



User's Manual

Inorganic Pyrophosphatase ELISA Detection Kit



DEIA-PX0006



96T



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

For illustrative purposes only. To perform the assay the instructions for use provided with the kit have to be used.

Creative Diagnostics

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PRODUCT INFORMATION

Intended Use

It is applicable to the optimization of purification process of biological products, impurity control of intermediate process and release testing of final products.

Principles of Testing

Inorganic pyrophosphatase (PPase) can catalyze the conversion of one molecule of pyrophosphate into two molecules of phosphate ions. PPase can avoid inhibiting the reaction system due to the accumulation of inorganic pyrophosphate in nucleic acid amplification experiments. In the production of mRNA vaccine products, PPase is added to increase yield. Therefore, detection of PPase residues is required for mRNA vaccine products. This kit uses double-antibody sandwich enzyme-linked immunosorbent assay (ELISA) method. Add PPase standard and test samples to the microtiter plate precoated with anti-PPase antibody, then add diluted biotin-labeled PPase detection antibody, finally add streptavidin-HRP to form the antibody + antigen + antibody-Biotin + SA-HRP complex, wash the plate and add TMB chromogenic solution for color development. TMB is converted from colorless to blue under the catalysis of HRP enzyme and finally to yellow under the action of stop solution. The shade of yellow is positively correlated with the amount of PPase detected in the sample.

Reagents And Materials Provided

1. Standard, lyophilized powder × 2 pieces. Gradient dilution with detection buffer
2. Coated Plate, 8 wells × 12 strips. Ready-to-use
3. Diluent Buffer 1, 45 mL × 1 vial. Ready-to-use
4. Diluent Buffer 2, 30 mL × 1 vial. Ready-to-use
5. Wash Buffer (20×), 50 mL × 1 vial. Make a 20-fold dilution with ultrapure water.
6. Detection Antibody (100×), 120 µL × 1 vial. Make a 100-fold dilution with Diluent Buffer 2.
7. Streptavidin-HRP (500×), 60 µL × 1 vial. Make a 500-fold dilution with Diluent Buffer 2.
8. TMB Substrate, 15 mL × 1 vial. Ready-to-use
9. Stop Solution, 10 mL × 1 vial. Ready-to-use
10. Sealing Film, 5 pieces. Ready-to-use

Materials Required But Not Supplied

1. Plate reader
2. Thermostat plate shaker
3. Micro pipette and tips
4. Deionized water
5. Unused filter paper



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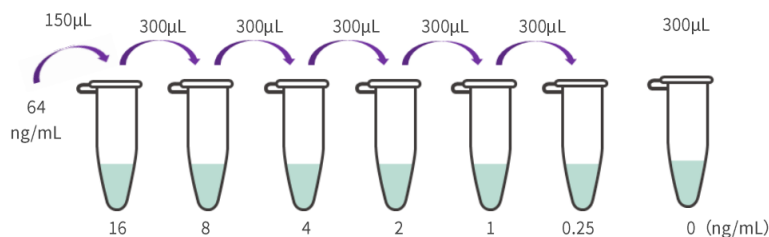
6. Vortex shaker

Storage

Sealed kits are valid for 12 months at 2-8°C.

Reagent Preparation

1. All reagents and samples to be tested should be restored to room temperature. All reagents are newly prepared and ready to use.
2. Preparation of 1× washing solution: Equilibrate the concentrated washing solution to room temperature, without crystallization. After mixing well, according to the usage volume, dilute 10× washing solution by 10 times with an appropriate amount of ultrapure water at the ratio of 1:9, to obtain 1× washing solution.
3. Preparation of 1× detection antibody: After the 100× detection antibody is fully dissolved, centrifuge and dilute the solution with Diluent 2 at the ratio of 1:99.
4. Preparation of 1× enzyme conjugate: After the 500× enzyme conjugate is fully dissolved, centrifuge and dilute the solution with Diluent 2 at a ratio of 1:499.
5. Preparation of standards: Prepare eight 1.5 mL centrifuge tubes and label them in turn according to the concentrations of the standards. Dissolve a vial of lyophilized standard with Diluent 1 according to the labeled amount, thoroughly dissolve and allow to stand for 10 minutes to obtain a solution concentration of 64 ng/mL. Add 450µL Diluent Buffer 1 to the first centrifuge tube, then add 300µL diluent 1 to the other centrifuge tubes, and take 150µL dissolved and mixed 64ng/mL standard product and add it into the first centrifuge tube to fully mix it to 16ng/mL, and then carry out gradient dilution according to the following figure:



Assay Procedure

All reagent components and samples to be tested should be restored to room temperature before use.

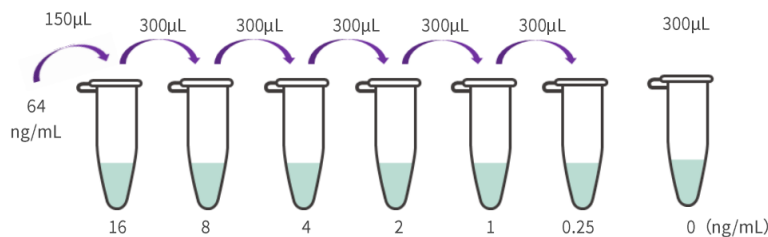
Duplicate well assay is recommended for all standards and samples to be tested.

1. Preparation of reagents: Prepare all reagents to be tested, diluted standards and samples to be tested in advance.
2. Microplate strip determination: Calculate the microtiter strips required for the samples to be tested and standards, remove the microtiter strips from the aluminum foil bag, place the remaining microtiter strips back into the aluminum foil bag and seal the mouth of the bag, and store it at low temperature.
3. Soak the plate: Add 1×Wash Buffer (300µL/well) to soak the enzyme label plate, leave for 30 seconds, discard the liquid in the hole, and pat the plate dry. Washing the plate has an important impact on the test results, ensuring that there is no wash residue from the last clapping.

4. Sample incubation: Add the 100 μ L of standards and the sample to be tested to each well, and ensure that the spot sampling is completed within 15 min, and incubate in a 37°C for 1 hour.
5. Plate washing: Discard the liquid in the wells, add 1 \times washing solution (300 μ L/well) to wash the plate for 5 times, and pat dry the residual liquid in the plate.
6. Detection Antibody incubation : Add the 100 μ L of 1 \times Detection Antibody to be tested to each well, and incubate in a 37°C for 1 hour.
7. Plate washing: Discard the liquid in the wells, add 1 \times washing solution (300 μ L/well) to wash the plate for 5 times, and pat dry the residual liquid in the plate.
8. Enzyme conjugate incubation: Add 1 \times enzyme conjugate into plate with 100 μ L/well, and incubate in a 37°C for 1 hour.
9. Plate washing: Discard the liquid in the wells, add 1 \times washing solution (300 μ L/well) to wash the plate for 5 times, and pat dry the residual liquid in the plate.
10. Color development : the substrate solution was restored to room temperature 10 min before use, and add TMB Substrate into plate with 100 μ L/well, and incubate at 37°C away from light for 15 min.
11. Termination: Add 50 μ L stop solution into each well, and gently shake the plate until the color development is uniform.
12. Readings: Read the absorbance value at 450 nm/630 nm within 20 minutes. Take 450 nm as detection wavelength and 630 nm as reference wavelength.

Calculation

1. OD processing of the standard curve (See the following example, which is only for example purpose. Please refer to the actual measurement for details):



2. The standard curve is obtained by 4-parameter fitting with the theoretical standard concentrations and the corresponding OD values.

Typical Standard Curve

Standard concentration (ng/mL)	OD value (1)	OD value (2)	Mean value
16	2.698	2.612	2.655
8	1.952	1.864	1.908
4	1.202	1.265	1.234
2	0.699	0.729	0.714
1	0.439	0.454	0.447
0.5	0.265	0.281	0.273
0.25	0.192	0.183	0.188
0	0.094	0.091	0.093

Detection Range

0.25 - 16 ng/mL

Sensitivity

0.25 ng/mL

Precautions

1. When the sample is tested for the first time, it is recommended to perform dilution with at least 3 consecutive dilution factors, so as to generate at least one diluted sample within the range of the standard curve.
2. The reagents should be stored as indicated on the label, and should be equilibrated to room temperature before use.
3. Before using the coated microtiter plates, please equilibrate to room temperature and then open the secondary packaging. The strip plates not used in the test should be immediately placed back into the package and sealed properly, and can be stored at 4°C for one month. Other unused reagents should be packaged or covered properly.
4. Please use disposable tips during experimental operation to avoid cross contamination.
5. Please check each individual reagent in the kit fully before use. To obtain accurate assay results, it is of special importance to mix well or shake well the reagents for dilution, loading, and reaction termination.
6. When washing residual Wash Buffer in the reaction wells, pat the plate dry adequately on clean tissue papers until watermark is no longer visible. Do not put the tissue paper into the well for liquid absorption.
7. The TMB Substrate is photosensitive, thus long-time exposure to illumination should be avoided; avoid contact with metal, otherwise, the assay results may be affected.
8. The kit is intended for single use. Please use within the shelf life.