ab274408 – Dog Thymidine Kinase ELISA Kit (TK1)

For the determination of Thymidine Kinase in dog biological samples.

View ab274408

Dog Thymidine Kinase ELISA Kit datasheet:

www.abcam.com/ab274408

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This product is for research use only and is not intended for diagnostic use.

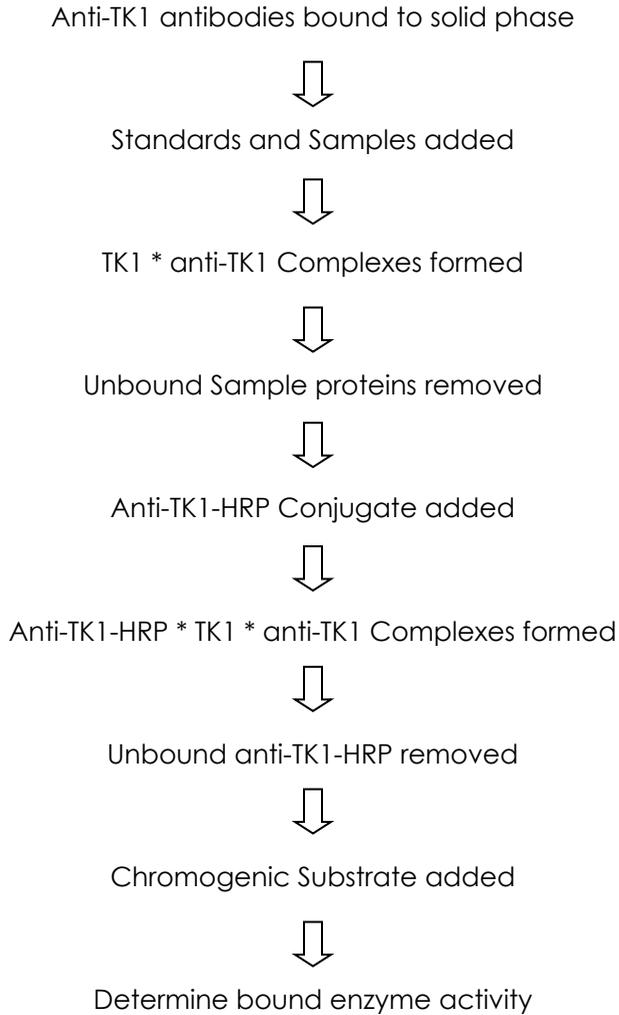# Table of Contents

1. Overview

The Dog Thymidine Kinase ELISA Kit (TK1) (ab274408) is a highly sensitive two-site enzyme linked immunoassay (ELISA) for measuring TK1 in dog biological samples.

2. Protocol Summary

Anti-TK1 antibodies bound to solid phase

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Standards and Samples added

⇩

TK1 * anti-TK1 Complexes formed

⇩

Unbound Sample proteins removed

⇩

Anti-TK1-HRP Conjugate added

⇩

Anti-TK1-HRP * TK1 * anti-TK1 Complexes formed

⇩

Unbound anti-TK1-HRP removed

⇩

Chromogenic Substrate added

⇩

Determine bound enzyme activity

3. Precautions

Please read these instructions carefully prior to beginning the assay.

All kit components have been formulated and quality control tested to function successfully as a kit. Modifications to the kit components or procedures may result in loss of performance.

4. Storage and Stability

– Store the components kit at +4-8°C in the dark immediately upon receipt.
– Kit has a storage time of 1 year from receipt, providing components have not been reconstituted.
– Refer to list of materials supplied for storage conditions of individual components. Observe the storage conditions for individual prepared components in the Reagent Preparation section.

5. Limitations

- This assay will perform as described only when the assay procedure is carefully followed and with adherence to good laboratory practice.
- Factors that might affect the performance of the assay include proper instrument function, cleanliness of glassware, quality of distilled or deionized water, accuracy of reagent and sample pipetting, washing technique, incubation time and/or temperature.
- Do not mix or substitute reagents with those from other lots or sources.

6. Materials Supplied

Item	Quantity	Storage Condition
Antibody Coated Plate	96 wells	4°C
Dog Thymidine Kinsae Calibrator (Lyophilized)	1 vial	4°C
5X Diluent Buffer Concentrate	50 mL	4°C
20X Wash Buffer Concentrate	50 mL	4°C
100X HRP Streptavidin Conjugated Thymidine Kinase antibody	1 vial	4°C (Store in dark)
Chromogen Substrate Solution	12 mL	4°C (Store in dark)
Stop Solution	12 mL	4°C
100X Biotin Conjugated Detection Antibody	1 vial	4°C (Store in dark)

7. Materials Required, Not Supplied

These materials are not included in the kit, but will be required to successfully perform this assay:

- Microplate reader capable of measuring absorbance at 450 nm.
- Microplate washer/ aspirator
- Precision pipettes to deliver 2 µL to 200 µL volumes.
- Adjustable 1-25 mL pipettes for reagent preparation.
- Timer
- Distilled or deionized water.
- Log-log graph paper or computer and software for ELISA data analysis.
- Tubes to prepare standard or sample dilutions.
- Assorted glassware for the preparation of reagents and buffer solutions.

8. Technical Hints

- Samples which generate values that are greater than the most concentrated standard should be further diluted in the appropriate sample dilution buffer.
- Avoid foaming or bubbles when mixing or reconstituting components.
- Avoid cross contamination of samples or reagents by changing tips between sample, standard and reagent additions.
- Ensure plates are properly sealed or covered during incubation steps.
- Completely aspirate all solutions and buffers during wash steps. When preparing your standards, it is critical to briefly spin down the vial first. The powder may adhere to the cape and not be included in the standard solution resulting in an incorrect concentration. Be sure to dissolve the powder thoroughly when reconstituting. After adding Assay Diluent to the vial, we recommend inverting the tube a few times, then flick the tube a few times, and then spin it down; repeat this procedure 3-4 times. This is an effective technique for thorough mixing of the standard without using excessive mechanical force.
- Do not vortex the standard during reconstitution, as this will destabilize the protein.
- Once your standard has been reconstituted, it should be used right away or else frozen for later use.
- Keep the standard dilutions on ice during preparation, but the ELISA procedure should be done at room temperature.
- Be sure to discard the working standard dilutions after use – they do not store well.
- This kit is sold based on number of tests. A 'test' simply refers to a single assay well. The number of wells that contain sample, control or standard will vary by product. Review the protocol completely to confirm this kit meets your requirements. Please contact our Scientific Support staff with any questions.

9. Reagent Preparation

– Equilibrate all reagents to room temperature (18-25°C) prior to use. The kit contains enough reagents for 96 wells.

9.1 1X Diluent Solution

The diluent solution is supplied as 5X Diluent Concentrate and must be diluted 1/5 with distilled or deionized water (1 part buffer concentrate, 4 parts dH_2O). The 1X Diluent Solution is stable for at least one week from the date of preparation and should be stored at +4-8°C.

9.2 1X Wash Buffer

The wash solution is supplied as 20X Concentrate and must be diluted 1/20 with distilled or deionized water (1 part buffer concentrate, 19 parts dH_2O). Crystal formation in the concentrate is not uncommon when storage temperatures are low. Warming of the concentrate to 30 - 35°C before dilution can dissolve crystals. The 1X Wash Buffer is stable for at least one week from the date of preparation and can be stored at +4-8°C.

9.3 1X Biotin-Antibody Conjugate and 1X HRP Streptavidin Conjugated Thymidine Kinase antibody:

Calculate the required amount of 1X Enzyme-Antibody Conjugate solution for each microtitre plate test strip by adding 10 µL Enzyme-Antibody Conjugate to 990 µL of 1X Diluent for each test strip to be used for testing (1/100 dilution). Dilute immediately before use and protect from light. Mix uniformly, but gently. Avoid foaming.

9.4 Antibody Coated Plate - Ready to use as supplied. Unseal foil pouch and remove plate from pouch. Remove all strips and wells that will not be used in the assay and place back in pouch and re-seal along with desiccant.

9.5 Dog Thymidine Kinsae Calibrator (Lyophilized)

NOTE: The calibrator is provided at the concentration stated on the vial. Prepare according to section 12.

9.6 Chromogen Substrate and Stop Solution:

Ready to use as supplied.

10. Sample Collection and Storage

- All blood components and biological materials should be handled as potentially hazardous. Follow universal precautions when handling and disposing.
- If blood samples are clotted, grossly hemolyzed, lipemic, or the integrity of the sample is of concern, make a note and interpret results with caution.
- The sample collection and storage conditions listed below are intended as general guidelines. Sample stability has not been evaluated.
- Known interfering substances - Azide and thimerosal at concentrations higher than 0.1% inhibits the enzyme reaction.

10.1 **Serum:**

Blood should be collected by venipuncture. The serum should be separated from the cells after clot formation by centrifugation. Remove serum and assay immediately or aliquot and store samples at –80**°**C (preferably) or -20**°**C. Avoid repeated freeze-thaw cycles.

10.2 **Plasma:**

Blood should be collected into a container with an anticoagulant and then centrifuged. Assay immediately or aliquot and store samples at –80°C (preferably) or -20°C. Avoid repeated freeze-thaw cycles.

10.3 **Urine:**

Collect mid-stream using sterile or clean urine collector. Centrifuge to remove cell debris. Assay immediately or aliquot and store samples at –80°C (preferably) or -20°C. Avoid repeated freeze-thaw cycles.

11.Sample Preparation

General Sample information:

The assay requires that each test sample be diluted before use. All samples should be assayed in duplicate each time the assay is performed. The recommended dilutions are only suggestions. Dilutions should be based on the expected concentration of the unknown sample such that the diluted sample falls within the dynamic range of the standard curve. If unsure of sample level, a serial dilution with one or two representative samples before running the entire plate is highly recommended.

11.1 Serum:

Recommended starting dilution is 1/2. To prepare a 1/2 dilution of a sample, transfer 300 µL of sample to 300 µL of 1X diluent. This gives you a 1/2 dilution. Mix thoroughly.

11.2 Plasma:

Recommended starting dilution is 1/2. To prepare a 1/2 dilution of a sample, transfer 300 µL of sample to 300 µL of 1X diluent. This gives you a 1/2 dilution. Mix thoroughly.

12. Standard Curve preparation

–   A standard curve should be generated each time the test is performed.

12.1   Reconstitute the Dog Thymidine Kinase Calibrator with distilled or de-ionized water as specified on the vial and mix gently until dissolved. The amount of calibrator is shown on the vial, and after reconstitution will have a concentration of X μg/mL, where X is the amount on the vial (the reconstituted calibrator should be aliquoted and stored frozen if future use is intended)

12.2   The standards need to be prepared immediately prior to use (see example table below. **Note: This example is for demonstration purposes only. Please remember to check your calibrator vial for the actual concentration of calibrator provided**).

12.3   Mix well between each step and avoid foaming.

Standard	Volume added to 1X Diluent (μl)	Volume of 1X Diluent	Std conc. ng/ml
6	50 μl of 75 ng/ml Calibrator	700 μl	5
5	300 μl std #6	300 μl	2.5
4	300 μl std #5	300 μl	1.25
3	300 μl std #4	300 μl	0.63
2	300 μl std #3	300 μl	0.31
1	300 μl std #2	300 μl	0.16
0	---	600 μl	0

13. Assay Procedure

– We recommend that you assay all standards, controls and samples in duplicate.

13.1 The Standards and the test sample(s) should be loaded into the ELISA wells as quickly as possible to avoid a shift in OD readings. Using a multichannel pipette would reduce this occurrence.

Pipette 100 µL of the below standards in duplicate:

Standard	Concentration (ng/mL)
0	0.0
1	0.16
2	0.31
3	0.63
4	1.25
5	2.50
6	5

13.2 Pipette 100 µL of sample (in duplicate) into pre designated wells.

13.3 Incubate the microtiter plate at room temperature for sixty (60 ± 2) minutes. Keep plate covered and level during incubation.

13.4 Following incubation, aspirate the contents of the wells.

13.5 Completely fill each well with appropriately diluted Wash Solution and aspirate. Repeat three times, for a total of four washes. If washing manually: completely fill wells with wash buffer, invert the plate then pour/shake out the contents in a waste container. Follow this by sharply striking the wells on absorbent paper to remove residual buffer. Repeat 3 times for a total of four washes.

13.6 Pipette 100 µL of appropriately diluted Biotin-Antibody Conjugate to each well. Incubate at room temperature for twenty (20 ± 2) minutes. Keep plate covered in the dark and level during incubation.

13.7 Wash and blot the wells as described in 13.4 - 13.5.

13.8 Pipette 100 µL of appropriately diluted HRP-Antibody Conjugate to each well. Incubate at room temperature for twenty (20 ± 2) minutes. Keep plate covered in the dark and level during incubation.

13.9 Wash and blot the wells as described in 12.4 - 12.5.

13.10 Pipette 100 µL of Chromogen Substrate Solution into each well.

13.11 Incubate in the dark at room temperature for precisely ten (10) minutes.

13.12 After ten minutes, add 100 µL of Stop Solution to each well.

13.13 Determine the absorbance (450 nm) of the contents of each well within 30 minutes. Calibrate the plate reader to manufacturer's specifications.

14. Calculations

14.1 Subtract the average background value (Average absorbance reading of Standard zero) from the test values for each sample.

14.2 Average the duplicate readings for each standard and use the results to construct a Standard Curve. Construct the standard curve by reducing the data using computer software capable of generating a four parameter logistic curve fit. A second order polynomial (quadratic) or other curve fits may also be used; however, they will be a less precise fit of the data.

14.3 Interpolate test sample values from standard curve. Correct for sera dilution factor to arrive at the TK1 concentration in original samples.

15. Notes

Technical Support

For all technical or commercial enquiries please go to:
www.abcam.com/contactus
www.abcam.cn/contactus (China)
www.abcam.co.jp/contactus (Japan)