

Triglycerides

GPO-POD. Liquid

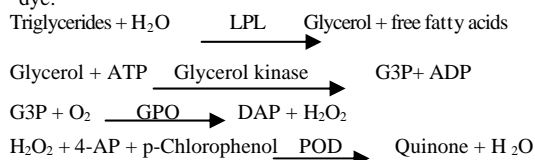
For in -vitro diagnostic use only.

Store at 2-8°C.

PRINCIPLE OF THE METHOD

Sample triglycerides incubated with lipoproteinlipase (LPL), liberate glycerol and free fatty acids. Glycerol is converted to glycerol-3-phosphate (G3P) and adenosine-5-diphosphate (ADP) by glycerol kinase and ATP. Glycerol-3-phosphate (G3P) is then converted by glycerol phosphate dehydrogenase (GPO) to dihydroxyacetone phosphate (DAP) and hydrogen peroxide (H₂O₂).

In the last reaction, hydrogen peroxide (H₂O₂) reacts with 4-aminophenazone (4-AP) and p-chlorophenol in presence of peroxidase (POD) to give a red colored dye:



The intensity of the color formed is proportional to the triglycerides concentration in the sample^{1,2,3}.

CLINICAL SIGNIFICANCE

Triglycerides are fats that provide energy for the cell.

Like cholesterol, they are delivered to the body's cells by lipoproteins in the blood. A diet with a lot of saturated fats or carbohydrates will raise the triglyceride levels. The increases in serum triglycerides are relatively non-specific. For example liver dysfunction resulting from hepatitis, extra hepatic biliary obstruction or cirrhosis, diabetes mellitus is associated with the increase^{3,6,7}.

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

REAGENTS

R	GOOD pH 7.5	50 mmol/L
	p-Chlorophenol	2 mmol/L
	Lipoprotein lipase (LPL)	150000 U/L
	Glycerol kinase (GK)	500 U/L
	Glycerol-3-oxidase (GPO)	3500 U/L
	4 - Aminophenazone (4-AP)	0.1 mmol/L
	ATP	0.1 mmol/L
TRIGLYCERIDES STD: Triglycerides primary calibrator 200 mg/dL		

PREPARATION

Reagent and standard provided are ready to use.

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 reagents over the expiration date.

Signs of reagent deterioration:

- Presence of particles and turbidity.
- Blank absorbance (A) at 505 nm ≥ 0.40 .

ADDITIONAL EQUIPMENT

- Spectrophotometer or colorimeter measuring at 505 nm.
- Matched cuvettes 1.0 cm light path.
- General laboratory equipment.

SAMPLES

Serum or plasma¹.

Stability of the sample: Triglycerides are stable for 5 days at 2-8°C.

PROCEDURE

1. Assay conditions:
2. Wavelength: 505 nm (490-550)
Cuvette: 1 cm light path
Temperature 37°C / 15-25°C
3. Adjust the instrument to zero with distilled water.
4. Pipette into a cuvette:

	Blank	Standard	Sample
R (mL)	1.0	1.0	1.0
Standard (µL)	--	10	--
Sample (µL)	--	--	10

4. Mix and incubate for 5 min at 37°C or 10 min at 15-25°C.
5. Read the absorbance (A) of the samples and calibrator, against the Blank. The colour is stable for at least 30 minutes.

CALCULATIONS

$$\frac{(A)\text{Sample}}{(A)\text{Standard}} \times 200 (\text{Standard conc.}) = \text{mg/dL}$$

triglyceride in the sample

Conversion factor: mg/dL x 0.0113 mmol/L.

QUALITY CONTROL

If control values are found outside the defined range, check the instrument, reagent and calibration for problems

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

REFERENCE VALUES

Men	40 – 160 mg/dL
Women	35 – 135 mg/dL

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

PERFORMANCE CHARACTERISTICS

Measuring range: From detection limit of 5.85 to linearity limit of 1000 mg/dL.

If the concentration is greater than linearity limit, dilute the sample 1/2 with NaCl 9 g/L and multiply the result by 2.

Precision:

	Intra-assay (n=20)		Inter-assay (n=20)	
Mean (mg/L)	123	205	124	204
SD	3.08	1.63	4.89	4.28
CV (%)	2.49	0.79	3.92	2.09

Sensitivity: 1 mg/dL = 0.0011 (A).

Accuracy: Results obtained using ATLAS 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

No interferences were observed with bilirubin up to 170 µmol/L and hemoglobin up to 10 g/L

A list of drugs and other interfering substances with cholesterol determination has been reported by Young et. al

NOTES

1. Calibration with the aqueous standard may cause a systematic error in automatic procedures. In these cases, it is recommended to use a serum Calibrator.
2. Use clean disposable pipette tips for its dispensation.

BIBLIOGRAPHY

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