

PACKAGING

Ref.: 101-0551	Cont.: 20 x 3 mL
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Store at 2-8°C

CLINICAL SIGNIFICANCE

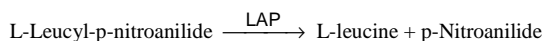
Leucine aminopeptidase (LAP) is a liver enzyme that has relatively broad specificity. Principally, serum LAP activity is increased in infants with jaundice caused by hepatocellular damage, in viral hepatitis, cirrhosis, hepatic neoplasms, acute pancreatitis and biliary obstruction^{2,5,6}.

Clinical diagnosis should not be made on a single test result; it should integrate clinical and other laboratory data.

PRINCIPLE OF THE METHOD

Leucine aminopeptidase (LAP) is a proteolytic enzyme hydrolysing the peptide bond adjacent to a free amino group.

It is called leucine amino peptidase as it rapidly catalyses the hydrolysis of leucine containing peptides, according the following reaction:



The rate of L-leucine formation, measured photometrically, is proportional to the catalytic concentration of LAP present in the sample¹.

REAGENTS

R 1 Buffer	Phosphate pH 7.2	100 mmol/L
R 2 Substrate	L-Leucyl-p-nitroanilide	0.8 mmol/L

Optional (not included in the kit)

Contro-N	Ref.: 101-0252	4 x 5 mL	Lyophilized human control serum
	Ref.: 101-0083	20 x 5 mL	
Contro-P	Ref.: 101-0253	4 x 5 mL	Lyophilized human control serum
	Ref.: 101-0084	20 x 5 mL	

PREPARATION

Working reagent (WR):

Dissolve (→) one tablet of R 2 Substrate in one vial of R 1 Substrate. Cap and mix gently to dissolve contents.

Stability:

7 days at 2-8° C or 48 hours at room temperature (15-25° C).

STORAGE AND STABILITY

All the components of the kit are stable until the expiration date on the label when stored tightly closed at 2-8° C, protected from light and contaminations prevented during their use.

Do not use the tablets if appears broken.

Do not use reagents over the expiration date.

Signs of reagent deterioration:

- Presence of particles and turbidity.
- Blank absorbance (A) at 405 nm ≥ 0.40.

ADDITIONAL EQUIPMENT

- Spectrophotometer or colorimeter measuring at 405 nm.
- Thermostatic bath at 25° C, 30° C o 37° C (± 0.1° C)
- Matched cuvettes 1.0 cm light path.
- General laboratory equipment.

SAMPLES

Serum¹.

PROCEDURE

Notes: CHRONOLAB SYSTEMS has instruction sheets for several automatic analyzers. Instructions for many of them are available on request.

1. Assay conditions:
Wavelength: 405 nm
Cuvette: 1 cm light path
Constant temperature 25° C / 30° C / 37° C

2. Adjust the instrument to zero with distilled water or air.

3. Pipette into a cuvette:

WR (mL)	1.0
Sample (µL)	70

4. Mix.

5. After 1 minute, read initial absorbance (A) of the sample, start the stopwatch and read absorbances at 1 minute intervals thereafter for 3 minutes.

6. Calculate the difference between absorbances and the average absorbance differences per minute (ΔA/min).

CALCULATIONS

$\Delta A/\text{min} \times 1544 = \text{U/L of LAP}$

Units: One international unit (IU) is the amount of enzyme that transforms 1 µmol of substrate per minute, in standard conditions. The concentration is expressed in units per litre of sample (U/L).

QUALITY CONTROL

Control sera are recommended to monitor the performance of assay procedures.

If control values are found outside the defined range, check the instrument, reagents and technique for problems.

Each laboratory should establish its own Quality Control scheme and corrective actions if controls do not meet the acceptable tolerances.

REFERENCE VALUES¹

	25° C	30° C	37° C
Serum	8-22 U/L	12-33 U/L	20-55 U/L
Urine	0.6-4.7 U/L	0.9-7 U/L	1.5-11 U/L

These values are for orientation purpose; each laboratory should establish its own reference range.

PERFORMANCE CHARACTERISTICS

Measuring range: Up to linearity limit of 0.250 ΔA/min.

If the results obtained were greater than linearity limit, dilute the sample 1/10 with NaCl (9 g/L) and multiply the result by 10.

Accuracy: Results obtained using CHRONOLAB reagents (y) did not show systematic differences when compared with other commercial reagents (x).

The results of the performance characteristics depend on the analyzer used.

INTERFERENCES

Haemolysed serum samples should not be used¹.

A list of drugs and other interfering substances with LAP determination has been reported by Young et. al^{3,4}.

BIBLIOGRAPHY

1. Nagel W et al. Klin Wschr 1964; 42: 446-449.
2. Kaplan A et al. Clin Chem The C.V. Mosby Co. St Louis. Toronto. Princeton 1984; 436.
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4. Young DS. Effects of disease on Clinical Lab. Tests, 4th ed AACC 2001.
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