LIQUIZYME

SGOT

(IFCC Method)

BEACON

Code	Product Name	Pack Size
LS025A	Liquizyme SGOT	50 ml
LS025B	Liquizyme SGOT	100 ml
LS025C	Liquizyme SGOT	200 ml
LS025G	Liquizyme SGOT	500 ml
LS025H	Liquizyme SGOT	1000 ml

Intended Use

Diagnostic reagent for quantitative *in vitro* determination of AST/SGOT (Aspartate Aminotransferase) in human serum.

Clinical Significance

SGOT / AST is widely distributed with high concentrations in the heart, liver, skeletal muscle, kidney and erythrocytes. Damage or disease to any of these tissues such as myocardial infarction, viral hepatitis, liver necrosis, cirrhosis and muscular dystrophy may result in raised levels of SGOT / AST.

Principle

This reagent is based on IFCC recommendations, without pyridoxal phosphate. The series of reactions involved in the assay system is as follow:

L-Aspartate + 2-oxoglutarate $\xrightarrow{\text{SGOT / AST}}$ Oxaloacetate + L-Glutamate

Oxaloacetate + NADH $\xrightarrow{\text{MDH}}$ Malate + NAD^+

Sample pyuvate + NADH $\xrightarrow{\text{LDH}}$ L-lactate + NAD

1. SGOT / AST present in the sample catalyses the transfer of the amino group from L-aspartate to 2-oxoglutarate forming oxaloacetate and L-glutamate.
2. Oxaloacetate in the presence of NADH and Malate dehydrogenase (MDH) is reduced to L-malate. In this reaction NADH is oxidized to NAD. The reaction is monitored by measuring the rate of decrease in absorbance at 340 nm due to the oxidation of NADH to NAD.
3. Addition of Lactate dehydrogenase (LDH) to the reagent is necessary to achieve rapid and complete reduction of endogenous pyruvate so that it does not interfere with the assay.

Reagent Composition

Reagent 1: SGOT Enzyme Reagent

Tris Buffer (pH 7.8) : >100 mmol/L
L-Aspartate : >200 mmol/L
LDH : >2000 U/L
MDH : >750 U/L

Reagent 2: SGOT Substrate Reagent

NADH : >1.05 mmol/L

Stability And Storage

The unopened reagents are stable till the expiry date stated on the bottle and kit label when stored at 2–8°C.

Material Required But Not Provided

- Clean & Dry container.
- Laboratory Glass Pippetes or Micropippetes & Tips.
- Colorimeter or Bio-Chemistry Analyzer.

Working Reagent Preparation

Mix 4 portion of reagent R1 with 1 portion of reagent R2.

Stability :

5 days (in the dark) : at 20 – 25°C
4 weeks (in the dark) : at 2 – 8°C

Specimen Collection And Handling

Use unheamolytic serum. It is recommended to follow NCCLS procedures (or similar standardized conditions).

Stability

3 months : at -20°C
Discard contaminated specimens.

Unit Conversion

U/l x 0.017 = µkat/l

Expected Values

At 37°C

Serum < 40 U/L

Quality Control

It's recommended to run normal and abnormal control sera to validate reagent performance.

It is recommended that each laboratory verify this range or derives reference interval for the population it serves.

Performance Data

Data contained within this section is representative of performance on Beacon system. Data obtained in your laboratory may differ from these values.

Limit of quantification : 3.84 U/L
Linearity : 300 U/L
Measuring range : 3.84 – 300 U/L

Precision

Intra-assay precision Within run (n=20)	Mean (U/L)	SD (U/L)	CV (%)
Sample 1	37	0.67	1.81
Sample 2	150	3.20	2.13

Inter-assay precision Run to run (n=20)	Mean (U/L)	SD (U/L)	CV (%)
Sample 1	58.3	2.02	3.47

Comparison

A comparison between Beacon SGOT (y) and a commercially available test (x) using 20 samples gave following results :

y = 0.967 x + 1.31 U/L

r = 0.998

Interferences

Following substances do not interfere :

bilirubin up to 30 mg/dl, triglycerides up to 2000 mg/dl, haemolysis interferes due to AST activity from erythrocytes.

Warning And Precautions

For *in vitro* diagnostic use. To be handles by entitled and professionally educated person. Reagents of the kit are not classified like dangerous but contains less than 0.1% sodium azide - classified as very toxic and dangerous substance for the environment.

Waste Management

Please refer to local legal requirements.

Assay Procedure

Wavelength : 340 nm

Cuvette : 1 cm

Addition Sequence	Volume
Working Reagent	1000 µl
Sample	100 µl

Mix, well and read the initial absorbance A after 1 min and repeat the absorbance reading after every 1 & 2 mins. Calculate the mean absorbance change per minute (A/min).

Calculation

SGOT Activity (U/L) = min. x 1746

Applications for automatic analysers are available on request.

Assay Parameters For Photometers

Mode	Kinetic
Wavelength 1 (nm)	340
Sample Volume (µl)	100
Working Reagent Volume (µl)	1000
Lag time (sec.)	60
Kinetic Interval (sec.).	60
No. of Interval	2
Kinetic Factor	1746
Reaction temp. (°C)	37
Reaction Direction	Decreasing
Normal Low (U/L)	-
Normal High (U/L)	40
Linearity Low	3.84
Linearity High	300
Blank with	Water
Unit	U/L

References

1. Thomas L. Alanine aminotransferase (ALT), Aspartate aminotransferase (AST). In: homas L, editor. Clinical Laboratory Diagnostics. 1st ed. Frankfurt:TH-Books Verlagsgesellschaft; 1998. p. 55-65.
2. Moss DW, Henderson AR. Clinical enzymology. In: Burtis CA, Ashwood ER, editors. Tietz Textbook of Clinical Chemistry. 3rd ed. Philadelphia: W.B Saunders Company; 1999. p. 617-721.
3. Schumann G, Bonora R, Ceriotti F, Férard G et al. IFCC primary reference procedure for the measurement of catalytic activity concentrations of enzymes at 7 °C. Part 5: Reference procedure for the measurement of catalytic concentration of aspartate aminotransferase. Clin Chem Lab Med 2002;40:725-33.4.Tietz Textbook of Clinical Chemistry. Burtis CA and Ashwood ER, Fifth Edition, 2012.

Symbols Used On Labels

REF	Catalogue Number		Manufacturer
	See Instruction for Use	LOT	Lot Number
CONT	Content		Storage Temperature
	Expiry Date	IVD	In Vitro Diagnostics

BEA/24/SGO/LS/IFU-02 22/04/2022