OBio...
Supporting Care to Cure
A Division of Orchard Medical

Triglycerides

Order Information

Cat. No.	Kit Configuration
OMR1155	Reagent: 4 x 40 mL

Summary

Triglycerides are the fatty acid esters of glycerol formed by the liver cells. They are the energy source of the body and are transported by Low and Very Low Density Lipoproteins. Their abnormal level increased concentrations are found in diabetes, liver disease, hypothyroidism, nephritic syndrome. Increased concentrations of Triglycerides are also a risk factor in Coronary artery disease and Peripheral vascular disease. Decreased concentrations of Triglycerides are found in malnutrition and hyperthyroidism

Method

Colorimetric enzymatic test using Glycerol-3-Phosphate-Oxidase.

Principle

Determination of triglycerides involves enzymatic splitting with lipoprotein lipase. Indicator is quinoneimine, which is generated from 4- aminoantipyrine and 4-chlorophenol by hydrogen peroxide under the catalytic action of peroxides.

$$\text{Triglycerides} \xrightarrow{\text{Lipase}} \text{Glycerol + Fatty acids}$$

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

$$\text{Glycerol-3-phosphate + } O_2 \xrightarrow{\text{GPO}} \text{Dihydroxy acetone phosphate + } H_2O_2$$

$$2H_2O_2 + \text{4-Aminoantipyrine + 4-Chlorophenol} \xrightarrow{\text{POD}} \text{Quinoneimine} + HCl + 4H_2O_2$$

Storage Instructions and Reagent Stability

The reagents and standard are stable till the date of expiry, if stored at 2°C-8°C, protected from light and contamination is avoided.
Do not freeze the reagents.

Composition

Reagent - Good's buffer (pH 7.2) 50 mmol/L, 4- Chlorophenol 4 mmol/L, ATP 2 mmol/L, Mg2+ 15 mmol/L, Glycerokinase (GK) ≥ 0.4 kU/L
Peroxidase (POD) ≥ 2.0 kU/L, Lipoprotein lipase (LPL) ≥ 2.0 kU/L, 4-Aminoantipyrine 0.5 mmol/L, Glycerol-3-phosphateoxidase (GPO) ≥1.5 kU/L
Standard: Triglycerides (Conc. 200 mg/dL)

Warnings and Precautions

1. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
2. Wear suitable gloves and eye/face protection.
3. Always use safety pipettes to pull the reagents into a pipette.
4. Reagents may contain some non-reactive and preservative components. It is suggested to handle carefully, avoid direct contactwithskinanddonotswallow.
5. The reagents contain sodium azide (0.95g/L) as preservative. Do not swallow. Avoid contact with skin and mucous membranes.
6. For professional use only!

Waste Management

Please refer to local regulatory requirements.

Reagent Preparation

The reagent and the standard are ready to use.

Materials required but not provided

NaCl solution 9 g/L
General laboratory equipment

Specimen

Serum, heparin plasma or EDTA plasma Stability:
1 months at 2° – 8 °C,
3 months at -20°C Only freeze once!
Discard contaminated specimens.

Assay Procedure

Wavelength	546nm
Lightpath	10mm
Temperature	37°C
Measurement	Against reagent Blank

	Blank	Sample/Standard/Calibrator
Sample/Standard/Calibrator	-	10 µL
Distilled water	10 µL	-
Reagent	1000 µL	1000 µL
Mix, incubate for 5 min. at 37°C. Read absorbance against the reagent blank		

Calculation:

With Standard or Calibrator

$$\text{Triglyceride (mg/dL)} = \frac{\Delta A \text{Sample}}{\Delta A \text{ Std. /Cal}} \times \text{Conc. of Std. /Cal (mg/dL)}$$

Conversion Factor

Triglyceride (mg/dL) x 0.02586 = Triglyceride (mmol/L)

Quality Control

Forinternalqualitynormal and abnormal controls should be assayed with each batch of samples.
Each laboratory should establish corrective action in case of deviations in controlrecovery.

Performance Characteristics Measuring Range

Measuring range of the assay is 5 to 1000 mg/dL. When values exceed 1000 mg/dL, the samples should be diluted 1+4 NaCl solution (9g/L) and the result is multiplied by 5.

Specificity/Interferences

No interference was observed by Ascorbic acid up to 6 mg/dL and Bilirubin up to 40 mg/dL.

Sensitivity/Limit of Detection

The lower limit of detection is 5 mg/dL.

Linearity

The maximum limit of detection is 1000 mg/dL.

Precision

Intra-assay n=20	Mean (mg/dL)	SD (mg/dL)	CV (%)
Sample 1	206.44	0.19	0.09
Sample 2	90.97	0.35	0.38

Inter-assay n=20	Mean (mg/dL)	SD (mg/dL)	CV (%)
Sample 1	220.00	0.62	0.28
Sample 2	90.12	0.35	0.39

Method Comparison

A comparison of Nucleus Diagnosys Triglyceride (y) with a commercially available test (x) using 15 samples gave following results:
$y = 1.007x + 5.531$; $r^2 = 0.995$.

Reference Range

Desirable	< 200 mg/dL (2.3 mmol/L)
Borderline high	200-400 mg/dL (2.3 -4.5 mmol/L)
Elevated	> 400 mg/dL (4.5 mmol/L)

Each laboratory should check if reference ranges are transferable to its own patient population and determine own reference ranges if necessary.

Literature

1. Tietz textbook of clinical chemistry. 3rd ed. Philadelphia: W.B. Saunders Company; 1999.p.809-61.
2. Handbook of lipoprotein testing. Washington: AACC Press, 1997.p .115-26.
3. Prevention of coronary heart disease in clinical practice. Eur Heart J1998:191434-503.

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Marketed By: ORCHARD MEDICAL,

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