Liquick Cor-TG

DIAGNOSTIC KIT FOR DETERMINATION OF TRIGLYCERIDES CONCENTRATION

Kit name	**Cat. No**
Liquick Cor-TG 500	2-311
Liquick Cor-TG "bulk"	2-280

INTRODUCTION

Triglycerides are built of glycerol molecule esterified with three fatty acids molecules. Triglycerides are delivered with food or are synthesized endogenously in liver. Triglycerides stored in adipose tissue constitute a reserve of energy. Elevated triglycerides serum level is a risk factor of atherosclerosis. Triglycerides measurement is useful for hyperlipidemia diagnosis and treatment or for estimation of atherosclerosis progression.

METHOD PRINCIPLE

Colorimetric, enzymatic method with glycerophosphate oxidase.

$$\text{triglycerides} + H_2O \xrightarrow{\text{LPL}} \text{glycerol} + \text{fatty acids}$$

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

$$\text{glycerol-3-phosphate} + O_2 \xrightarrow{\text{GPO}} \text{dihydroxy-acetone-phosphate} + 2H_2O_2$$

$$2H_2O_2 + \text{4-AA} + \text{4-chlorophenol} \xrightarrow{\text{POD}} \text{quinoneimine dye} + 4H_2O$$

The colour intensity is proportional to the triglycerides concentration.

REAGENTS

Package

	Liquick Cor-TG 500	**Liquick Cor-TG "bulk"**
1-TG	3 x 400 ml	--*
2-TG	1 x 300 ml	--*

*****reagent volume is printed on the label.

The reagents when stored at 2-8°C are stable up to expiry date printed on the package. The reagents are stable for 10 weeks on board the analyser at 2-10°C. Protect from light and avoid contamination!

Working reagent preparation and stability

Assay can be performed with use of separate 1-TG and 2-TG reagents or with use of working reagent. For working reagent preparation mix gently 4 parts of 1-TG with 1 part of 2-TG. Avoid foaming.

Stability of working reagent: 3 months at 2-8°C
2 weeks at 15-25°C

Protect from light and avoid contamination!

Concentrations in the test

buffer PIPES (pH 7.0)	40 mmol/l
4-aminoantipyrine (4-AA)	0.4 mmol/l
ATP	1.5 mmol/l
Mg^{2+}	1.6 mmol/l
ADPS	0.6 mmol/l
glycerol kinase (GK)	> 66.67 µkat/l
glycerol-3-phosphate oxidase (GPO)	> 60.00 µkat/l
peroxidase (POD)	> 20.00 µkat/l
lipoprotein lipase (LPL)	> 16.67 µkat/l

Warnings and notes

- Product for in vitro diagnostic use only.
- The reagents are usable when the absorbance of the working reagent is less than 0.300 (read against distilled water, wavelength λ=550 nm, cuvette l=1 cm, at temp. 25°C).
- The reagents contain < 0.1% sodium azide as a preservative. Avoid contact with skin and mucous membranes.

ADDITIONAL EQUIPMENT

- automatic analyser or photometer able to read at 550 nm (546 nm);
- thermostat at 37ºC;
- general laboratory equipment;

SPECIMEN

Serum, EDTA or heparinized plasma (recommended: heparine lithium, sodium or ammonium salt) free from hemolysis.

Blood should be collected only if the patient has been fasting for minimum of 12 hours. Before blood collection patient should stay in rest position for about 30 minutes. Venous blood is recommended for triglycerides measurement.

Plasma triglycerides values have been reported to be 2% to 4% lower than serum triglycerides values.

Serum should be separated from red blood cells as soon as possible after blood collection.

Serum and plasma can be stored up to 3 days at 2-8ºC or 3 months at -20ºC.

Nevertheless it is recommended to perform the assay with freshly collected samples!

PROCEDURE

These reagents may be used both for manual assay and in several automatic analysers. Applications for them are available on request.

Manual procedure

wavelength	550 nm (546 nm)
temperature	20-25ºC / 37°C
cuvette	1 cm

Pipette into the cuvettes:

	reagent blank (RB)	test (T)	standard (S)
working reagent	1000 µl	1000 µl	1000 µl

Bring up to the temperature of determination. Then add:

standard / calibrator	-	-	10 µl
sample	-	10 µl	-

Mix well, incubate for 10 min. at 20-25ºC or 5 min. at 37ºC. Read the absorbance of test A(T) and standard A(S) against reagent blank (RB).

Calculation

$$\text{triglycerides concentration} = \frac{\Delta A(T)}{\Delta A(S)} \times \text{standard / calibrator concentration}$$

From calculated triglycerides concentration value subtract 0.11 mmol/l (10 mg/dl), which corresponds to average amount of free glycerol in serum.

REFERENCE VALUES [7]

serum, plasma	< 150 mg/dl <1.7 mmol/l

It is recommended for each laboratory to establish its own reference ranges for local population.

QUALITY CONTROL
For internal quality control it is recommended to use the CORMAY SERUM HN (Cat. No 5-172) and CORMAY SERUM HP (Cat. No 5-173) with each batch of samples.
For the calibration is also recommended the CORMAY MULTICALIBRATOR LEVEL 1 (Cat. No 5-174; 5-176), LEVEL 2 (Cat. No 5-175; 5-177) or TRIGLYCERIDES STANDARD 220 (Cat. No 5-130).
The calibration curve should be prepared every 10 weeks, with change of reagent lot number or as required e.g. quality control findings outside the specified range.

PERFORMANCE CHARACTERISTICS
These metrological characteristics have been obtained using automatic analyser Biolis 24i Premium. Results may vary if a different instrument or a manual procedure is used.

- **Sensitivity:** 11.5 mg/dl (0.13 mmol/l).

- **Linearity:** up to 2000 mg/dl (22.6 mmol/l).
  For higher triglycerides concentrations dilute the sample with 0.9% NaCl in the ratio of 1 to 4 and repeat the assay. Multiply the result by 5.

- **Specificity / Interferences**
  Haemoglobin up to 2.50 g/dl, bilirubin up to 20 mg/dl and ascorbate up to 62 mg/l do not interfere with the test.

- **Precision**

Repeatability (run to run) n = 20	Mean [mg/dl]	SD [mg/dl]	CV [%]
level 1	185.15	1.12	0.60
level 2	82.56	1.55	1.88

Reproducibility (day to day) n = 80	Mean [mg/dl]	SD [mg/dl]	CV [%]
level 1	187.89	2.70	1.44
level 2	83.86	3.16	3.77

- **Method comparison**

A comparison between triglycerides values determined at Biolis 24i Premium (y) and at COBAS INTEGRA 400 (x) using 100 samples gave following results:
y = 1.0403 x - 0.1866 mg/dl;
R = 0.9989 (R – correlation coefficient)

TRACEABILITY
TRIGLYCERIDES STANDARD 220 is traceable to the SRM 1951B reference material.

WASTE MANAGEMENT
Please refer to local legal requirements.

LITERATURE

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