

Blood Potassium Content Assay Kit

Note: It is necessary to predict 2-3 large difference samples before the formal determination.

Operation Equipment: Spectrophotometer /Microplate reader

Cat No: BC2775

Size: 100T/96S

Components:

Reagent I: Liquid 50 mL×1, store at 2-8°C.

Reagent I Working Solution: Accordance the ratio Reagent I: concentrated sulfuric acid =5:12 prepare solution before use.

Reagent IIA: Liquid 4 mL×1, store at 2-8°C.

Reagent IIB: Powder×2, store at 4°C. Add 1.2 mL of Reagent IIA to one Reagent IIB, mix well, the unused reagent can be stored at 2-8°C for one week.

Reagent III: Liquid 15 mL×1, store at 2-8°C.

Standard: Liquid 1 mL×1, 2 μmol/mL potassium standard, store at 2-8°C. Dilute 2 times before use, prepare as 1 μmol/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:

Centrifuge, Transferpettor, Spectrophotometer/Microplate Reader, Micro Glass Cuvette/96 Well Flat-Bottom Plate, Distilled Water.

Procedure:

I. Extraction:

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

II. Determination procedure:

1. Preheat spectrophotometer or microplate reader for 30 min, adjust the wavelength to 520nm and set spectrophotometer counter to zero with distilled water.
2. Preheat Reagent III at 25°C water bath for 30min.
3. Operation table:

Reagent(μL)	Blank Tube (B)	Test Tube (T)	Standard Tube (S)
Distilled Water	40	-	-
1 μmol/mL Standard	-	-	40
Supernatant	-	40	-
Reagent II	20	20	20
Mix thoroughly, react for 5 min.			
Reagent III	140	140	140
Mix thoroughly, detect the absorbance at 520nm, record A_B , A_S , A_T . The standard tube and blank tube only need to be measured 1-2 times.			

III. Calculation:

Blood Potassium (μmol /mL) = $[C_S \times (A_T - A_B) \div (A_S - A_B)] \times \text{dilute times} = 10 \times (A_T - A_B) \div (A_S - A_B)$

C_S : 1 μmol/mL;

Dilute times: $(50\mu\text{Lserum} + 450\mu\text{LReagent I}) \div 50\mu\text{Lserum} = 10$

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 1.1, it is recommended to dilute the sample with Reagent I working solution for determination.

Experimental example:

1. The mouse serum is taken and operated according to the determination steps. Using 96 well plate, $A_T = 0.261$, $A_B = 0.048$, $A_S = 0.427$.

Blood potassium concentration (μmol/mL) = $10 \times (A_T - A_B) \div (A_S - A_B) = 5.62 \mu\text{mol/mL}$.

Related Products:

BC2790/BC2795	Blood Magnesium Content Assay Kit
BC1650/BC1655	Blood Phosphate Content Assay Kit
BC2800/BC2805	Blood Sodium Content Assay Kit
BC1730/BC1735	Serum Ferri Ion Content Assay Kit

Technical Specifications:

The detection limit: 0.0175 μmol/mL

The linear range: 0.125-3 μmol/mL