

Blood Potassium Content Assay Kit

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

Operation Equipment: Spectrophotometer

Cat No: AK0382

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_B , A_T , A_S .			

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_S : 0.4 μmol/mL;

Dilute times: $(50\mu\text{L serum} + 450\mu\text{L Reagent I}) \div 50\mu\text{L serum} = 10$

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. $A_T = 0.636$, $A_B = 0.012$, $A_S = 0.397$.

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

Related Products:

AK0380/AK0379	Blood Magnesium Content Assay Kit
AK0272/AK0265	Blood Phosphate Content Assay Kit
AK0181/AK0180	Blood Sodium Content Assay Kit
AK0415/AK0414	Serum Ferri Ion Content Assay Kit

Technical Specifications:

The detection limit: 0.0095 mg/mL

The linear range: 0.05- 1.5 mg/mL