

## Blood Calcium Content Assay Kit

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

**Operation Equipment:** Spectrophotometer

**Catalog Number:** BC0720

**Size:** 50T/48S

**Product Composition:** Before use, please carefully check whether the volume of the reagent is consistent with the volume in the bottle. If you have any questions, please contact Solarbio staff in time.

Reagent Name	Size	Preservation Condition
Reagent I	Liquid 10 mL×1	2-8°C
Reagent II	Liquid 10 mL×1	2-8°C
Reagent III	Self-supplied reagent	2-8°C
Standard	Liquid 1 mL×1	2-8°C

### Solution Preparation:

**1. Reagent III:** Prepare your own anhydrous methanol and acetone, add 27 mL of anhydrous methanol and 3 mL of acetone in sequence, tighten the lid and mix well;

**2. Standard:** 2 μmol/mL CaCl<sub>2</sub> solution, which should be diluted five times with distilled water immediately before use to obtain a 0.4 μmol/mL standard solution. This is done by pipetting 50μL of the standard solution and mixing it with 450μL of distilled water.

### Product Description:

Blood calcium is almost present in plasma, so blood calcium mainly refers to plasma calcium which contain ionized calcium and bound calcium. The ionized calcium plays a physiological role directly. It is in dynamic balance with the bound calcium and affected by pH in blood. Blood calcium is related with many physiological function, too high or too low can affect normal physiological function. The kit is used for detecting free calcium concentration of blood.

In the strong alkaline solution, free calcium react with GBHA to form red calcium-GBHA compound which has absorption peak at 520 nm; Free calcium concentration is calculated according to detect the absorbance at 520 nm.

### Technical Indicators:

**Minimum Detection limit:** 0.011 μmol/mL

**Linear Range:** 0.025 - 1 μmol/mL

### Reagents and Equipment Required but Not Provided:

Visible Spectrophotometer, Adjustable Pipette, 1 mL Glass Cuvette, Anhydrous methanol (>98%, AR), Anhydrous acetone (>98%, AR), ice, distilled water.

### Operation procedure:

1. Preheat spectrophotometer 30 minutes, adjust wavelength to 520 nm, set zero with distilled water.

## 2. Add samples according to the table:

Reagent Name (μL)	Blank Tube (B)	Standard Tube (S)	Test Tube (T)
Serum	-	-	50
Distilled water	50	-	-
0.2 μmol/mL Standard	-	50	-
Reagent I	200	200	200
Reagent II	200	200	200
Reagent III	400	400	400

Note: Mix thoroughly, detect the absorbance A of 520 nm after incubating for 5 minutes, record  $A_T$ ,  $A_B$ ,  $A_S$ . The standard tube and blank tube only need to be measured 1-2 times.

**Calculation:**

$$\text{Blood Calcium}(\mu\text{mol} / \text{dL}) = [C_S \times (A_T - A_B) \div (A_S - A_B)] \times 100 = 20 \times (A_T - A_B) \div (A_S - A_B)$$

$C_S$ : 0.2 μmol/mL;

100: 1dL=100 mL

**Note:**

1. It is advisable to take blood on an empty stomach in the morning and complete the measurement as soon as possible after taking blood.
2. Try to complete the measurement within 10min.
3. Since the reaction needs to be determined as soon as possible, when using a micro cuvette, it is recommended to measure 5-10 samples per batch.
4. If  $A_T$  more than 1, suggest dilute with distilled water before detecting, the calculation formula needs to be changed accordingly.

**Experimental example:**

1. The mouse plasma is taken and operated according to the determination steps.  $A_T=0.608$ ,  $A_B=0.112$ , and  $A_S=0.316$ . Blood calcium content ( $\mu\text{mol}/\text{dL}$ ) =  $20 \times (A_T - A_B) \div (A_S - A_B) = 48.63 \mu\text{mol}/\text{dL}$ .

**Recent Product Citations:**

- [1] Wang Y, Jia X, Guo Z, Li L, Liu T, Zhang P, Liu H. Effect of dietary soybean saponin Bb on the growth performance, intestinal nutrient absorption, morphology, microbiota, and immune response in juvenile Chinese soft-shelled turtle (*Pelodiscus sinensis*). *Front Immunol.* 2022 Dec 23;13:1093567. doi: 10.3389/fimmu.2022.1093567. PMID: 36618377; PMCID: PMC9816404.
- [2] Wang P, Wu B, You S, Lu S, Xiong S, Zou Y, Jia P, Guo X, Zhang Y, Cao L, Sun Y, Zhang N. DNA Polymerase Gamma Recovers Mitochondrial Function and Inhibits Vascular Calcification by Interacted with p53. *Int J Biol Sci.* 2022 Jan 1;18(1):409-425. doi: 10.7150/ijbs.65030. PMID: 34975341; PMCID: PMC8692132.

- [3] Li B, Liu Q, Chen X, Chen T, Dang W, Zhao J, Cui G, Chen K, Wu Y. A Novel Idiopathic Atrial Calcification: Pathologic Manifestations and Potential Mechanism. *Front Cardiovasc Med.* 2022 Mar 21;9:788958. doi: 10.3389/fcvm.2022.788958. PMID: 35387434; PMCID: PMC8978529.
- [4] Qin B, Qincao L, He S, Liao Y, Shi J, Xie F, Diao N, Bai L. Parathyroid hormone-related protein prevents high-fat-diet-induced obesity, hepatic steatosis and insulin resistance in mice. *Endocr J.* 2022 Jan 28;69(1):55-65. doi: 10.1507/endocrj.EJ20-0728. Epub 2021 Aug 18. PMID: 34408100.
- [5] Zhang Z, Liu S, Qi Y, Aluo Z, Zhang L, Yu L, Li Q, Luo Z, Sun Z, Zhou L, Li Y. Calcium supplementation relieves high-fat diet-induced liver steatosis by reducing energy metabolism and promoting lipolysis. *J Nutr Biochem.* 2021 Aug;94:108645. doi: 10.1016/j.jnutbio.2021.108645. Epub 2021 Apr 7. PMID: 33838230.

**Related Products:**

BC2770/BC2775	Blood Potassium Content Assay Kit
BC2790/BC2795	Blood Magnesium Content Assay Kit
BC1650/BC1655	Blood Phosphate Content Assay Kit
BC2800/BC2805	Blood Sodium Content Assay Kit