(FOR RESEARCH USE ONLY. DO NOT USE IT IN CLINICAL DIAGNOSIS!)

Creatine kinase MB isoenzyme Assay Kit

Catalog No.: BC00181

Size: 200T

Please read the instructions carefully before use. If you have any questions or need further help during experiment, please don't hesitate to contact us through the following methods:

✉ Email (Sale) order@enkilife.com

✉ Email (Techsupport) techsupport@enkilife.com

☎ Tel: 0086-27-87002838

Website: www.enkilife.com

Shelf life: Please refer to the label on the outer package.

Techsupport: In order to provide you with better service, please inform us the lot number on the label of the outer package.

Basic Information

Product Name	Creatine kinase MB isoenzyme Assay Kit
Detection Method	Colorimetric
Sample Type	Serum, plasma
Assay Type	Quantitative
Detection Instrument	Spectrophotometer (340 nm)

Product Introduction

Creatine Kinase (CK) exists in four isoform types: muscle type (MM), brain type (BB), hybrid type (MB), and mitochondrial type (MiMi).
The MM isoform is mainly distributed in various muscle cells, the BB isoform primarily in brain cells, the MB isoform predominantly in cardiomyocytes, and the MiMi isoform chiefly in the mitochondria of cardiac and skeletal muscles.
Creatine kinase isoenzymes are of great clinical significance. In the event of various pathological conditions including muscular atrophy and myocardial infarction, the serum level of creatine kinase rises rapidly. At present, the detection of creatine kinase activity is considered more reliable than electrocardiography for the diagnosis of myocardial infarction. Among these isoenzymes, CK-MB exhibits the highest diagnostic specificity.
Due to its vital physiological functions and clinical application value, creatine kinase has attracted extensive attention and in-depth research worldwide.

Principle

Creatine kinase (CK) consists of two subunits, M and B, forming three dimeric isoenzymes. CK1 (BB), CK2 (MB) and CK3 (MM) are mainly located in the cytoplasm, while a small amount of mitochondrial isoenzyme (CK-MiMi) is also present in serum.

The heart contains high CK activity, second only to skeletal muscle. In cardiac tissue, CK-MB accounts for approximately 13–22% of total CK, whereas it is less than 1% in skeletal muscle. Therefore, CK-MB serves as a specific biomarker for myocardial injury.

This assay kit adopts the immunoinhibition method: anti-M serum is used to inhibit the activity of the M subunit. The residual activity of the B subunit is then determined, and the measured value is

multiplied by 2 to calculate the total CK-MB activity.

Components

No.	Components	Size
Reagent 1 (R1)	Liquid	40 mL
Reagent 2 (R2)	Liquid	10 mL

Storage

The kit is stable for one year when stored at 2-8 ℃.

Applicable Instruments

Suitable for colorimetric determination by ultraviolet spectrophotometer or automatic biochemical analyzer.

Operation process

1. Colorimetric determination by spectrophotometer

	Assay tube
Sample (μL)	40
Reagent 1 (R1) (μL)	800
Reagent 2 (R2) (μL)	200
Add the above reagents into a 1 mL cuvette, mix thoroughly. Incubate at 37 ℃ for 2 minutes, then record the absorbance A_1 at a wavelength of 340 nm. Continue incubating for another 3 minutes and measure the absorbance A_2, and calculate $\Delta A = A_2 - A_1$.	

2. Determination by biochemical analyzer

Main Performance Parameters:

Primary Wavelength	340nm	Reaction Method	Rate Method	Reaction Temperature	37℃
Auxiliary Wavelength	405nm	Reaction Direction	Upward	Calculation Factor	8360

Operation Steps

	Assay tube
Sample (μL)	10
Reagent 1 (R1) (μL)	200
Reagent 2 (R2) (μL)	50
Mix thoroughly, incubate at 37 ℃ for 2 minutes, continuously monitor the absorbance change for 1 to 3 minutes, and calculate ΔA/min.	

Calculation

$$\text{CK-MB Activity (U/L)} = \triangle \text{A/min} \times \text{F}\ (\ 8360\ )$$

$$\text{F} = \frac{\text{V}_{\text{Total}} \times 1000}{\text{V}_{\text{Sample}} \times 6.22 \times 1} \times 2 = 8360$$

Annotation:

V_{Total}: Total volume of reaction system, mL

V_{Sample}: Volume of sample added, mL

1000: Conversion coefficient from U/mL to U/L

6.22: Millimolar extinction coefficient of NADPH at 340 nm

1: Cuvette optical path length, 1cm

Reference Range

0~25 U/L (This reference range is applicable to human serum and plasma samples. It is recommended that each laboratory establish its own reference range.)

Precautions

1. Serum or plasma should be separated promptly after blood collection to avoid hemolysis. Anticoagulants other than heparin exert an inhibitory effect on CK.
2. The major interfering substance for CK detection is adenylate kinase (AK), which is abundant in red blood cells. AK catalyzes the conversion of ADP to ATP, resulting in falsely elevated CK results. An AK level of 10 U/L is equivalent to 1 U/L of CK. Therefore, hemolysis of samples should be strictly avoided.
3. It is recommended to use disposable laboratory test tubes for operation.
4. This product is intended for scientific research use only by professionals and must not be used for clinical diagnosis or treatment, in food or drugs, or stored in ordinary residences.