TRIGLYCERIDES TEST KIT

GPO-PAP Enzymatic Method (Colorimetric End Point)

SAWIN BIOMEDICALS PVT LTD.

Product Code: 10051 / 11051 / 12051	**Reaction Type:** End Point with Standard
Pack Size: 5x10 ml / 2x50 ml / 5x100 ml	**Matrix Target:** Human Serum & Plasma
Storage Temp: 2–8°C (Reagent & Standard)	**Wavelength:** 546 nm (Green Filter)

INTENDED USE & CLINICAL SIGNIFICANCE

Intended Use: This liquid diagnostic reagent system is configured for the quantitative in vitro colorimetric determination of Triglyceride concentrations in human serum or plasma specimens.

Clinical Significance: Triglycerides are lipid molecules absorbed from dietary fats or synthesized endogenously from carbohydrates in the liver. Diets high in saturated fats or simple sugars elevate circulating triglyceride levels. Hypertriglyceridemia is a key marker in identifying metabolic syndrome, cardiovascular disease risk, liver dysfunction (including fatty liver and cirrhosis), and uncontrolled diabetes mellitus.

METHOD PRINCIPLE

This assay relies on an enzymatic sequence using Lipase, Glycerol Kinase (GK), Glycerol-3-Phosphate Oxidase (GPO), and Peroxidase (POD). Triglycerides are hydrolyzed to glycerol and free fatty acids. Glycerol is then phosphorylated and oxidized, generating hydrogen peroxide, which couples with 4-aminoantipyrine and ESPAS to form a stable brown chromogen complex:

$$\text{Triglycerides} + H_2O \xrightarrow{\text{Lipase}} \text{Glycerol} + \text{Free Fatty Acids}$$

$$\text{Glycerol} + \text{ATP} \xrightarrow{\text{GK}} \text{Glycerol-3-Phosphate} + \text{ADP}$$

$$\text{Glycerol-3-Phosphate} + O_2 \xrightarrow{\text{GPO}} \text{Dihydroxyacetone Phosphate} + H_2O_2$$

$$H_2O_2 + \text{ESPAS} + \text{4-AAP} \xrightarrow{\text{POD}} \text{Brown Chromogen Complex} + H_2O$$

STEP 1: REAGENT CONFIGURATION & PIPETTING BASELINE

Instruction: Avoid detergent-contaminated glassware, as surfactant residues can interfere with enzymatic color development. Reagents should be clear; a slight pink tint (up to 0.15 Abs) does not compromise performance.

Reagent / Component Line	Blank	Standard	Test
R1 - GPO Enzyme Reagent	1000 µl	1000 µl	1000 µl
Triglycerides Standard (200 mg%)	—	10 µl	—

Reagent / Component Line	Blank	Standard	Test
Patient Specimen (Fasting serum or plasma)	—	—	10 µl

Operational Directive: Mix completely and incubate at 37°C for exactly 10 minutes. Measure the optical density of the Standard and Test against the Reagent Blank at 546 nm (or using a green filter) on a photocolorimeter.

STEP 2: CALCULATIONS & DATA TRACKING

> Triglycerides (mg%) = ***(Abs. of Test / Abs. of Standard) × 200 (Standard Conc.)***

SI Conversion Factor: mmol/L = mg% × 0.0113

TECHNICAL PARAMETERS & CLINICAL SUPPORT MATRIX

Universal Safeguards	Professional in vitro diagnostic use. Discard reagents if visible turbidity occurs. Handle clinical components according to baseline biosafety protocols. Always use fresh micro pipette tips to protect against cross-contamination tracks.
Expected Range	Fasting Triglycerides: Up to 150 mg%. High clinical values require comprehensive lifestyle and lipid panel correlations.
Analytical Linearity	Linear up to 1000 mg%. For samples exceeding 1000 mg%, dilute 1:1 with isotonic saline, repeat the assay, and multiply the final result by a dilution factor of 2.

Manufactured by: M/s. SAWIN BIOMEDICALS PVT. LTD.
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