

# Blood Potassium Content Assay Kit

**Note:** Take two or three different samples for prediction before test.

**Operation Equipment:** Spectrophotometer

**Cat No:** NA0669

**Size:** 50T/48S

## Components:

Reagent I: Liquid 25mL×1, store at 4°C. Accordance the ratio Reagent I: concentrated sulfuric acid =5:12 prepare solution before use.

Reagent II A: Liquid 5.1mL×1, store at 4°C.

Reagent II B: Powder×1, store at 4°C. Add Reagent II A to Reagent II B, mix thoroughly.

Reagent III: Liquid 40mL×1, store at 4°C.

Standard: Liquid 1mL×1, 2μmol/mL potassium standard, store at 4°C. Dilute 5 times before use, prepare as 0.4μmol/mL potassium standard.

## Description:

Potassium maintains normal osmotic pressure and acid-base balance, participates in sugar and protein metabolism, and ensures normal neuromuscular function. If Blood potassium concentration is more than 5.5mmol/L, the disease is called high blood potassium, which increases sensitivity of nerve and muscle, decreases sensitivity of Myocardial stress. When serum potassium concentration exceeds 10mmol/L, ventricular fibrillation or even diastolic arrest occurs. When serum potassium is lower than 3.5mmol/L, hypokalemia can cause muscle weakness, muscle flaccid paralysis, increase of myocardial stress, tachycardia, arrhythmia and even arrest in systolic phase. Therefore, serum potassium is a commonly biochemical index.

Potassium ion in serum is reacted with sodium tetraphenylboron to form potassium tetraphenylboron insoluble in water, and the turbidity is proportional to the concentration of potassium ion in a certain range. The content of serum potassium was determined by measuring its turbidity.

## Required but not provided:

Spectrophotometer, desk centrifuge, transferpettor, 1mL glass cuvette and distilled water.

## Procedure:

### I. Extraction:

Serum pretreatment: Add 50μL of serum and 450μL of Reagent I into centrifuge tube, mix thoroughly, centrifuge at 8000rpm and 25°C for 10min, the supernatant is used for detecting.

### II. Determination procedure:

- 1.Preheat spectrophotometer for 30 min, adjust wavelength to 520nm, set zero with distilled water.
- 2.Preheat Reagent III at 25°C water bath for 30min.

### 3. Operation table:

| Reagent name  | Blank tube (B) | Test tube (T) | Standard tube (S) |
|---|----------------|---------------|-------------------|
| Distilled water (μL)  | 200            |               |                   |
| 0.2 μmol/mL standard (μL)   |                |               | 200               |
| Supernatant (μL)  |                | 200           |                   |
| Reagent II (μL)   | 100            | 100           | 100               |
| Mix thoroughly, react for 5 min.  |                |               |                   |
| Reagent III (μL)  | 700            | 700           | 700               |
| Mix thoroughly, detect the absorbance at 520nm, record A <sub>B</sub> , A <sub>T</sub> , A <sub>S</sub> . |                |               |                   |

#### Calculation:

$$\text{Blood Potassium } (\mu\text{mol/dL}) = [C_S \times (A_T - A_B) \div (A_S - A_B)] \times \text{dilute times} = 4 \times (A_T - A_B) \div (A_S - A_B)$$

C<sub>S</sub>: 0.4 μmol/mL;

Dilute times: (50μLserum+450μLReagrt I)÷50μLserum=10

#### Note:

1. Serum potassium should be determined as soon as possible after blood collection. Too long time will affect the content of serum potassium.
2. If the absorbance value of the sample is greater than 1.2, it is recommended to dilute the sample with reagent - working solution for determination.

#### Experimental example:

1. The mouse serum is taken and operated according to the determination steps. A<sub>T</sub>= 0.636, A<sub>B</sub> = 0.012, A<sub>S</sub> = 0.397.

$$\text{Blood potassium concentration } (\mu\text{mol/mL}) = 4 \times (A_T - A_B) \div (A_S - A_B) = 6.48 \mu\text{mol/mL}.$$

#### Related Products:

NA0668/NA0427 Blood Magnesium Content Assay Kit

NA0737/NA0426 Blood Phosphate Content Assay Kit

NA0667/NA0425 Blood Sodium Content Assay Kit

NA0736/NA0494 Serum Ferri Ion Content Assay Kit

#### Technical Specifications:

The detection limit: 0.0095 mg/mL

The linear range: 0.05-1.5 mg/mL