

Sodium (Na) Colorimetric Assay Kit

Catalog No: E-BC-K207-S

Method: Colorimetric method

Specification: 200 Assays (Can detect 48 samples with spectrophotometer or 196 samples with biochemical analyzer and microplate reader without duplication)

Measuring instrument: Spectrophotometer, Microplate reader, Biochemistry analyzer

Detection range: 80-180 mmol/L

- ▶ Please kindly provide us the lot number (on the outside of the box) of the kit for more efficient service.

General information

▲ Intended use

This kit can be used for detecting the concentration of sodium ions in serum samples.

▲ Detection principle

Production of o-nitrophenol and galactose by o-nitrophenol- β -D-galactoside (ONPG) catalyzed by sodium dependent β -D-galactosidase. The amount of o-nitrophenol is directly proportional to the concentration of sodium ion in the sample. The o-nitrophenol is yellow in alkaline environment. The increase of absorbance is determined at 405 nm, and the content of sodium ion is calculated indirectly.

▲ Kit components & storage

Item	Component	Specification	Storage
Reagent 1	Tris-HCl buffer solution	20 mL × 2 vials	2-8°C ,12 months, shading light
	β- Galactosidase		
	Cryptand		
Reagent 2	ONPG	10 mL × 2 vials	
	Tris-HCl buffer solution		
Reagent 3	140 mmol/L Standard	2 mL × 1 vial	

Note: The reagents must be stored strictly according to the preservation conditions in the above table. The reagents in different kits cannot be mixed with each other.

▲ Materials prepared by users



Instruments

Spectrophotometer (405 nm), Biochemical analyzer (405 nm), Microplate reader (405 nm), Micropipettor, Vortex mixer, Centrifuge, Water bath, Incubator



Consumptive material

Tips (10 µL, 200 µL, 1000 µL), EP tubes (1.5 mL, 2 mL)



Reagents

Double distilled water

▲ Safety data

Some of the reagents in the kit contain dangerous substances. It should be avoided to touch the skin and clothing. Wash immediately with plenty of water if touching it carelessly. All the samples and waste material should be treated according to the relevant rules of laboratory's biosafety.

▲ Precautions

Before the experiment, please read the instructions carefully, and wear gloves and work clothes.

Pre-assay preparation

▲ Sample preparation

Separate the serum as soon as possible after blood collection to avoid hemolysis.

Assay protocol	
Ambient temperature	25-30
Optimum detection wavelength	405 nm

Instructions for the use of transferpettor:

- (1) Equilibrate the pipette tip in that reagent before pipetting each reagent.
- (2) Don't add the liquid outside the tips into the reaction system when pipetting each reagent.

Assay protocol

▲ Operation table

1. Detection with microplate reader

	Blank tube	Standard tube	Sample tube
ddH ₂ O (μL)	8		
Standard (μL)		8	
Sample (μL)			8
Reagent 1 (μL)	200	200	200
Reagent 2 (μL)	100	100	100
Mix fully and stand for 1 min. Measure the absorbance at 405 nm at 0 min (A1) and 2 min (A2), respectively. Calculate the ΔA .			

2. Detection with spectrophotometer

	Blank tube	Standard tube	Sample tube
ddH ₂ O (μL)	32		
Standard (μL)		32	
Sample (μL)			32
Reagent 1 (μL)	800	800	800
Reagent 2 (μL)	400	400	400
Mix fully and stand for 1 min. Set to zero with ddH ₂ O, measure the absorbance of each tube with 1 cm cuvette at 405 nm at 0 min (A1) and 2 min (A2), respectively. Calculate the ΔA.			

3. Detection with biochemical analyzer

Analysis method	Two-point method	Wavelength (nm)	405
Auxiliary wavelength (nm)	660	Reaction direction	Up
Reagent 1 (μL)	200	Reagent 2 (μL)	100
Sample (μL)	8	Delay time (min)	1
Reaction time (min)	2		

Automatic biochemical analyzer has its own program parameter input language. Reagents matches the analyzer and carry out automatic measurement after the above basic parameters are modified.

▲ Calculation

$$\text{Sodium ions content} = \frac{\Delta A_{\text{Sample}}/\text{min}}{\Delta A_{\text{Standard}}/\text{min}} \times c \times f$$

Note:

c: Concentration of standard, 140 mmol/L.

f: Dilution factor of sample before test.

▲ Performance index

1. Absorbance of blank: $A_{405} \leq 1$, $\Delta A_{405}/\text{min} \leq 0.4$ (optical path = 1 cm)
2. Linear range: 80~180 mmol/L, $|R| \geq 0.995$.
3. Sensitivity: ($|\Delta A|/\text{min}$) is between 0.154 ~ 0.504 when testing 140 mmol/L samples.
4. Accuracy: relative deviation $\leq 10\%$.
5. Precision: intra-CV $\leq 5.0\%$, inter- CV $\leq 8.0\%$.

▲ Notes

1. This kit is for research use only.
2. Instructions should be followed strictly, changes of operation may result in unreliable results.
3. The validity of kit is 12 months.
4. Do not use components from different batches of kit.
5. Please take safety precautions and follow the procedures of laboratory reagent operation. All waste liquid should be handled in accordance with local regulations.