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CheKine™ Micro Blood Magnesium Concentration Assay Kit

Cat #: KTB2120 Size: 48 T/48 S 96 T/96 S

	Micro Blood Magnesium Concentration Assay Kit		
REF	**Cat #:** KTB2120	LOT	**Lot #:** Refer to product label
	Detection range: 0.01-0.6 mmol/dL		**Sensitivity:** 0.01 mmol/L
	Applicable samples: Plasma, Serum		
	Storage: Stored at 4℃, protected from light for 6 months		

Assay Principle

Magnesium is an activator of multiple enzymes, such as phosphatase, creatine kinase, hexokinase and carboxylase. Magnesium is also an element necessary for the structure of DNA, RNA and ribosomal macromolecules. Magnesium is an important element in maintaining normal nerve and muscle function. Deviations from normal values in serum magnesium concentrations are associated with certain renal and endocrine diseases. CheKine™ Micro Blood Magnesium Concentration Assay Kit provides a simple method for detecting blood magnesium concentration in serum, plasma sample. Magnesium ions are hydroxidized into colloidal particles in alkaline medium, and then turn orange-red after being further combined with Dardan yellow. Within a certain range, the absorbance at 540 nm is proportional to the concentration of magnesium ions.

Materials Supplied and Storage Conditions

Kit components	Size		Storage conditions
	48 T	96 T	
Reagent Ⅰ	Powder×1 vial	Powder×2 vials	4℃
Reagent Ⅱ	1.2 mL	2.4 mL	4℃, protected from light
Reagent Ⅲ	2.5 mL	5 mL	4℃
Standard	1 mL	1 mL	4℃, protected from light

Note: Before formal testing, it is recommended to select 2-3 samples with large expected differences for pre-experiment.

Materials Required but Not Supplied

- Microplate reader or visible spectrophotometer capable of measuring absorbance at 540 nm
- 96-well plate or microglass cuvette, precision pipettes, disposable pipette tips, 1.5 mL EP tube
- Freezing centrifuge, incubator
- Deionized water

Reagent Preparation

Working Reagent I: Prepared before use. Add 1.2 mL deionized water to each bottle to dissolve thoroughly in 50℃ water bath. The remaining reagent can also be stored at 4℃ for 2 weeks.

Reagent II: Ready to use as supplied; Equilibrate to room temperature before use; Store at 4℃, protected from light.

Reagent III: Ready to use as supplied; Equilibrate to room temperature before use; Store at 4℃.

Standard: Ready to use as supplied; 2 mmol/L magnesium Standard. Equilibrate to room temperature before use; Store at 4℃, protected from light.

Note: (1) Always prepare fresh standards per use. (2) During use of this kit, light exposure should be avoided as much as possible.

Sample Preparation

Note: We recommend that you use fresh samples. If not assayed immediately, samples can be stored at -80℃ for one month.When measuring, the temperature and time of thawing should be controlled. When thawing at room temperature, the sample should be thawed within 4 h.

Plasma, Serum: Test directly.

Note: (1) Blood should be collected on an empty stomach during blood collection, and sodium citrate anticoagulant should be avoided. (2) The magnesium content in red blood cells is about 3 times that of serum. Hemolysis should be avoided and serum should be separated as soon as possible.

Assay Procedure

1. Preheat the microplate reader or visible spectrophotometer for more than 30 min, and adjust the wavelength to 540 nm, visible spectrophotometer was returned to zero with deionized water.

2. Sample measurement (The following operations are operated in the 96-well plate or microglass cuvette).

Reagent	Blank Well (μL)	Standard Well (μL)	Test Well (μL)
Sample	0	0	10
Standard	0	10	0
Deionized water	120	110	110
Working Reagent Ⅰ	20	20	20
Reagent Ⅱ	20	20	20
Reagent Ⅲ	40	40	40

3. Mix well and kept at room temperature for 5 min. The absorbance value is measured at 540 nm. The blank well is marked as A_{Blank}, the standard well is marked as $A_{Standard}$, and the test well is marked as A_{Test}. Finally calculate $\Delta A_{Test}=A_{Test}-A_{Blank}$, $\Delta A_{Standard}=A_{Standard}-A_{Blank}$.

Note: (1) The Standard Well and Blank Well only need to be done once or twice. (2) In order to guarantee the accuracy of experimental results, need to do a pre-experiment with 2-3 samples. If ΔA_{Test} is less than 0.01, increase the ratio of sample to deionized water in the reaction system appropriately. If ΔA_{Test} is greater than 0.5, the sample can be appropriately diluted with deionized water, the calculated result multiplied by the dilution factor. (3) Absorbance should be measured within 30 min after adding Reagent Ⅲ and mixing well.

Data Analysis

Note: We provide you with calculation formulae, including the derivation process and final formula. The two are exactly

equal. It is suggested that the concise calculation formula in bold is final formula.

Calculation of the concentration of blood magnesium

Blood magnesium (mmol/dL)=$C_{Standard}\times\Delta A_{Test}\div\Delta A_{Standard}\times 0.1$**=$0.2\times\Delta A_{Test}\div\Delta A_{Standard}$**

$C_{Standard}$: Standard concentration, 2 mmol/L; 0.1: unit conversion factor, 1 dL=0.1 L.

Typical Data

The following data are for reference only. And the experimenters need to test the samples according to their own experiments.

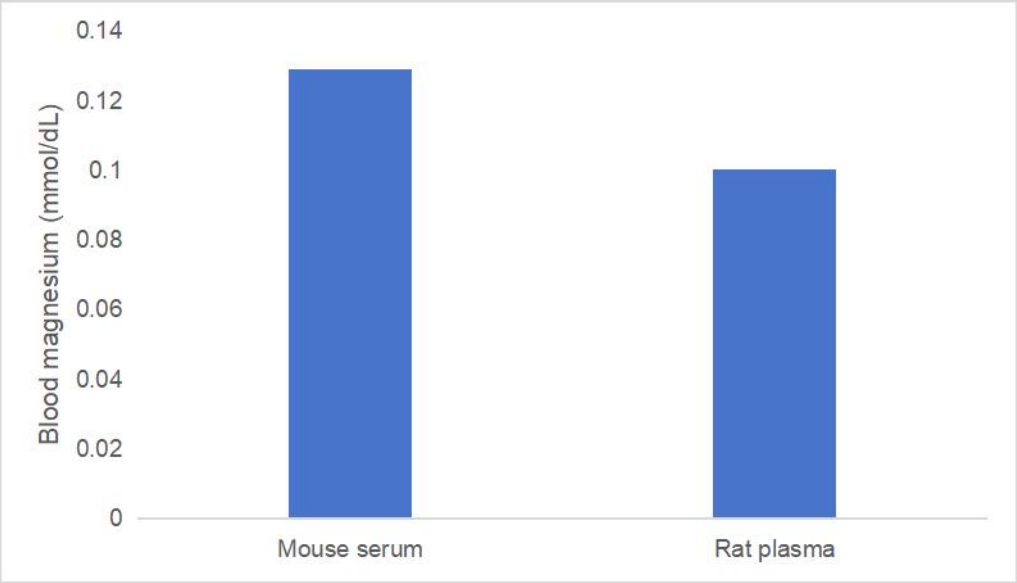

Figure 1. Determination of blood magnesium concentration in mouse serum and rat plasma by this kit.

Recommended Products

Catalog No.	Product Name
KTB2140	CheKine™ Micro Serum Zinc Assay Kit
KTB2130	CheKine™ Micro Serum Sodium Assay Kit
KTB2160	CheKine™ Micro Blood Phosphate Assay Kit

Disclaimer

The reagent is only used in the field of scientific research, not suitable for clinical diagnosis or other purposes. For your safety and health, please wear a lab coat and disposable gloves.