LIQUIZYME

CHLORIDE

(Colorimetric Method)

BEACON

Code	Product Name	Pack Size
LS013A	Liquizyme Chloride	1 x 25 ml
LS013B	Liquizyme Chloride	25 T
LS013D	Liquizyme Chloride	4 x 25 ml

Intended Use

Diagnostic reagent for quantitative in vitro determination of Chloride in human serum.

Clinical Significance

Chloride is estimated in conjunction with the other electrolytes and used to support interpretation of the other electrolytes. The anion gap (Na + K) - (Cl + HCO_3) between these electrolytes is frequently affected in disease states. Increased levels can occur in nephritis, prostatic obstruction, eclampsia and dehydration. Decreased levels can occur with impaired gastrointestinal or renal function.

Principle

When chloride is mixed with a solution of undissociated mercuric thiocyanate, the chloride preferentially combines with mercury forming mercuric chloride. The thiocyanate that is released then combines with ferric ions present in the solution forming strongly coloured ferric thiocyanate with an absorption maxima at 480 nm.

Reaction

$2\,cl + Hg(SCN)_2 \longrightarrow HgCl_2 + 2(SCN)$

$3(SCN) + Fe^{3+} \longrightarrow Fe(SCN)_3$

Reagent Composition

R1 : Cholride Reagent

Mercuric Thiocyanate	:	< 1.01 mmol/L
Ferric Nitrate	:	< 37.13 mmol/L
Nitric Acid	:	> 62.43 mmol/L
Mercuric Nitrate	:	< 2 mmol/L

R2 : Chloride Standard : 100 mEq/L

Reagent Preparation

Reagent R1 ,R2 is liquid, ready to use.

Materials Required But Not Provided

- Clean & Dry container.
- Laboratory Glass Pipettes or Micropipettes & Tips
- Colorimeter or Bio-Chemistry Analyzer.

Stability And Storage

The unopened reagents are stable till the expiry date stated on the bottle and kit label when stored at +2–+8°C.

Specimen Collection And Handling

Use Unhemolysed serum.

It is recommended to follow NCCLS procedures (or similar standardized conditions).

Stability :

7 days : at +20 – +25°C

7 days : at +4 – +8°C

Discard contaminated specimens.

Calibration

Calibration with the Chloride standard provided in the kit is recommended.

Quality Control

It's recommended to run normal and abnormal control sera to validate reagent performance.

Expected Values

Serum : 98-104 mEq/L

It is recommended that each laboratory verify this range or derives reference interval for the population it serves.

Performance Data

Data contained within this section is representative of performance on Beacon system. Data obtained in your laboratory may differ from these values.

Limit of quantification : 3.7 mEq/L

Linearity : 120 mEq/L

Measuring range : 3.7 – 120 mEq/L

Precision :

Intra-assay precision Within run (n=20)	Mean (mEq/L)	SD (mEq/L)	CV (%)
Sample 1	94.50	1.98	2.10
Sample 2	103.47	1.46	1.41

Inter-assay precision Run to run (n=20)	Mean (mEq/L)	SD (mEq/L)	CV (%)
Sample 1	87.354	3.18	3.64

Comparison

A comparison between Beacon Chloride (y) and a commercially available test (x) using 20 samples gave following results :

y = 0.937 x + 5.219 mEq/L

r = 0.988

Interferences

Following substances do not interfere :

haemoglobin up to 10 g/l, bilirubin up to 40 mg/dl, triglycerides up to 500 mg/dl.

Note :

Grossly haemolysed, lipaemic and jaundiced samples give falsely elevated results and should not be used. High levels

of immunoglobulins, as found in case of multiple myeloma will interfere due to the development of turbidity.

Warning And Precautions
For in vitro diagnostic use. To be handled by entitled and professionally educated person.

Waste Management
Please refer to local legal requirements.

Assay Procedure
Wavelength : 510 nm
Cuvette : 1 cm

Addition Sequence	Reagent Blank	Standard	Sample
Reagent 1	1000 µl	1000 µl	1000 µl
Standard	-	10 µl	-
Sample	-	-	10 µl
Distilled Water	10 µl	-	-

Mix and incubate 1 min. at Room Temp. Measure absorbance of the sample Abs. of T and standard Abs. S against reagent blank.

Calculation

$$\text{Chloride (mEq/L)} = \frac{\text{Abs. T}}{\text{Abs. S}} \times 100$$

Assay Parameters For Photometers

Mode	End point
Wavelength 1 (nm)	510
Sample Volume (µl)	10
Reagent Volume (µl)	1000
Incubation time (min.)	1
Incubation temp. (°C)	Room Temperature
Normal Low (mEq/L)	98
Normal High (mEq/L)	104
Linearity Low (mEq/L)	3.7
Linearity High (mEq/L)	120
Standard Concentration	100 mEq/L
Blank with	Reagent
Unit	mEq/L

References

1. Tietz Textbook of Clinical Chemisty and Molecular diagnostics. Burtis, C.A., Ashwood, E. R., Bruns, D.E.; 5th edition, WB Saunders Company, 2012.
2. Zall, D.M. Fischer, D. Garner, D.O. Anal. Chem. 28, 1665, 1956.
3. Harper, R.J. (Ed.) Clinical Chemistry: Principles and Techniques (2nd Ed.) Harper and Row 1974, P. 718 - 719.

Symbols Used On Labels

REF	Catalogue Number		Manufacturer
	See Instruction for Use	LOT	Lot Number
CONT	Content		Storage Temperature
	Expiry Date	IVD	In Vitro Diagnostics

BEA/24/CHL/LS/IFU Ver-03
21/09/20225