SGOT / AST TEST KIT

IFCC Method Without Pyridoxal Phosphate (Kinetic UV)

SAWIN BIOMEDICALS PVT LTD.

Product Code: 10046	**Reaction Type:** Kinetic with Factor
Pack Size: 5 x 10 ml	**Matrix Target:** Human Serum & Plasma
Storage Temp: 2–8°C	**Wavelength:** 340 nm (Photometric Light Path: 1 cm)

INTENDED USE & CLINICAL SIGNIFICANCE

Intended Use: This liquid diagnostic reagent system is configured for the direct quantitative in vitro kinetic UV determination of SGOT/AST activity in human serum or plasma specimens.

Clinical Significance: Aspartate aminotransferase (AST/SGOT) is an enzyme found primarily in metabolically active tissues, particularly cardiac muscle, hepatic cells, skeletal muscle, and kidneys. Physical injury to these cellular structures induces a distinct release of the enzyme into the bloodstream. Marked elevations are core indicators in myocardial infarction, acute hepatitis, toxic liver necrosis, and skeletal muscle trauma. Decreased catalytic levels are occasionally noted during pregnancy or severe vitamin deficiencies.

METHOD PRINCIPLE

This kinetic determination follows the standardized recommendations of the IFCC without pyridoxal phosphate. AST catalyzes the transamination of L-aspartate and α-ketoglutarate into oxaloacetate and L-glutamate. Oxaloacetate is subsequently reduced to L-malate by Malate Dehydrogenase (MDH) alongside the parallel oxidation of NADH to NAD^+:

$$\text{L-Aspartate} + \alpha\text{-Ketoglutarate} \xrightarrow{\text{AST}} \text{Oxaloacetate} + \text{L-Glutamate}$$

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

The catalytic acceleration rate is evaluated photometrically by monitoring the continuous rate of decrease in optical density (absorbance) at 340 nm due to NADH consumption. This rate of decrease (ΔA/min) is directly proportional to AST activity.

STEP 1: REAGENT CONFIGURATION & PIPETTING BASELINE

Working Reagent Preparation: Reconstitute the R1 Enzyme Reagent vial with R2 Buffer Reagent as stated on the vial packaging. The reconstituted working reagent is stable for 30 days when protected at 2–8°C.

Reagent / Component Line	Test Vector Volume
Prepared AST Working Reagent (Brought to room temperature)	1000 µl

Reagent / Component Line	Test Vector Volume
Patient Sample (Hemolysis-free serum or plasma)	100 µl

Operational Directive: Mix completely and initiate a 1-minute incubation hold. Precisely measure the continuous shift in absorbance per minute (ΔA/min) over a 3-minute monitoring window.

STEP 2: CALCULATIONS & DATA TRACKING

Compute the mean change in absorbance per minute (ΔA/min) and multiply by the mathematical conversion factor:

$$\text{SGOT / AST Activity (IU/L)} = \Delta A/min \times 1768\ Factor$$

TECHNICAL PARAMETERS & CLINICAL SUPPORT MATRIX

Universal Safeguards	Professional in vitro use. Reagents contain less than 0.1% sodium azide. Avoid explosive heavy metal azide development paths in plumbing systems by executing heavy water rinses during disposal. **CRITICAL SUBSTRATE DEPLETION RULE:** Falsely low readings can occur in samples with extremely high AST activity due to the complete consumption of NADH before reading. Verify analyzer depletion tracking limits carefully.
Expected Range	Normal Clinical Baseline: < 40 IU/L. Localized laboratories must independently establish internal control ranges.
Analytical Linearity	Linear up to 300 IU/L. Dilute highly active specimens with normal saline and re-assay.

Manufactured by: M/s. SAWIN BIOMEDICALS PVT. LTD.
Plot No: M82/2, Medical Devices Park, Sultanpur, Ameenpur Mandal, Sangareddy Dist-502 319, Hyderabad, Telangana, INDIA.
Phone: +91 8455-240822 / +91 7816 075705 | E-mail: info@sawinbio.com | Web: www.sawinbio.com
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