously frozen.

- 2) Do not use expired reagents. Use of such reagents cannot guarantee the reliability of measurement values.
- 3) Do not replenish the reagents.
- 4) Do not perform the assay under direct sunlight.

3. Precautions for Disposal

- 1) Before disposal, used samples and their containers must be immersed in sodium hypochlorite solution at a concentration of greater than 0.1% for longer than 1 hour or autoclaved at 121°C for 20 minutes.
- 2) To prevent infections from spilled samples or solutions containing samples, wipe the spilled area thoroughly with disinfectants such as sodium hypochlorite solution at a concentration of greater than 0.1%.
- 3) The reagents and treated samples should be discarded as medical waste or industrial waste according to the waste disposal regulations.
- 4) The reagents should be disposed of in accordance with the Water Pollution Control act or related regulations.
- 5) Sodium azide is added as an antiseptic agent in the ALT-L Substrate Solution 2. It can react with lead or copper pipes to produce the highly explosive metal azide. Therefore, the reagent should be flushed with large amounts of water when disposing.

4. Other precautions

Do not use the containers for other purposes.

Storage and Shelf Life **

1. Storage temperature: 2–10°C
2. Shelf life: 9 months from the date of manufacture (The expiration date is printed on the outer package.)

Packaging

		Name	Package
Pureauto S ALT-L	(1)	ALT-L Enzyme Solution 1	2 × 100 mL
	(2)	ALT-L Substrate Solution 2	2 × 50 mL

Constituent reagents are available in other configurations. For further details please contact SEKISUI MEDICAL CO., LTD.

References **

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- 2) Japan Society of Clinical Chemistry: Jpn J Clin Chem, 18, 255, 1989.
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- 5) Osawa S.: Med Tech, 20, 1022, 1992.
- 6) Japan Society of Clinical Chemistry: Jpn J Clin Chem, 25, 135, 1996.
- 7) Sasaki M. et al.: Sampling of constituents of the human body, 211, Kodansha, 1972.
- 8) Kanai M. (supervising editor): Kanai's manual of clinical laboratory medicine. 34th ed. 579,

Kanehara Shuppan, 2015.
9) In house data, SEKISUI MEDICAL CO., LTD.

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