Total Protein

Total Protein. Biuret. Colorimetric.

Product information

24TP01-UN	**Meditest Total Protein**	**6x40 mL**
24TP01-AU	**Meditest Total Protein**	**6x40 mL**
24TP01-AB	**Meditest Total Protein**	**6x40 mL**
24TP01-ER	**Meditest Total Protein**	**6x40 mL**
24TP01-AR	**Meditest Total Protein**	**6x40 mL**

Purpose

This reagent is designed for the quantitative determination of total protein concentration in human serum and plasma.

Summary

Proteins are macromolecular organic compounds that are widely distributed in the organism. They act as structural and bearing elements. Serum proteins are divided into two parts, albumin and globulins

Determination of total proteins is useful in ascertaining:

- High protein levels are caused by hemoconcentration or an increase in the concentration of specific proteins, as in dehydrations.
- Low protein level is caused by haemodilution due to inadequate synthesis or loss (such as haemorrhage) or excessive protein catabolism4,5.

Clinical diagnosis should not be based on a single test result, but clinical and other laboratory data should be integrated.

Test principle

Proteins form a dense purple-blue complex with copper salts in an alkaline environment. Yodide is included as an antioxidant. The intensity of the resulting color is proportional to the total protein concentration in the sample1,4.

Reagents - working solutions

R 1 Biuret	Sodium potassium tartrate	15 mmol/L
	Sodium iodide	100 mmol/L
	Potassium iodide	5 mmol/L
	Copper (II) sulphate	5 mmol/L
	Sodium hydroxide	1000mmol/L

Precautions warnings

R: H314-Causes severe skin burns and eye damage. Follow the precautionary declarations given in the MSDS and on the label of the product!

It is intended for in vitro diagnostic use by healthcare professionals. Follow the normal precautions necessary in handling all laboratory reagents.

Infectious or microbial waste:

Warning: handle waste as potentially biohazardous. Dispose of waste according to accepted laboratory instructions and procedures.

Environmental hazards: Follow all relevant local disposal regulations to determine that it has been disposed of safely. If requested, a safety data sheet can be provided to professional users. Inhibit foam formation in all reagents and sample types (sample, calibrator and control).

If there is any damage on the package, do not use Read the user manual carefully before use, do not use the expired assay kit. Do not mix different lot reagents.

All samples should be considered epidemic material, please dispose of them in accordance with the laboratory working standard of infectious diseases.

Take the necessary protective measures to prevent users from becoming infected during operation.

Use of reagents

Ready to use.

Storage and stability

All components of the kit are stable until the expiration date on the label when stored tightly closed at 2-8ºC, protected from light and contamination is avoided during their use.

Do not use reagents after the expiration date. Signs of reactive deterioration: Presence of particles and turbidity.

Sample collection and preparation

- Serum or plasma1,5: Must not contain haemolysis. Serum or plasma should be removed from the coagul as quickly as possible to prevent elevation of serum phosphorus due to hydrolysis or leakage of phosphate present in erythrocytes.

Stability: 1 month at 2-8ºC

Required Materials (not included in the kit)

1. Cat# 24BIO01-DC Meditest Diachem Calibrator
2. Cat# 24BIO01-DQ Meditest Diacheck Control L1
3. Cat# 24BIO02-DQ Meditest Diacheck Control L2
4. General laboratory equipment
5. Distilled or deionized water

Working Procedure

If you are using a spectrophotometer to perform this test, work with the following procedure. Ask your representative for the application data for fully automatic devices.

1.Test Conditions:

Wavelength: . 540 nm

Cuvette: . . . . . 1 cm light path

Temperature: .

2. Adjust the instrument to zero with distilled water.

3. Pipette into a cuvette:

	Blank	Standard	Sample
R (mL)	1.0	1.0	1.0
Standard[Note 1,4,5] (µL)	--	25	--
Sample (µL)	--	--	25

4. Stir and incubate at room temperature for 10 minutes or at 37ºC for 5 minutes.

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5. Read the absorbance of the samples and calibrator (A) against blank. The color is stable for at least 30 minutes.

Calculation:

$$\text{Serum:} \quad \frac{\text{(A) Sample – (A) Blank}}{\text{(A) Standard – (A) Blank}} \times 7 \text{ (Standard conc.)} = \text{g/dL}$$

Expected values

Adult: 6.6 – 8.3 g/dL
Newborn: 5.2 – 9.1 g/dL

These values are for orientation purposes; Each laboratory should establish its own reference range

Limitations

Hemoglobin and lipemia1,4. A list of drugs and other substances that interact with total protein determination is reported by Young et al.2,3.

Performance characteristics

Measuring range: 0.007 - 14 g/dL

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

Precision

	Intra-assay (n=20)		Inter-assay (n=20)	
Mean (g/dL)	6,53	4,89	6,77	5,08
SD	0,01	0,01	0,07	0,05
CV (%)	0,21	0,24	1,05	0,94

Sensitivity: 1 g/dL = 0.0825 Abs.
Accuracy: Results obtained using Meditest reagents (y) did not show systematic differences when compared with other commercial reagents (x). The results obtained using 50 samples are as follows:
Correlation coefficient $(r)^2$: 0.97002
Regression equation: y= 0.954x + 0.511

The results of the performance characteristics depend on the analyzer used.

References

1. Koller A. Total serum protein. Kaplan A et al. Clin Chem The C.V. Mosby Co. St Louis. Toronto. Princeton 1984; 1316-1324 and 418.
2. Young DS. Effects of drugs on Clinical Lab. Tests, 4th ed AACC Press, 1995.
3. Young DS. Effects of disease on Clinical Lab. Tests, 4th ed AACC 2001.
4. Burtis A et al. Tietz Textbook of Clinical Chemistry, 3rd ed AACC 1999.
5. Tietz N W et al. Clinical Guide to Laboratory Tests, 3rd ed AACC 1995.

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