Reactivos GPL

Barcelona, España

CE

- Chloride -

CHLORIDE

Thiocyanate-Hg. Colorimetric

Conservar entre: +2+8ºC.

Presentacion:
Cod. SU010 CONT: *R 2 x 125 mL.+ CAL 1 x 5 mL.*

Procedure

Quantitative determination of chloride ion.

Only for *in vitro use in clinical laboratory* (IVD)

TEST SUMMARY

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

$$2\ Cl^- + Hg(SCN)_2 \rightarrow HgCl_2 + 2\ SCN^-$$
$$SCN^- + Fe^{+++} \rightarrow FeSCN^{++}$$

The intensity of the color formed is proportional to the chloride ion concentration in the sample[1,2,3,4].

REAGENTS COMPOSITION

R Thiocyanate-Hg	Mercuric thiocyanate	2 mmol/L
	Ferric nitrate	40 mmol/L
	Mercuric nitrate	0.15 mmol/L
	Nitric acid	45 mmol/L
Calibrator	Chloride aqueous primary standard	125mmol/L.

PRECAUTIONS

R (Thiocyanate-Hg): Harmful (Xn): R26/27/28: Very toxic by inhalation, in contact with skin and if swallowed. S13: Keep away from food and drink. S28/45: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S60/61.

REAGENT PREPARATION AND STABILITY

Reagent and standard are ready to use.
All the components of the kit are stable until the expiration date on the label when stored at 2-8ºC, protected from light and contamination prevented during their use.
Do not use reagents over the expiration date.
Chloride Calibrator: Once open is stable up to 1 month when stored tightly closed at 2-8ºC, protected from light and contamination prevented during their use.
Signs of Reagent deterioration:

- Presence of particles and turbidity.
- Blank absorbance (A) at 480 nm. ≥ 0.15

All the reagents of the kit are stable up to the end of the indicated month and year of expiry. Store tightly closed at 2-8ºC,. Do not use reagents over the expiration date.

SPECIMEN

Serum, plasma, CSF, sweat and other body fluids[1,2]: Free of hemolysis and separated from cells as rapidly as possible. Anticoagulants such as oxalate or EDTA are not acceptable they will interfere with results.
Urine[1]: Collect 24-hour urine specimen in chloride free containers. Dilute a sample 1/2 in distilled water. Mix. Multiply results by 2 (dilution factor).
Stability of the sample: Ion chloride is stable 1 week at room temperature (15-25ºC), in refrigerator (2-8ºC) or frozen (-20ºC) temperatures.

MATERIAL REQUIRED BUT NOT PROVIDED

- Spectrophotometer or colorimeter measuring at 480 nm.
- Matched cuvettes 1.0 cm. light path.

General laboratory equipment [note 1,2,3] **.**

TEST PROCEDURE

1. Assay Conditions
   - Wavelenght : ..... 480 (400-500) nm.
   - Cuvette: ..... 1 cm light path.
   - Temperature ..... 37ºC / 15-25ºC.
2. Adjust the instrument to zero with distilled water.
3. Pipette into a cuvette:

	Blank	Calibrator	Sample
R.1 (mL.)	1.0	1.0	1.0
Calibrator[(Note 4,5)] (µL.)	--	10	--
Sample (µL.)	--	--	10

4. Mix and incubate for 5 minutes.
5. Read the absorbance (A) of the samples and Standard, against the Blank. The colour is stable for at least 30 minutes.

CALCULATIONS

$$\text{Chloride (mmol/L.)} = \frac{(A)\text{Sample}}{(A)\text{Standard}} \times 125\ (\text{Standard conc.})$$

Urine 24 h:

$$\text{Chloride (mmol/24h.)} = \frac{(A)\text{Sample}}{(A)\text{Standard}} \times 125 \times \text{vol. (dL) urine/24 h}$$

Conversion Factor: mmol/L = mEq/L.

QUALITY CONTROL

Control sera are recommended to monitor the performance of the procedure, Control Normal Ref. QC001 and Control Pathological Ref. QC002. If control values are found outside the defined range, check the instrument, reagents and calibrator for problems.

Serum controls are recommended for internal quality control. Each laboratory should establish its own Quality Control scheme and corrective actions.

REFERENCE VALUES[1]

Serum or plasma:	101 – 111 mmol/L	CSF:	95 – 110 mmol/L
Urine:	110 - 250 mmol/24h	Swear:	Up to 60 mmol/L

(These values are for orientation purpose).

It is suggested that each laboratory establish its own reference range.

CLINICAL SIGNIFICANCE

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 pyelonephritis[2,7,8].
Clinical diagnosis should not be made on a single test result; it should integrate clinical and other laboratory data.

REAGENT PERFORMANCE

- *Measuring Range*:
  From detection limit 0f 1.13 mmol/L. to linearity limit of 130 mmol/L., under the described assay conditions.
  If results obtained were greater than linearity limit, dilute the sample ½ with NaCl 9 g/L. and multiply result by 2.
- *Precision*:

	Intra-assay n= 20		Inter-assay n= 20	
Mean (mmol/L)	90.7	106	91.6	108
SD	0.64	0.73	0.69	0.81
CV %	0.70	0.69	0.76	0.74

- Sensitivity:
  1 mmol/L. = 0.006 A
- Accuracy:
  Results obtained GPL reagents did not show systematic differences when compared with other commercial reagents.
  The results of the performance characteristics depend on the analyzer used.

INTERFERING SUBSTANCES

Hemolysis. Anticoagulants other than heparin[1].
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[4].
A list of drugs and other interfering substances with chloride determination has been reported by Young et. al[3,4].

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 contains chelating agents. A defective rinsing will invalidate the procedure.
3. Avoid the contact with metal materials.
4. Calibration with the aqueous standard may cause a systematic error in automatic procedures. In these cases, it is recommended to use a serum Calibrator.
5. Use clean disposable pipette tips for its dispensation.

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