

CHLORIDE

(Mercuric Thiocyanate method)

Intended Use

Chloride is used for the quantitative determination of Chloride concentration in Serum/Plasma based on the Mercuric Thiocyanate method.

Principle

Chloride reacts with Mercuric Thiocyanate to give mercuric chloride. The Thiocyanate which is released reacts with ferric ions present in the reagent to form ferric Thiocyanate which is directly proportional to chloride present in serum/plasma & can be measured at 510 nm(500 - 520 nm).

Reagent provided

1. Chloride Reagent Ready to use.
2. Standard - Chloride (100mmol/l).

Working reagent preparation

Ready to use Chloride Reagent.

Reagent storage and stability

The Reagents are stable till the expiry date stated on the bottle label; when stored at R.T ($\leq 30^{\circ}\text{C}$). Contamination of the Reagent should be strictly avoided. Protect the Reagent from direct light.

Specimen collection and preservation

Blood should be collected in a clean dry container. Serum or plasma should be separated from cells as early as possible (within 30 minutes). Neatly separated serum or plasma should be used.

Chloride is stable for 7 days in neatly separated serum/plasma at $2^{\circ}\text{--}8^{\circ}\text{C}$.

Assay guidelines for Analyzers

Reaction Type	End Point with Standard
Incubation time	2 minute at R.T ($15^{\circ}\text{C} - 25^{\circ}\text{C}$)
Wave length	510 nm (500 – 520 nm)
Zero setting with	Reagent Blank
Blank absorbance limit	< 0.200
Sample Volume	10 μl (0.01ml)
Reagent Volume	1000 μl (1.0ml)
Chloride Standard Concentration	100mmol/l
Factor Calculation	$100\text{mmol/l} \div \text{Std.Abs.}$
Low normal	98 mmol/l
High normal	107 mmol/l
Linearity	Up to 130 mmol/l

Assay guidelines for Manual Procedure

Reagents	Blank	Standard	Sample
Reagent	1000 μl (1.0 ml)	1000 μl (1.0 ml)	1000 μl (1.0 ml)
Standard	-	10 μl (0.01 ml)	-
Sample	-	-	10 μl (0.01 ml)

1. Mix thoroughly and incubate at room temperature for 2 minute.
2. Read the absorbance against Reagent Blank at 510nm.
3. The final colour is stable for 60 minutes (when protected from light). Do not read the test after 60 minutes.

Calculation

Chloride Conc. in sample (mmol/l) = $\frac{\text{Sample OD} \times \text{Con. of Std.}}{\text{Standard OD}}$

Standard OD

Note:

- Avoid the contamination of reagent into standard during its repeated use.
- Glassware is the most common source of contamination in the Chloride assay. It is strongly recommended that glassware required for assay is rinsed with 0.1 N HCl followed by repeated rinsing with de-mineralized water.
- The specimen and reagent volumes can proportionally be altered without affecting the final results.

Normal Range

Guidance Value - 98 – 107 mmol / l

Note: Expected range varies from population to population and each laboratory should establish its own normal range.

Limitation

1. Strong lipaemic and hemolytic sera should not be used
2. Discard the working reagent if its absorbance is more than 0.200 against distilled water at 510 nm
3. Contaminated glassware is the greatest source of error. Disposable plastic wares are recommended for the test.
4. The reagent contains nitric acid. Avoid contact with skin and mucous membrane. If you come in contact with the reagent wash thoroughly with water
5. The use of normal saline should be avoided. It may contaminate the reagent and lead to erroneous results.

Quality Control

To ensure adequate quality control, it is recommended that each batch should include a normal and an abnormal commercial reference control serum. It should be realized that the use of quality control material checks both instrument and reagent functions together. Factors which might affect the performance of this test include proper instrument function, temperature control, cleanliness of glassware, and accuracy of pipetting.

Reference

1. Zall D Fisher D and Garner M. Anal Chem 28 1665 1956
2. Schoenfeld R. G. And Lerveller C.V. Clin Chem 10 333 964

Symbols

 IVD	In Vitro Diagnostics.	 Caution.	 Keep away from sun light.	 Date of Manufacture.
 LOT	Batch No.	 Read Instructions.	 Fragile.	 Product Expiry Date.
 CONT	Content.	 Storage Temperature.	 Keep Dry.	 Manufactured By.
 REF	Catalogue No.			



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