

(FOR RESEARCH USE ONLY. DO NOT USE IT IN CLINICAL DIAGNOSIS!)

Chlorine (Cl) Assay Kit

Catalog No.: BC00212

Size: 100T

Please read the instructions carefully before use. If you have any questions or need further help during experiment, please don't hesitate to contact us through the following methods:

✉ Email (Sale)	order@enkilife.com
✉ Email (Techsupport)	techsupport@enkilife.com
☎ Tel:	0086-27-87002838
🌐 Website:	www.enkilife.com

Shelf life: Please refer to the label on the outer package.

Techsupport: In order to provide you with better service, please inform us the lot number on the label of the outer package.

Basic Information

Product Name	Chlorine (Cl) Assay Kit
Detection Method	Colorimetric
Sample Type	Tissue, cell, serum, plasma, cerebrospinal fluid, urine
Assay Type	Quantitative
Detection Instrument	Microplate reader (505 nm)

Product Introduction

Chloride ions are essential anions for the normal operation of many key metabolic processes, including maintaining the body's acid-base balance. In cystic fibrosis, mutations in the cystic fibrosis transmembrane conductance regulator (CFTR) gene alter the transport channels for sodium and chloride ions.

Principle

Chloride ions react with mercuric thiocyanate to form colored complexes, and the color intensity is proportional to the chloride ion concentration.

Components

No.	Components	Size	Note
Reagent 1	103.59mmol/L Chloride standard solution	0.5 mL	Store at 2-8°C.
Reagent 2	Mercuric thiocyanate working solution	30 mL	Store at 2-8°C.
Consumable 1	Microplate	1 plate	RT
Consumable 2	Plate Sealer	2 pieces	RT

Preparation of 20.72 mmol/L chloride standard solution: Dilute the 103.59 mmol/L chloride standard solution 5-fold (i.e., 1:4 dilution) with deionized water.

Storage

The kit can be stored for 6 months under specified conditions.

Preparation

Microplate reader with adjustable wavelength of 505 nm, deionized water, protein assay reagent (available from our company).

- **Sample requirements**

1. Tissue: Accurately weigh the tissue. Add 9 volumes of deionized water at a ratio of weight (g) to volume (ml) = 1:9. Homogenize the mixture in an ice-water bath, then centrifuge at 3500 rpm for 10 minutes. Collect the supernatant for testing.
2. Cell: Wash the collected cells 1 to 2 times with isotonic PBS, then centrifuge at low speed (1000-2000 rpm) to harvest cell pellets. Add 0.3 mL of deionized water, and lyse the cells by ultrasonication or manual grinding in an ice bath. Centrifuge at 3500 rpm for 10 minutes, and collect the supernatant for testing.
3. Liquid samples such as serum (plasma): Use directly. Dilute samples with excessively high concentration using deionized water prior to testing.

Operation process

	Blank well	Standard well	Assay well
Deionized water (μL)	10		
20.72 mmol/L chloride standard solution (μL)		10	
Sample (μL)			10
Reagent 2 (μL)	250	250	250
Mix thoroughly, incubate at 37 °C for 2 minutes, then measure the OD value (A) of each well with a microplate reader at 505 nm.			

Notes: Before the experiment, read and record the OD values of the empty 96-well plate using a microplate reader. Subtract the corresponding blank plate OD value from the reading of each well before calculation to ensure test accuracy.

Calculation

1. Calculation for liquid samples such as serum

$$\text{Chloride content (mmol/L)} = \frac{A_{\text{Assay}} - A_{\text{Blank}}}{A_{\text{Standard}} - A_{\text{Blank}}} \times C_{\text{Standard}} \times N$$

2. Calculation for tissue

$$\text{Chloride content (mmol/g)} = \frac{A_{\text{Assay}} - A_{\text{Blank}}}{A_{\text{Standard}} - A_{\text{Blank}}} \times C_{\text{Standard}} \div C_{\text{pr}}$$

3. Calculation for cell

$$\text{Chloride content (mmol/10}^4\text{)} = \frac{A_{\text{Assay}} - A_{\text{Blank}}}{A_{\text{Standard}} - A_{\text{Blank}}} \times C_{\text{Standard}} \div \frac{\text{cell count}}{V}$$

Annotation:

C_{Standard} : Standard solution concentration, 20.72mmol/L

N : Dilution factor of the sample before testing

C_{pr} : Tissue homogenate protein concentration, g/L

Cell count: Total number of collected cells, 10^4 cells.

V : Volume of deionized water added during cell lysis, L

Technical parameters

Wavelength selection range	500-520nm	Detection range	0-30mmol/L
Inter-assay CV	$\leq 6\%$	Intra-assay CV	$\leq 4\%$

Precautions

1. It is recommended to use disposable laboratory test tubes for operation.
2. This product is intended for scientific research use only by professionals and must not be used for clinical diagnosis or treatment, in food or drugs, or stored in ordinary residences.
3. Avoid chloride contamination throughout the experiment. Disposable 96-well plates are recommended.
4. Use deionized water as the homogenization medium for tissue samples to prevent chloride contamination. Do not use normal saline or other chloride-containing solutions.
5. This kit is compatible with fully automatic and semi-automatic biochemical analyzers.
6. The concentration of standard solutions may vary between batches (the calculation examples use fixed values). Please calculate according to the actual labeled concentration.
7. Chloride contamination should be avoided during the experiment. Disposable 96-well plates are recommended.