



# Canine creatine kinase MB isoenzyme (CK-MB)ELISA Kit

Catalog No. CSB-E15852c

(96T)

- This immunoassay kit allows for the in vitro quantitative determination of **canine creatine kinase MB isoenzyme** concentrations in **serum and plasma**.
- **Expiration date** six months from the date of manufacture
- **FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC PROCEDURES.**

## **PRINCIPLE OF THE ASSAY**

The microtiter plate provided in this kit has been pre-coated with creatine kinase MB isoenzyme. Standards or samples are then added to the appropriate microtiter plate wells with Horseradish Peroxidase (HRP) -conjugated antibody preparation specific for creatine kinase MB isoenzyme, mix well and incubated. The more the amount of creatine kinase MB isoenzyme in samples, the less HRP- conjugated antibody preparation specific for creatine kinase MB isoenzyme bound by pre-coated creatine kinase MB isoenzyme. Then a TMB (3,3',5,5' tetramethyl-benzidine) substrate solution is added to each well. And the color develops in opposite to the amount of creatine kinase MB isoenzyme in the sample. The color development is stopped and the intensity of the color is measured.

## **SPECIFICITY**

This assay recognizes creatine kinase MB isoenzyme. No significant cross-reactivity or interference was observed.

## SENSITIVITY

The minimum detectable dose of creatine kinase MB isoenzyme is typically less than 1.56 uIU/ml.

The sensitivity of this assay, or Lower Limit of Detection (LLD) was defined as the lowest protein concentration that could be differentiated from zero.

## MATERIALS PROVIDED

Reagent	Quantity
Assay plate	1
Standard	1 x 200 $\mu$ l (A solution of 1000 uIU/ml)
Sample Diluent	2 x 20 ml
HRP- conjugate Diluent	1 x 10 ml
HRP- conjugate	1 x 60 $\mu$ l
Wash Buffer	1 x 20 ml (25xconcentrate)
TMB Substrate	1 x 10 ml
Stop Solution	1 x 10 ml

## STORAGE

1. Unopened test kits should be stored at 2-8°C upon receipt and the microtiter plate should be kept in a sealed bag. The test kit may be used throughout the expiration date of the kit, provided it is stored as prescribed above. Refer to the package label for the expiration date.

2. Opened test plate should be stored at 2-8°C in the aluminum foil bag with desiccants to minimize exposure to damp air. The kits will remain stable until the expiring date shown, provided it is stored as prescribed above.
3. A microtiter plate reader with a bandwidth of 10 nm or less and an optical density range of 0-3 OD or greater at 450nm wavelength is acceptable for use in absorbance measurement.

## REAGENT PREPARATION

*Bring all reagents to room temperature before use.*

1. **Wash Buffer** If crystals have formed in the concentrate, warm up to room temperature and mix gently until the crystals have completely dissolved. Dilute 20 ml of Wash Buffer Concentrate into deionized or distilled water to prepare 500 ml of Wash Buffer.
2. **HRP- conjugate** Centrifuge the vial before opening. Dilute to the working concentration using **HRP- conjugate Diluent** (1:100), respectively.
3. **Standard**
  - Centrifuge the vial before opening. Allow the 1000 uIU/ml standard solution to warm to room temperature .Label six tubes#1 through #6.

- Pipette 270µl Sample Diluent into tube#1. Add 30µl of the 1000 uIU/ml standard to tube #1. Vortex thoroughly. The 100 uIU/ml standard(**tube #1**)serves as the high standard.
- Pipette 150µl Sample Diluent into tubes#2-6. Add 150µl of tube #1 to tube #2 and vortex thoroughly ,Add 150µl of tube #2 to tube #3 and vortex thoroughly,Continue this for tubes #3 through 5. Mix each tube thoroughly before the next transfer. Sample Diluent serves as the zero standard (0uIU/ml) (**tube #6**).

**The concentration of canine creatine kinase MB isoenzyme in tubes #1through #6 will be 100, 50, 25, 12.5, 6.25 and 3.12 uIU/ml. respectively.**

**Diluted standards should be used within 30 minutes of preparation.**

**Precaution: The Stop Solution provided with this kit is an acid solution. Wear eye, hand, face, and clothing protection when using this material.**

## **OTHER SUPPLIES REQUIRED**

- Microplate reader capable of measuring absorbance at 450 nm, with the correction wavelength set at 540 nm or 570 nm.
- Pipettes and pipette tips.
- Deionized or distilled water.
- Squirt bottle, manifold dispenser, or automated microplate washer.

- An incubator which can provide stable incubation conditions up to  $37^{\circ}\text{C}\pm 0.5^{\circ}\text{C}$ .

## **SAMPLE COLLECTION AND STORAGE**

- **Serum** Use a serum separator tube (SST) and allow samples to clot for 30 minutes before centrifugation for 15 minutes at 1000 g. Remove serum and assay immediately or aliquot and store samples at  $-20^{\circ}\text{C}$ . Centrifuge the sample again after thawing before the assay. Avoid repeated freeze-thaw cycles.
- **Plasma** Collect plasma using citrate, EDTA, or heparin as an anticoagulant. Centrifuge for 15 minutes at 1000 g within 30 minutes of collection. Assay immediately or aliquot and store samples at  $-20^{\circ}\text{C}$ . Centrifuge the sample again after thawing before the assay. Avoid repeated freeze-thaw cycles.

## **SAMPLE PREPARTION**

- Recommend to dilute the serum or plasma samples with Sample Diluent(1:400) before test. The suggested 400-fold dilution can be achieved by adding 5 $\mu\text{l}$  sample to 95 $\mu\text{l}$  of Sample Diluent. Complete the 400-fold dilution by adding 15 $\mu\text{l}$  of this solution to 285 $\mu\text{l}$  of Sample Diluent. The

recommended dilution factor is for reference only. The optimal dilution factor should be determined by users according to their particular experiments.

## ASSAY PROCEDURE

*Bring all reagents and samples to room temperature before use. It is recommended that all samples, standards, and controls be assayed in duplicate. All the reagents should be added directly to the liquid level in the well. The pipette should avoid contacting the inner wall of the well.*

1. Add 50µl of Standard or Sample pell well. Add 50µl **HRP- conjugate working solution** to each well immediately. Mix well with the pipette or shake the plate gently for 60 seconds.
2. Then incubate for 60 minutes at 37° C.
3. Aspirate each well and wash, repeating the process four times for a total of five washes. Wash: Fill each well with Wash Buffer (200µl) and let it stand for 2 minutes, then remove the liquid by flicking the plate over a sink. The remaining drops are removed by patting the plate on a paper towel. Complete removal of liquid at each step is essential to good performance.
4. Add 90µl of **TMB Substrate** to each well. Incubate for 20 minutes at 37°C. Keeping the plate away from drafts and other temperature fluctuations in the dark.
5. Add 50µl of **Stop Solution** to each well when the last four

wells containing the lowest concentration of standards develop obvious blue color. If color change does not appear uniform, gently tap the plate to ensure thorough mixing.

6. Determine the optical density of each well within 15 minutes, using a microplate reader set to 450 nm.

## **CALCULATION OF RESULTS**

*Using the professional soft "Curve Exert 1.3" to make a standard curve is recommended, which can be downloaded from our web.*

Average the duplicate readings for each standard, control, and sample and divide the average zero standard optical density. Create a standard curve by reducing the data using computer software. As an alternative, construct a standard curve by plotting the absorbance ratio for each standard on the x-axis against the concentration on the y-axis and draw a best fit curve through the points on the graph. The data may be linearized by plotting the creatine kinase MB isoenzyme concentrations versus the ratio and the best fit line can be determined by regression analysis. This procedure will produce an adequate but less precise fit of the data. If samples have been diluted, the concentration read from the standard curve must be multiplied by the dilution factor.



## **LIMITATIONS OF THE PROCEDURE**

- The kit should not be used beyond the expiration date on the kit label.
- Do not mix or substitute reagents with those from other lots or sources.
- If samples generate values higher than the highest standard, dilute the samples with the appropriate Diluent and repeat the assay.
- Any variation in operator, pipetting technique, washing technique, incubation time or temperature, and kit age can cause variation in binding.
- This assay is designed to eliminate interference by soluble receptors, binding proteins, and other factors present in biological samples. Until all factors have been tested in the Immunoassay, the possibility of interference cannot be excluded.

## **TECHNICAL HINTS**

- Centrifuge vials before opening to collect contents.
- When mixing or reconstituting protein solutions, always avoid foaming.
- To avoid cross-contamination, change pipette tips between additions of each standard level, between sample additions,

and between reagent additions. Also, use separate reservoirs for each reagent.

- When using an automated plate washer, adding a 30 second soak period following the addition of wash buffer, and/or rotating the plate 180 degrees between wash steps may improve assay precision.
- To ensure accurate results, proper adhesion of plate sealers during incubation steps is necessary.
- Substrate Solution should remain colorless or light blue until added to the plate. Keep Substrate Solution protected from light. Substrate Solution should change from colorless or light blue to gradations of blue.
- Stop Solution should be added to the plate in the same order as the Substrate Solution. The color developed in the wells will turn from blue to yellow upon addition of the Stop Solution. Wells that are green in color indicate that the Stop Solution has not mixed thoroughly with the Substrate Solution.