SWEMED DIAGNOSTICS

CHLORIDE REAGENT KIT

(Mercuric Thiocyanate method)

For photometric determination of Chloride activity in serum /plasma
Only for In Vitro diagnostic use

Ref no.
CL50
CL100

Summary

It is important clinically the determination of chloride due regulation of osmotic pressure of extra cellular fluid and to its significant role in acid-base balance. Increases in chloride ion concentration may be found in severe dehydratation, excessive intake of chloride, severe renal tubular damage and in patients with cystic fibrosis. Decrease in chloride ion concentration may be found in metabolic acidosis, loss from prolonged vomiting and chronic pyelonephritis2"a.

Principle

The quantitative displacement of thiocyanate by chloride from mercuric thiocyanate and subsequent formation of a red ferric thiocyanate complex is measured colorimetrically.

$2Cl^- + Hg(SCN)_2 \longrightarrow HgCl_2 + 2\,SCN^-$

$SCN^- + Fe^{+++} \longrightarrow FeSCN^{++}$

The intensity of the color formed is proportional to the chloride ion concentration in the sample.

Kit Contents

Kit size	2×50ml	2×100ml
Ref no.	Cl100	Cl200
Chloride Reagent	2×50ml	2×100ml
Chloride Standard	1×3ml	1×3ml
IFU	1	1

Material required but not provided

Test tubes, yellow tips, blue tips
General laboratory equipment

Storage & Stability of the Reagents

1. All the components of the kit are stable until the expiration date on the label when stored tightly closed at Room temp, protected from light and contaminations prevented during their use.
2. Do not freeze the reagents.
3. Do not use reagents over the expiration date
4. Blank absorbance (A) at 505nm>0.3

Reagent preparation

The reagent and standard are ready to use

Reagent Composition

Reagent	Mercuric thiocyanate	0.5ml/L
	Ferric nitrate	8ml/L
	Mercuric nitrate	0.2 ml/L
	Nitric acid	10 ml/L
Standard	Chloride	100mEq/L

Specimen

Serum, heparin plasma

Specimen collection

1. Serum, plasma, CSF, sweat and other body fluids : Free of hemolysis and separated from cells as rapidly as possible.
2. Anticoagulants such as oxalate or EDTA are not acceptable they will interfere with results

Storage & Stability of the Specimen

Stability of the sample: Ion chloride is stable 1 week at room temperature (15-25°C), in refrigerator (2-8°C) or frozen (-20°C) temperatures.

Warning & Precautions

1. Mercury(II) thiocyanate is harmful by inhalation, in contact with skin and if swallowed.
2. Keep out of reach children. In case of contact with eyes, rinse immediately with plenty of water &seek medical advice.
3. Keep away from food, drink and animal feeding stuffs.
4. Wear suitable gloves and eye /face protection.
5. Always use safety pipettes to pull the reagents into a pipette.
6. Reagents may contain some non-reactive and preservative components. It is suggested to handle carefully, avoid direct contact with skin and do not swallow.
7. Perform the test according to the "Current Good Laboratory Practice"(cGLP) guidelines.

Assay Procedure

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Wave length	: 630 nm
Temperature	: 37^0 c
Light path	: 10 mm
Measurement	: against reagent blank

	Blank	Standard	Test
Reagent	1000μl	1000μl	1000μl
Sample/ Standard	-	10μl	10μl

Mix & incubate for 5mins. at RT and read the absorbance against reagent Blank at 505nm.

Calculation:

$$\frac{\text{Abs. (Sample)}}{\text{Abs. (Standard)}} \text{ X Conc. Std (mEq/L)} = \text{Chloride (mEq/L)}$$

Performance Characteristics

Measuring rang

The linearity limit of 140mEq/L.If the results obtained were greater than linearity limit, dilute the sample 1/2 with distilled water and multiply the result by 2.

Linearity

The linearity is 140mEq/L.

Interferences

1. Hemolysis. Anticoagulants other than heparin.
2. Bilirubin up to 120 mg/L, bovine serum albumin up to 150 g/L and triglycerides up to 6 g/L did not significantly alter the assay.

Reference Range

Serum/Plasma	92-108mEq/L

"Each laboratory should check if references ranges are transferable to its own patient population & determine own preference ranges if necessary".

Quick References

Parameter	Chloride
Mode	Endpoint
Wavelength	505nm
Unit	mEq/L
Temperature	37^0C
Standard conc.	100 mEq/L
Reaction slope	Increasing
Reagent volume	1000µl
Sample volume	10µl
Incubation time	5mins.at RT
Blanking	Reagent blank
linearity	140mEq/L

Notes

1. It is recommended to use disposable material. If glassware is used the material should be scrupulously cleaned with H_2SO_4 - $K_2Cr_2O_7$ Solution and then thoroughly rinsed it with distilled water.
2. Most of the detergents and water softening products used in the laboratories contain chelating agents. A defective rinsing will invalidate the procedure.
3. Avoid the contact with metal materials.
4. Use clean disposable pipette tips for its dispensation.

References:

1. Miller W.G. Chloride. Kaplan A at al. Clin Chem The C.V. Mosby Co. St Louis. Toronto. Princeton 1984;1059-1062 and 417.
2. Ibbod F A. at al. New York Academic Press 1965:101-111.
3. Schoenfeld R G at al. Clin Chem 1964 (10): 533-539.
4. Levinson S S. et al. In Faulkner W R et al editors. (9) AACC 1982:143-148.

Note on symbols and marks

Instructions for use	Use by	Batch number	Manufacturer
Invitro Diagnostic Medical Device	Date of manufacturer	Temperature limit	Reference number