



BIOLABO
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AST GOT (IFCC)

Reagent for quantitative determination of Aspartate amino transferase activity (AST)
[EC 2.6.1.1] in human serum and plasma

REF LP80505	R1 4 x 30 mL	R2 1 x 30 mL
REF LP80605	R1 4 x 100 mL	R2 1 x 100 mL



IN VITRO DIAGNOSTIC USE

TECHNICAL SUPPORT AND ORDERS

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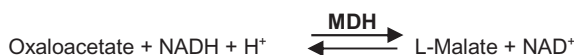
CLINICAL SIGNIFICANCE (1) (2)

AST is distributed in all body tissues, but greatest activity occurs in liver, heart, skeletal muscle and in erythrocytes. Minimal activity occurs in skin, kidney and pancreas. Although serum levels of both AST and ALT become elevated whenever diseases processes affecting liver cells integrity (viral hepatitis, liver necrosis and cirrhosis), an increased AST activity in serum or plasma appears in more than 97% of cases of myocardial infarction. AST levels (and occasionally ALT) are also elevated in progressive muscular dystrophy, pulmonary emboli, acute pancreatitis...

PRINCIPLE (4) (5)

Method developed by Karmen and Al, and optimised by Henry and al. (according to modified IFCC recommendations).

Reaction scheme is as follows:



The decrease in absorbance proportional to AST activity in the specimen is measured at 340 nm.

Absence of P₅P allows a better stability of working reagent.

REAGENTS COMPOSITION

R1 BUFFER ENZYMES BUF ENZ AST

L-Aspartate	275 mmol/L
MDH	≥1000 UI/L
LDH	≥ 500 UI/L
EDTA	6 mmol/L
Tris Buffer	105 mmol/L
pH à 30°C	7,80 ± 0.1
Stabilizer	

R2 COENZYME COENZ AST

Tris Buffer	20 mmol/L
NADH	≤ 1,4 mmol/L
2-Oxoglutarate	80 mmol/L
Stabilizer	

According to 1272/2008 regulation, these reagents are not classified as dangerous

REAGENTS PREPARATION

Ready for use.

MATERIAL REQUIRED BUT NOT PROVIDED

1. Medical analysis laboratory equipment.
2. Spectrophotometer or Biochemistry Clinical Analyzer

SAFETY CAUTIONS

BIOLABO reagents are designated for professional, in vitro diagnostic use (do not pipette with mouth).

- Refer to current Material Safety Data Sheet available on request or on www.biolabo.fr
- Verify the integrity of the contents before use.
- Waste disposal: Respect legislation in force in the country.

All specimens should be handled as potentially infectious, in accordance with good laboratory practices using appropriate precautions. Respect legislation in force in the country.

STABILITY AND STORAGE

Stored away from light, well cap in the original vial at 2-8°C, reagents are stable when stored and used as described in the insert:

Unopened,

- Until the expiry date stated on the label of the Kit.

Once opened:

- Transfer requested quantity, well recap vials and store at 2-8°C,
- 2 separated reagents are stable at least 6 months without contamination
- Discard any cloudy reagent or if absorbance of mixed reagent (R1+R2) is < 1.000 at 340 nm.

SPECIMEN COLLECTION AND HANDLING (2)

Unhemolysed serum. Do not use heparinised plasma

AST is stable in serum or plasma for:

- 24 hours at room temperature
- 28 days at 2-8°C
- At least for 1 year at -20°C.

Adding pyridoxal phosphate (0.1 mM) improves stability at room temperature to 7 days.

LIMITS (3) (6)

LDH contained in reagent allows, during pre-incubation step, reduction of endogenous pyruvate which would positively interfere.

Likewise, oxaloacetate, product of the reaction, is carboxylated into pyruvate. This one will also be consumed by LDH contained in reagent and will not interfere with AST determination.



For a more comprehensive review of factors affecting this assay refer to the publication of Young D.S.

CALIBRATION

- REF 95015 BIOLABO Multicalibrator traceable to *ERM-AD457/IFCC*

The calibration frequency depends on proper instrument functions and on the preservation of reagent.

QUALITY CONTROL

-  95010 BIOLABO EXATROL-N Level I
-  95011 BIOLABO EXATROL-P Level II
- External quality control program.

It is recommended to control in the following cases:

- At least once a run.
- At least once within 24 hours.
- When changing vial of reagent.
- After maintenance operations on the instrument.

If control is out of range, apply following actions:

1. Repeat the test with the same control.
2. If control is still out of range, prepare a fresh control serum and repeat the test.
3. If control is still out of range, verify analysis parameters: Wavelength, temperature, specimen/reagent ratio, time counting, calibration factor.
4. If control is still out of range, use a new vial of reagent and re-assay
5. If control is still out of range, please contact BIOLABO technical support or your local Agent.

EXPECTED VALUES (1) (2)

UI/L	at 30°C	at 37°C
Newborn	25-75	39-117
Infant	15-60	23-94
Adult	8-20	13-31

Each laboratory should establish its own normal ranges for the population it serves.

PERFORMANCES at 37°C on KENZA 240TX

Linearity Range: between 9 and 500 IU/L

Detection limit: approx. 5 IU/L

Precision:

Within-run N = 20	Low level	Normal level	High level	Between run N = 20	Low level	Normal level	High level
Mean (IU/L)	23.6	45.9	162.8	Mean (IU/L)	23.8	45.7	170.5
S.D. IU/L	1.0	1.6	2.6	S.D. IU/L	1.3	2.1	4.1
C.V. %	4.2	3.5	1.6	C.V. %	5.4	4.6	2.4

Comparison studies with commercially available reagent:

Realised on human specimens (n=100) between 5 and 400 IU/L

$$y = 0.9527x + 1.6243 \quad r = 0.9985$$

Analytical sensitivity: approx. 0.0063 abs/min for 10 IU/L

Interferences:

Total bilirubin	Negative interference from 418 µmol/L
Direct bilirubin	No interference up to 420 µmol/L
Ascorbic acid	No interference up to 2500 mg/dL
Glucose	No interference up to 1060 mg/dL
Turbidity	Positive interference from 0.133 OD
Haemoglobin	Positive interference from 133 µmol/L

Other substances may interfere (see § Limits)

On-board stability: 2 separate reagents are stable 60 days

Calibration Frequency: 14 days

Make a new calibration when changing reagent batch, if quality control results are found out of the established range and after maintenance operations.

PROCEDURE

Detailed KENZA 240TX procedure is available on request

Wavelength: 340 nm

Temperature: 37°C

Let stand reagents and specimen at room temperature

	Automated analyzer	Manual procedure
Reagent 1	200 µL	800 µL
Reagent 2	50 µL	200 µL
Mix. Wait for 15 sec then add:		
Specimen	25 µL	100 µL
Mix. After 60 sec, measure variation of absorbance per minute (ΔAbs/min) during 180 sec.		

Note:

1-Performances and stability data's have been validated on KENZA 240TX and KENZA 450TX

2- With Manual Procedure on Spectrophotometer and on other biochemistry analyzers, performances and stability data should be validated by user

3- Applications proposal are available on request

CALCULATION

With Seric Muticalibrator:

$$\text{AST Activity} = \frac{(\Delta\text{Abs}/\text{min}) \text{ Specimen}}{(\Delta\text{Abs}/\text{min}) \text{ Calibrator}} \times \text{Calibrator Activity}$$

With Theoretical Factor:

$$\text{Activity (U/L)} = \Delta\text{Abs}/\text{min} \times \text{Factor}$$

$$\text{Factor} = \frac{\text{VR} \times 1000}{6.3 \times \text{VE} \times \text{P}}$$

With:

VR = Total reactional volume (mL)

VE = Specimen volume (mL)

6.3 = Molar extinction coefficient for NADH at 340nm

P = Path length (cm).

Example, with manual Procedure.

(Path length 1 cm, 37°C, 340 nm):

$$\text{IU/L} = (\Delta\text{Abs}/\text{min}) \times 1746$$

$$\mu\text{Kat/L} = \frac{\text{IU/L}}{60}$$

REFERENCES

- (1) TIETZ N.W. *Text book of clinical chemistry*, 3rd Ed. C.A. Burtis, E.R. Ashwood, W.B. Saunders (1999) p. 652-657
- (2) *Clinical Guide to Laboratory Test*, 4th Ed., N.W. TIETZ (2006) p. 154-159
- (3) YOUNG D.S., *Effect of Drugs on Clinical laboratory Tests*, 4th Ed. (1995) p. 3-68 to 3-79
- (4) HENRY R. J. and al., *Am J clin Path* (1960), 34, 381-398
- (5) IFCC *Method for L-Aspartate aminotransferase*. *J Clin. Chem. Clin. Biochem.* (1986), 24, p.497-510.
- (6) M. MATHIEU and col. SFBC. *Comité de Standardisation. Recommandations pour la mesure de l'activité catalytique de l'Aspartate aminotransférase dans le sérum à 30°C*. *Ann. Biol. Clin.* 1976. 34. 291-297



Manufacturer



Use by



In vitro diagnostic



Temperature limitation



Catalogue number



See insert



Batch number



Store away from light



sufficient for



dilute with



Demineralized water



Biological hazard