CE IVD

TG Reagent Kit-2
(GPO-PAP Enzymatic-Colorimetric Method)

Instructions for Use

REF CC1078

PRODUCT NAME

TG Reagent Kit-2 (GPO-PAP Enzymatic-Colorimetric Method)

PACKAGE SPECIFICATION

R1: 1×20 mL	R2: 1×10 mL	R1: 1×40 mL	R2: 1×20 mL
R1: 1×60 mL	R2: 1×30 mL	R1: 2×60 mL	R2: 2×30 mL
R1: 2×30 mL	R2: 2×15 mL	R1: 2×40 mL	R2: 2×20 mL
R1: 2×50 mL	R2: 1×50 mL	R1: 2×60 mL	R2: 1×60 mL
R1: 2×60 mL	R2: 3×20 mL	R1: 2×65 mL	R2: 1×65 mL
R1: 2×65 mL	R2: 1×70 mL	R1: 2×80 mL	R2: 1×80 mL
R1: 2×120 mL	R2: 2×60 mL	R1: 3×20 mL	R2: 3×10 mL
R1: 3×40 mL	R2: 3×20 mL	R1: 4×40 mL	R2: 4×20 mL
R1: 4×50 mL	R2: 2×50 mL	R1: 4×55 mL	R2: 2×55 mL
R1: 4×60 mL	R2: 2×60 mL	R1: 4×60 mL	R2: 4×30 mL
R1: 4×60 mL	R2: 6×20 mL	R1: 4×65 mL	R2: 1×65 mL
R1: 4×65 mL	R2: 2×65 mL	R1: 4×65 mL	R2: 2×70 mL
R1: 4×100 mL	R2: 2×100 mL		
12×72 T (R1: 12×16.8 mL R2: 2×8.4 mL)			
Calibrator (optional): 1×1 mL			

INTENDED USE

Used for the *in vitro* quantitative determination of Triglyceride (TG) in human serum and plasma. For professional and laboratory use only.
Pathological elevation: primary seen in familial hypertriglyceridemia and familial mixed hyperlipemia (protein). Secondary seen in diabetes, glycosuria accumulation disease, hypothyroidism, nephrotic syndrome, pregnancy, oral contraceptives, alcoholism, etc. Pathological reduction: primary seen in none β-lipoproteinemia and low β-lipoproteinemia. Secondary is seen in secondary lipid metabolism abnormalities, such as digestive diseases (liver diseases, malabsorption syndrome), endocrine diseases (hyperthyroidism, chronic adrenal insufficiency) and the application of heparin and other drugs.

TEST PRINCIPLE

$$TG+3H_2O \xrightarrow{LPL} \text{Glycerinum} +3 \text{ fatty acid}$$

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

$$\text{Glycerol-3-phosphate}+2H_2O+O_2 \xrightarrow{GPO} 2H_2O_2+ \text{Dihydroxyacetone phosphate}$$

$$2H_2O_2+4\text{-AAP}+ \text{ESPMT} \xrightarrow{POD} \text{Color reaction}$$

The absorbance (△A) is directly proportional to the concentration of TG at a wavelength of 546nm.

MAIN COMPONENTS

Kit composition	Reagent components	Content
Reagent 1	Piperazine1,4-bis (2-taurine) buffer	11 g/L
	Lipoprotein lipase	4 KU/L
	N-Ethyl-N-(3-sulfopropyl)-3-methylaniline	0.5 g/L
	Peroxidase	6 KU/L
Reagent 2	Glycerol kinase	5 KU/L
	Adenosine triphosphate	1.8 g/L
	Glycerol phosphate oxidase	5 KU/L
	4-amino-antipyrine	0.5 g/L
Calibrator (optional)	Triglycerides, water matrix	2-2.5 mmol/L

The components in different batches of a multi-component kit are not interchangeable.
Calibrator traceability: Traceable to international Standard Reference Material (SRM) 909c.

STORAGE AND SHELF LIFE

Unopened reagents should be stored at 2°C-8°C away from light, with a shelf life of 18 months. Opened reagents are stable for 42 days when stored at 2°C-8°C.
Please refer to the label on the reagent kit for the production date and expiration date.

APPLICABLE INSTRUMENTS

The kit is applicable to the following instruments: fully automatic biochemistry analyzers from Hitachi High-Tech (Shanghai) International Trading Co., Ltd., models: 7100, 7170, 7180, 7600, LABOSPECT 008 AS, 3100, 3500; fully automatic biochemistry analyzers from Beckman Coulter Commercial Enterprise (China) Co., Ltd., models: DXC800, AU480, AU680, AU5800; fully automatic biochemistry analyzers from Canon Medical Systems (China) Co., Ltd., models: TBA-120FR, TBA-2000FR, TBA-FX8; fully automatic biochemistry analyzers from Shenzhen Mindray Bio-Medical Electronics Co., Ltd., models: BS-420, BS-490, BS-600, BS-800, BS-820, BS-2000; fully automatic biochemistry analyzers from Dirui Industrial Co., Ltd., models: CS-400, CS-600B, CS-1200; fully automatic biochemistry analyzers from Siemens Healthineers Diagnostics (Shanghai) Co. Ltd., models: 1800, 2400, ADVIA Chemistry XPT; fully automatic biochemistry analyzers from Roche Diagnostics (shanghai) Co., Ltd., models: cobas 6000 c 501, cobas 8000 c 502, 701, 702; clinical chemistry analyzers from Getein Biotech, Inc, models: CM-400, CM-430, CM-480, CM-600, CM-630, CM-680, CM-800, CM-830, CM-880, CM-2000, CM-1600, CM-1200, CM-1000; automatic biochemical analyzers from Changchun Blaser Medical Technology Co., LTD, models: BBA-400, BBA-300, BBA-480. If you need the application parameters of the fully automatic biochemistry analyzers, please contact our company.

SAMPLE REQUIREMENTS

1. Serum and plasma can be used for this test.
2. Serum and plasma anticoagulated with heparin should be separated in time after blood collection to avoid hemolysis.
3. The test results for serum and plasma will not change within 2 days at 15-25°C, 7 days at 2-8°C and 3 months at -20°C.

TEST PROCEDURE

1. Reagent preparation: Use directly.
2. Test conditions: (Different load parameters can be requested based on different testing instruments)

Primary/secondary wavelengths	546 nm/700 nm	**Calibration type**	Linearity
Sample/R1/R2	3/200/100 μL	**Time of mixture of serum + R1**	3-5 min
Method	Two-point Endpoint Assay	**Reaction time after addition of R2**	5 min
Calibration method	Two-point calibration	**Direction of reaction**	Upward

(Absorbance (A) read by the instrument=$A_{\text{Primary wavelength}}$-$A_{\text{Secondary wavelength}}$)
Operating procedures:

Substances added	Blank tubes	Test tubes
Reagent 1	200 μL	200 μL
Sample	-	3 μL
Distilled water	3 μL	-
Mix well, incubate at 37°C for 3-5 min, and read the absorbance (A_1);		
Reagent 2	100 μL	100 μL
Mix well, incubate at 37°C for 5 min, and read the absorbance (A_2); then calculate the absorbance (ΔA) according to the formula $\Delta A=A_2-A_1$		

3. Calibration procedure: A calibrator from Getein is recommended, and a calibration serum from Randox can also be used.
4. Quality control procedure: Select quality control from Randox, and its measured value should be within the range of its label claim. If the result deviates from the range, find out the reason according to the steps below:
   4.1 Check whether the parameter settings and light source are correct.
   4.2 Check whether the cuvettes and sampling probes are clean.
   4.3 Check whether water is contaminated, and bacterial growth will cause incorrect results.
   4.4 Check reaction temperature.
   4.5 Check the expiration date of the kit.
5. Result calculation:

TG concentration（mmol/L）= Concentration of TG Standard Reference Material (SRM) × $\triangle A_{\text{test sample}} / \triangle A_{\text{Standard}}$

REFERENCE RANGE

< 2.3 mmol/L (200 mg/dL)

The reference range is for reference only. Because there are differences in respect of factors including geography, race, gender and age, it is recommended that each laboratory should establish its own reference range.

RESULT INTERPRETATION

Since hemolysis interferes with determination, it should be avoided as much as possible during operation.

LIMITATIONS

There is no interference with measurement when hemoglobin ≤ 200 mg/dL, ascorbic acid ≤ 10 mg/dL, bilirubin ≤ 25 mg/dL.

PERFORMANCE CHARACTERISTICS

1. Appearance
   R1 is colorless or light-yellow and clear solution. R2 is light-yellow and clear solution. There are possibly some undissolved small particulates that does not interfere the test result.
2. Reagent blank absorbance
   Reagent blank absorbance A_{546nm} ≤ 0.100.
3. Accuracy
   The relative deviation should be within ±15.0%.
4. Linear range
   4.1 Linear correlation coefficient (r) should be ≥ 0.9900 in the range of [0.1, 11.3] mmol/L.
   4.2 Linear deviation:
   When test a sample with concentration of [0.1, 1.5] mmol/L, the absolute deviation should be within ±0.5 mmol/L.
   When test a sample with concentration of (1.5, 11.3] mmol/L, the absolute deviation should be within ±10%.
5. Analytical sensitivity
   When the absorbance value of the sample (concentration: 2.26 mmol/L) can be distinguished from the blank absorbance, the absorbance difference should be ≤ 0.350.
6. Precision
   Within-run precision: Within-run precision should not be greater than 5.0%.
   Between-run precision: Between-run precision should not be greater than 10.0%.

PRECAUTIONS

1. General precautions
   1.1 This product is for *in vitro* diagnosis only.
   1.2 For clinical diagnosis, please make a comprehensive judgment based on the measurements, clinical symptoms and other findings.
   1.3 Please use this product according to the IFU.
   1.4 Reagents from different manufacturers used to test the same sample may produce different results, which should be considered in conjunction with clinical findings.
2. Precautions for operation
   2.1 Please treat the specimens as dangerous substances that may be infected with HIV, HBV, HCV, etc. Please use disposable gloves to avoid or reduce the associated risk for infection.
   2.2 If the reagents get into the eyes or mouth, or come into contact with the skin, rinse them quickly and thoroughly with water, and receive medical treatment from a doctor when necessary.
3. Precautions for use
   3.1 Please store the reagents according to the storage method, and avoid freezing. Please do not use frozen reagents whose quality may change.
   3.2 Please do not use expired reagents whose test results may be inaccurate.
   3.3 Please avoid adding reagents halfway during a test.
   3.4 Please avoid direct sunlight during operation.
   3.5 The reagents cannot be used if they are cloudy.
4. Precautions for waste disposal
   Samples, waste liquids, etc. are potentially biologically contaminated. Operators should comply with the SOP for laboratory safety and dispose of waste liquids in accordance with local regulations for medical waste, infectious waste, industrial waste, etc.
5. Other precautions
   5.1 On a fully automatic biochemistry analyzer, the linearity range is related to the ratio of the amount of a sample to the amount of a reagent and the time of measurement.
   5.2 The amounts of the reagent and sample can be changed proportionally according to the requirements of different instruments.
   5.3 Please do not use the reagent bottles for other purposes.
   5.4 A result calculated with the k value is not as reliable as that obtained using the SRM (calibrator).
   5.5 Please do not mix reagents in different batches.

REFERENCE

Shang Hong, et al. National Standard Operating Procedure for Clinical Testing (4th Edition). People's Medical Publishing House, 2015：317-320.

DESCRIPTION OF SYMBOLS USED

The following graphical symbols used in or found on TG Reagent Kit-2 (GPO-PAP Enzymatic-Colorimetric Method) are the most common ones appearing on medical devices and their packaging. They are explained in more details in the European Standard EN ISO 15223-1:2021.

Key to symbols used					
	Manufacturer		Use-by date	REF	Catalogue number
	Date of manufacture	LOT	Batch code		Temperature limit
IVD	*In vitro* diagnostic medical device		Keep away from sunlight		Biological risks
	Consult *instructions for use* or consult electronic *instructions for use*		Do not use if package is damaged and consult *instructions for use*	EU REP	Authorized representative
CE	CE mark		This way up		Do not re-use

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