

PD-1: PD-L1 [Biotinylated] Inhibitor Screening ELISA Kit-Pre coated plate

Pack Size: 96 tests

Catalog Number: EP-163

IMPORTANT: Please carefully read this manual before performing your experiment.

For Research Use Only. Not For Use In Diagnostic Or Therapeutic Procedures

INTENDED USE

This kit is designed for screening of inhibitors of human PD-1 binding to human PD-L1.

It is intended for research use only (RUO).

PRINCIPLE OF THE ASSAY

This inhibitor screening ELISA kit is designed to facilitate the identification and characterization of new PD-1 pathway inhibitors. The assay takes advantage of our in house-developed binding of biotinylated human PD-L1 to immobilized human PD-1 in a functional ELISA assay, and employs a simple colorimetric ELISA platform. Briefly, we provide you with a human Biotinylated PD-L1 protein, a Human PD-1 coated Plate, an anti-PD-1 neutralizing antibody (as method verified Std.), and Streptavidin-HRP reagent. Your experiment will include 3 simple steps:

- 1) Add your molecule of interest to the tests.
- 2) Add human PD-L1-Biotin to bind the coated human PD-1.
- 3) Add Streptavidin-HRP followed by TMB or other colorimetric HRP substrate.

Finally, the half maximal inhibitory concentration (IC₅₀) of your compound to PD-1: PD-L1 binding will be determined by comparing OD readings among different experimental groups.

MATERIALS PROVIDED

TABLE 1. MATERIALS PROVIDED (pls modify according to COA)

Catalog	Components	Size (96 tests)	Format	Storage	
EP163-C01	Human PD-1 coated Plate	1 plate	Solid	2-8°C	
EP163-C02	Biotinylated Human PD-L1	10 ug	Powder	2-8°C	
EP163-C03	Anti-PD-1 Neutralizing Antibody	10 ug	Powder	2-8°C	
EP163-C04	Streptavidin-HRP	5 ug	Powder	2-8°C, avoid light	-70°C after reconstitution, avoid freeze-thaw cycles
EP163-C05	20xWashing Buffer	50 mL	Liquid	2-8°C	
EP163-C06	1X Dilution Buffer	50 mL	Liquid	2-8°C	
EP163-C07	Substrate Solution	12 mL	Liquid	2-8°C, avoid light	
EP163-C08	Stop Solution	7 mL	Liquid	2-8°C	

REAGENTS/EQUIPMENT NEEDED BUT NOT SUPPLIED

Single or dual wavelength microplate reader with 450 nm/630nm filter;

Centrifuge;

37 °C Incubator;

Single channel or multichannel pipettes with 10 µL, 200 µL and 1000 µL precision;

10 µL, 200 µL and 1000 µL pipette tips;

Test Tubes;

Graduated cylinder;

Deionized or distilled water for dilution;

STORAGE AND VALIDITY INSTRUCTIONS

Unopened kit should be stored at 2°C -8°C upon receiving. Find the expiration date on the outside packaging and do not use reagents past their expiration date.

The kit should be stored as TABLE 1 after the reconstitution of lyophilized materials. The shelf life is 30 days from the date of opening.

Note:

- a. Do not use reagents past their expiration date.
- b. Find the expiration date on the outside packaging.

REAGENT PREPARATION

1. Restore all reagents and samples to room temperature (20-25°C) before use.
2. Reconstitute the provided lyophilized materials to stock solutions with sterile deionized water as recommended in Tab.2, Solubilize for 15 to 30 minutes at room temperature with occasional gentle mixing. Avoid vigorous shaking or vortex. The reconstituted stock solutions should be stored as recommended in TABLE 1.

Note: Streptavidin-HRP stock solution should be protected from light.

TABLE 2. RECONSTITUTION METHODS FOR 96 TESTS

Catalog	Components	Amount	Stock Solution Con.	Reconstitution Buffer and Vol.
EP163-C02	Biotinylated Human PD-L1	10 µg	20 µg/mL	500 µL, water
EP163-C03	Anti-PD-1 Neutralizing Antibody	10 µg	20 µg/mL	500 µL, water
EP163-C04	Streptavidin-HRP	5 µg	50 µg/mL	100 µL, water

RECOMMENDED PROTOCOL

1. Working solution preparation

1.1 Preparation of 1×Washing Buffer:

Dilute 25 mL 20×Washing Buffer with ultrapure water/deionized water to 500 mL.

2. Add Samples

- 1) Make series dilution of the samples as appropriate.
- 2) If you intend to use the provided Anti-PD-1 Neutralizing Antibody as a reference (Std.), you may dilute the antibody as recommended in Figure 1.
- 3) Add 50 µL of sample solution to each well according to our recommendation (Figure 2) or your own plate setup.

3. Binding

- 1) Dilute Biotinylated Human PD-L1 stock solution (20 µg/mL) to 1.2 µg/mL with Dilution Buffer to make Biotinylated Human PD-L1 working solution.
- 2) For No-binding ctrl. wells, please add 50 µL Dilution Buffer
- 3) For all other wells, please add 50 µL Biotinylated Human PD-L1 working solution to the wells and mix the samples by gently tapping the plate. Seal the plate with microplate sealing film and incubate at 37°C for 1 hour.

Note: The working solution should be prepared immediately before use and should not be stored.

FIG.1 PREPARATION OF 1:1 SERIAL DILUTIONS OF THE Anti-PD-1 Neutralizing Antibody

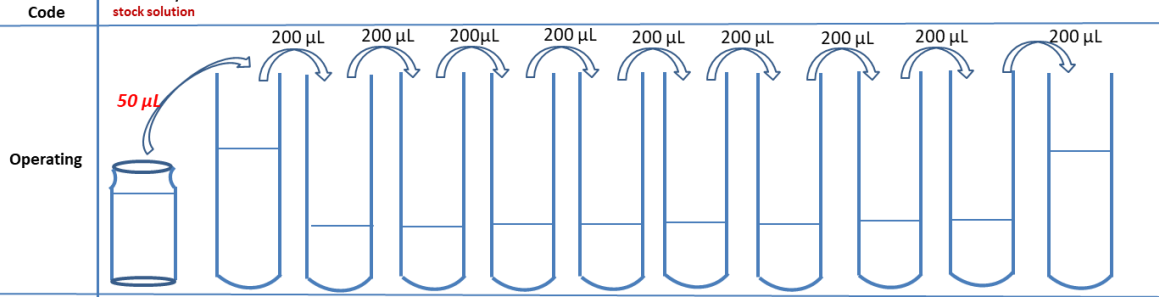
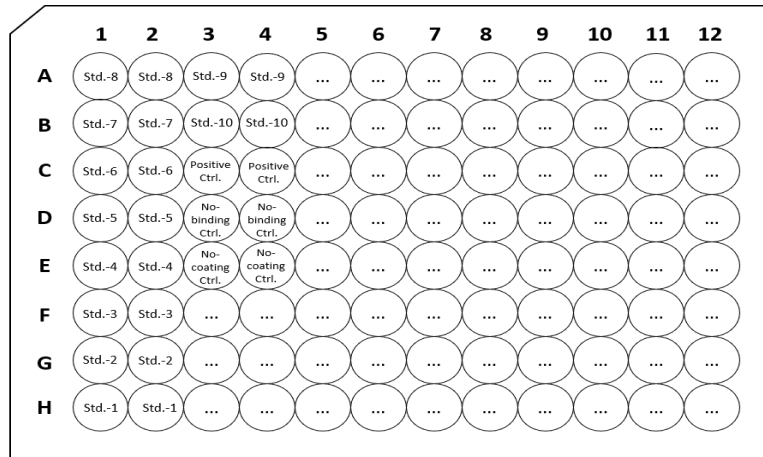
Tubes/ Solution Code	Anti-PD-1 Neutralizing Antibody stock solution	Std.-1	Std.-2	Std.-3	Std.-4	Std.-5	Std.-6	Std.-7	Std.-8	Std.-9	Std.-10
Operating		200 µL	200 µL	200 µL	200 µL	200 µL	200 µL	200 µL	200 µL	200 µL	200 µL
Solution Con.	20 µg/mL	2.5 µg/mL	1.25 µg/mL	0.625 µg/mL	0.312 µg/mL	0.156 µg/mL	0.078 µg/mL	0.039 µg/mL	0.0195 µg/mL	0.0098 µg/mL	0.0049 µg/mL
Dilution Buffer Vol.		350 µL	200 µL	200 µL	200 µL	200 µL	200 µL	200 µL	200 µL	200 µL	200 µL

FIG.2 PLATE LAYOUT



4. Washing

Remove the remaining solution by aspiration, add 300 μ L of 1 \times Washing Buffer to each well, gently tap the plate for 1 minute, remove any remaining 1 \times Washing Buffer by aspirating or decanting, invert the plate and blot it against paper towels. Repeat the washing step above for three times

5. Add Streptavidin-HRP

1) Dilute Streptavidin-HRP stock solution (50 μ g/mL) to 0.1 μ g/mL with Dilution Buffer to make Streptavidin-HRP working solution.

2) For all wells, add 100 μ L Streptavidin-HRP working solution, seal the plate with microplate sealing film and incubate at 37°C for 1 hour, avoid light.

6. Washing

Repeat step 4.

7. Substrate Reaction

Add 100 μ L **Substrate Solution** to each well. Seal the plate with microplate sealing film and incubate at 37°C for 20 minutes. Avoid light.

8. Termination

Add 50 μ L **Stop Solution** to each well, and gently shake the plate to allow thorough mixing.

Note: the color in the wells should change from blue to yellow.

9. Data Recording

Read the absorbance at 450 nm using UV/Vis microplate spectrophotometer.

Note: Subtracting the value read at OD_{450nm} with OD_{630nm} can be used to reduce the background noise.

SIMPLIFIED PROTOCOL

TABLE. 3 ASSAY PROTOCOL

Steps Code	Steps	Reagents & Instruments	Reaction Conditions	Samples	No-binding Ctrl.	No-coating Ctrl.	Positive Ctrl.
1	Add Samples	Samples	—	50 µL	—	—	—
		Dilution Buffer		—	50 µL	50 µL	50 µL
2	Binding	Biotinylated Human PD-L1 Working Solution	Mix by gentle tapping, incubate at 37°C for 1 hours	50 µL	—	50 µL	50 µL
		Dilution Buffer		—	50 µL	—	—
3	Washing	1XWash Buffer	Wash for 3 times	300 µL	300 µL	300 µL	300 µL
4	Streptavidin-HRP	Streptavidin-HRP Working Solution	37°C for 1 hours	100 µL	100 µL	100 µL	100 µL
5	Washing	1XWash Buffer	Wash for 3 times	300 µL	300 µL	300 µL	300 µL
6	Substrate Reaction	Substrate Solution	37°C for 20 minutes	100 µL	100 µL	100 µL	100 µL
7	Termination	Stop Solution	Mix by gentle tapping	50 µL	50 µL	50 µL	50 µL
8	Data Recording	UV/Vis spectrophotometer	Measure absorbance at 450 nm, with the correction wavelength set at 630 nm				

Note for TAB. 3:

- 1) *Samples: Your samples of interest.*
- 2) *No-binding Ctrl.: Reaction without Biotinylated Human PD-L1 added. The absorbance should be around 0.05(< 0.1) at 450 nm.*
- 3) *Positive Ctrl.: Determined the max value in 450nm absorbance, when out of inhibitors.*
- 4) *It is recommended that all samples, controls and standards should be done in duplicates.*

PRECAUTIONS

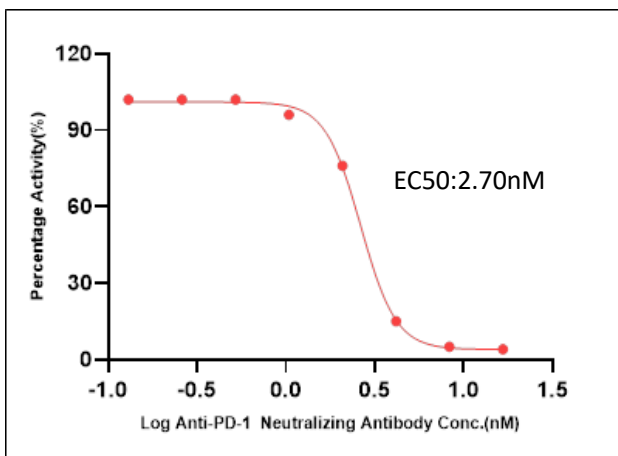
1. This kit is for research use only and is not for use in diagnostic or therapeutic applications.
2. This kit should be used according to the provided instructions.
3. Do not mix reagents from different lots.
4. All reagents should be balanced to room temperature (20°C-25°C) before use.
5. This kit should be stored at 2°C-8°C.

6. Please prepare the working solution of each component according to the needs of the experiment. Except for 1x Washing Buffer, all prepared working solution is for one-time use and cannot be stored.

METHOD VERIFICATION

INHIBITION OF PD-1: PD-L1 [BIOTINYLATED] BINDING BY ANTI-PD-1 NEUTRALIZING ANTIBODY

Serial dilutions of Anti-PD-1 Neutralizing antibody (Catalog # EP163-C03) (1:1 serial dilution, from 2.5µg/mL to 0.01µg/mL) was added into PD-1: Biotinylated PD-L1 binding reactions. The assay was performed according to the protocol described below. Background was subtracted from data points prior to log transformation and curve fitting (QC tested).



Anti-Human PD-1 Neutralizing Antibody conc.(µg/ml)	Anti-Human PD-1 Neutralizing Antibody conc.(nM)	Mean Abs.(OD450)	Percentage Activity(%)
0.000	0.000	2.617	100%
0.005	0.033	2.594	99%
0.010	0.065	2.591	99%
0.020	0.130	2.512	96%
0.039	0.260	2.427	93%
0.078	0.521	2.36	90%
0.156	1.042	2.042	78%
0.313	2.083	1.376	53%
0.625	4.167	0.518	20%
1.250	8.333	0.148	6%
2.500	16.667	0.091	3%
No Coating		0.066	
No Binding		0.068	

For each experiment, a standard curve needs to be set for each micro-plate, and the specific OD value may vary depending on different laboratories, testers, or equipments. The example data is for reference only.