Human GPIHBP1 Autoantibody Assay Kit - IBL

96 Well

Please read carefully this instruction prior you use this assay kit.

INSTRUCTIONS FOR USE

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

KIT COMPONENT

1	**Precoated plate:**(Recombinant Human GPIHBP1)	96Well x 1
2	**Labeled antibody conc.:** (30X) HRP conjugated Anti-Human IgG Goat IgG)	0.4mL x 1
3	**Standard:** (Anti- Human GPIHBP1 Rat IgG hFc Chimera)	0.5mL x 2
4	**EIA buffer**	30mL x 1
5	**Solution for labeled antibody**	12mL x 1
6	**Chromogen:** TMB solution	15mL x 1
7	**Stop solution**	12mL x 1
8	**Wash buffer conc.**	50mL x 1

MEASURING SAMPLES

Human serum, EDTA-plasma, heparin plasma and post-heparin EDTA-plasma.

PRINCIPLE

This kit is an indirect ELISA (Enzyme-linked Immunosorbent Assay). As a primary antigen is coated on a plate, samples and standard are added into the wells for 1st reaction. After the reaction, HRP-conjugated secondary antibody is added into the wells for 2nd reaction. After washing away unbound the secondary antibody, Tetra Methyl Benzidine (TMB) is added to the wells and color develops.

OPERATING PRECATION

1. Test samples should be measured soon after collection. For storage of samples, store them frozen and do not repeat freeze/thaw cycles. Thaw the test samples at a low temperature and mix them completely before measurement.
2. Test samples should be diluted with “4, EIA buffer” contained in this kit.
3. Duplicate measurement of test samples and standards is recommended.
4. Standard curve should run for each assay.
5. Use test samples in neutral pH range. The contaminations of organic solvent may affect the measurement.
6. All reagents should be brought to room temperature (R.T.) and mixed completely and gently before use. After mixing them, make sure of no change in quality of the reagents.
7. Use only “8, Wash buffer conc.” contained in this kit for washing the precoated plate. Insufficient washing may lead to the failure in measurement.
8. Wash the plate immediately after each reaction using by a plate washer with setting wait time zero second. The O.D. value tends to be lower if washing time is getting longer. If you use a multichannel pipette or a washing bottle due to no availability of any plate washer, filling wash buffer in each well and immediately turn the plate upside down and shake it off to completely remove the wash buffer. Repeat the number of times of wash defined in a table for measurement procedure described in section 3. It should be properly washed off as instructed in order to avoid any insufficient wash.
9. Carefully tap the plate against a clean paper towel without contacting with inside of each well to completely remove the washing buffer after repeated the determined number of wash.
10. “6, Chromogen - TMB solution” should be stored in the dark due to its sensitivity against light. It should be also avoided contact with metals. Required quantity should be prepared into a collecting container for each use.
11. After adding TMB solution into the wells, the liquid in the wells gradually changes the color in blue. In this process the plate should be in dark. Remained TMB solution in the collecting container should not be returned into the original bottle of TMB solution to avoid contamination.
12. Measurement of O.D. should be done within 30 minutes after addition of “7, Stop solution”.

OPERATION MANUAL AND DOSAGES

1. Materials needed but not supplied.

Plate reader	Micropipette and tip
Test tubes for dilution	Measuring cylinder and beaker
Deionized water	Plate washer or washing bottle
Paper towel	Collecting container
Incubator(25℃±1℃)	(i.e. clean disposable test tube)

2. Preparation

(1) Preparation of wash buffer
Dilute “8, Wash buffer conc.” 40 fold with deionized water. The diluted one is used for the assay as a wash buffer. Adjust the required quantities if needed.

(2) Preparation of labeled antibody
Dilute “2, Labeled antibody conc.” 30 fold with “5, Solution for labeled antibody” using a prepared collecting container.
Example)
In case you use one strip (8 wells), the required quantity of labeled antibody is 800 µL. (Dilute 30 µL of “2, Labeled antibody Conc.” with 870 µL of “5, Solution for labeled antibody” and mix it. And use 100µL the mixed solution in each well.)
This operation should be done just before applying the labeled antibody.
The remaining “2, Labeled antibody Conc.” should be stored at 4°C in a firmly sealed vial.

(3) Preparation of standard
Add 0.5 mL of “4, EIA buffer” into the vial of “3, Standard” and completely dissolve it. Concentration of the standard is 1 U/mL. However the freeze-thaw shall not be repeated.
Prepare 7 test tubes for dilution of the standard and adding 230 µL of the EIA buffer into each tube.

Put 230 µL of 1 U/mL standard into the tube 0.5 U/mL (Tube-1) and gently mix it. Afterword, put 230 µL of the mixed liquid of tube-1 into the tube 0.25 U/mL (Tube-2) and gently mix it. Dilute two fold standard solution in series to set up 7 points of diluted standard between 0.5 U/mL and 0.008 U/mL.

Tube-1	0.500	U/mL
Tube-2	0.250	U/mL
Tube-3	0.125	U/mL
Tube-4	0.063	U/mL
Tube-5	0.031	U/mL
Tube-6	0.016	U/mL
Tube-7	0.008	U/mL

(4) Preparation of test samples
Dilute test samples with “4, EIA buffer” contained in this kit as follows.
Dilution Ratio: Human serum, EDTA-plasma, heparin plasma, and post-heparin EDTA-plasma: 1,000 fold

3. Measurement Procedure

(1) Add test sample blank
Determine wells for test sample blank. Put 100µL each of “4, EIA buffer” into the wells.

(2) Add prepared test samples and standard
Put 100 µL prepared test samples and 100 µL prepared standard into appropriate wells.

(3) Incubation with plate lid (1st reaction).

(4) Washing (Refer to No. 8 and 9 described in OPERATING PRECATION.)
Wash the plate with the prepared wash buffer and remove all liquid.

(5) Add prepared labeled antibody
Put 100 µL prepared labeled antibody into the wells.

(6) Incubation with plate lid (2nd reaction).

(7) Washing (Refer to No. 8 and 9 described in OPERATING PRECATION.)
Wash the plate with the prepared wash buffer and remove all liquid completely.

(8) Add “6, Chromogen - TMB solution”
Put 100 µL the TMB solution into the wells.

(9) Incubation in dark

(10) Add “7, Stop solution”
Put 100 µL the Stop solution into the wells.

(11) Determination of optical density (O.D.)
Remove any dirt or drop of water on the bottom of the plate and confirm there is no bubble on the surface of the liquid. Then, measure the both O.D. of standard and the test samples against a test sample blank.
Measurement wavelength: 450 nm. In case of 2 wavelengths:
Main wavelength is 450nm. Sub-wavelength is between 600 and 650 nm.

Table for measurement procedure

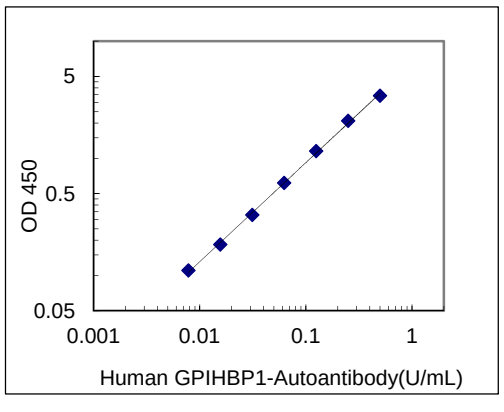
	Test samples	Standard	Test sample blank
Reagents	Test samples 100 µL	Diluted Standard 100 µL	EIA buffer 100 µL
1st reaction	Incubation for 60 minutes at 25℃ with plate lid		
Washing	4 times (wash buffer more than 350 µL) (Refer to No. 8 and 9 described in OPERATING PRECATION.)		
Labeled antibody	100 µL	100 µL	100 µL
2nd reaction	Incubation for 30 minutes at 25°C with plate lid		
Washing	5 times (wash buffer more than 350 µL) (Refer to No. 8 and 9 described in OPERATING PRECATION.)		
TMB solution	100 µL	100 µL	100 µL
Chromogenic reaction	Incubation for 30 minutes at 25℃ (shielded).		
Stop solution	100 µL	100 µL	100 µL
Measuring O.D.	450 nm / 600～650 nm		

CALCULATION OF TEST RESULT

1 Plot the concentration of the standard on the x-axis and its O.D. on the y-axis. Draw a standard curve by applying appropriate regression curve on each plot (i.e. quadratic regression of double logarithm conversion).
2 Read the concentration by applying the absorbance of the test samples on a standard curve.
3 Calculate the concentration of the test samples by multiplying dilution ratio of test samples on the value.

Example of standard curve and measured value

Standard (U/mL)	O.D. (450nm)
0.500	3.421
0.250	2.092
0.125	1.154
0.063	0.618
0.031	0.330
0.016	0.184
0.008	0.111

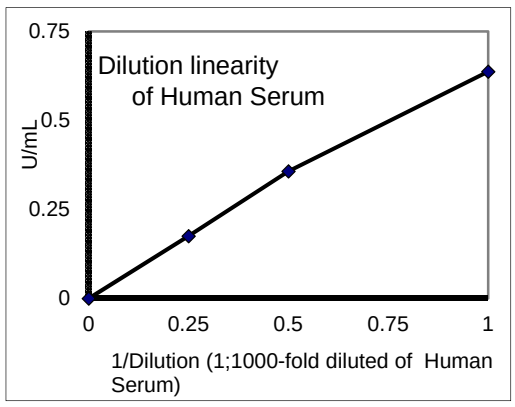


PERFORMANCE AND CHARACTERISTICS

1 Sensitivity
0.001 U/mL (Calculated by NCCLS method using the standard.)

2 Measurement range
0.008 ～ 0.500 U/mL

3 Dilution linearity



4 Dilution test

Specimen	Dilution ratio(U/ml)	Theoretical Value (U/ml)	Measurement Value(U/ml)	%
Human Serum	1000	0.265	0.251	94.7
	2000	0.131	0.123	93.9
	4000	0.065	0.064	98.5
Human EDTA-plasma	1000	0.267	0.246	92.1
	2000	0.132	0.124	93.9
	4000	0.066	0.062	93.9
Human heparin plasma	1000	0.264	0.245	92.8
	2000	0.131	0.120	91.6
	4000	0.066	0.061	92.4
Post- heparin human EDTA Plasma	1000	0.261	0.238	91.2
	2000	0.129	0.120	93.0
	4000	0.064	0.058	90.6

5 Added recovery assay

Specimen	Additive Amount (U/ml)	Theoretical Value (U/ml)	Measurement Value (U/ml)	%
Human Serum (x1000)	0.125	0.142	0.160	112.7
	0.063	0.080	0.084	105.0
	0.031	0.048	0.049	102.1
Human EDTA-plasma (x1000)	0.125	0.138	0.151	109.4
	0.063	0.076	0.081	106.6
	0.031	0.044	0.045	102.3
Human heparin plasma (x1000)	0.125	0.146	0.159	108.9
	0.063	0.084	0.090	107.1
	0.031	0.052	0.053	101.9
Post-heparin human EDTA-plasma(x1000)	0.125	0.138	0.135	97.8
	0.063	0.076	0.071	93.4
	0.031	0.044	0.042	95.5

6 Intra-assay

Measurement value (U/mL)	SD(U/mL)	CV (%)	n
0.221	0.014	6.3	24
0.051	0.003	6.6	24
0.016	0.002	9.6	24

7 Inter-assay

Measurement value (U/mL)	SD (U/mL)	CV (%)	n
0.228	0.011	5.0	8
0.053	0.004	6.6	8
0.017	0.002	10.6	8

8 Reference standard range value
9 ～ 57 U/ml (Refer to the reference 2)

9 Interfering Substances
Hemolyzed hemoglobin does not affect on the value of measurement up to 490 mg/dL.
Free bilirubin does not affect on the value of measurement up to 19.1 mg/dL.
Conjugated bilirubin does not affect on the valueof measurement up to 20.7 mg/dL.
Chyle does not affect on the value of measurement up to 1,650 FTU.

10 Sample processing method, etc.
In dilution process of samples, add samples into EIA buffer immediately after mix the sample well using a mixing equipment (e.g. vortex) as the composition is easily separated in high triglyceride plasma samples.

PRECAUTION FOR INTENDED USE AND/OR HANDLING

1 Precaution for handling (Hazard prevention)
(1) Treat the components carefully and wash hands after handling it.
(2) “7, Stop solution” is a strong acid substance (1N Sulfuric acid). Therefore, it should be careful for the treatment and do not contact your skin and clothes with it. It also needs to pay attention to the disposal of it.

2 Precaution for intended use
(1) “3, Standard” is lyophilized products. It should be careful to open this vial.
(2) All reagents should be stored at 2 - 8°C.
(3) Precipitation can be seen in “4, EIA buffer”, “5, Solution for labeled antibody” and “8, Wash buffer conc.”, however, it does not affect its performance.
(4) Do not mix or replace the reagents with the reagents from a different lot or kit.
(5) Do not use expired reagents.

3 Precaution for disposal
(1) Dispose used materials after rinsing them with large quantity of water.

STORAGE AND THE TERM OF VALIDITY

Storage Condition: 2 - 8°C
The expiry date is specified on the outer box.

PACKAGE UNIT AND PRODUCT NUMBER

Package unit: 96 Well
Product number: 27267

References

1. Beigneux, A. P., Miyashita, K., Ploug, M., Blom, D. J., Ai, M., Linton, M. F., … Young, S. G.Autoantibodies against GPIHBP1 as a Cause of Hypertriglyceridemia. New England Journal of Medicine,2017 Apr 27;376(17):1647-1658.

2. Miyashita, K., Fukamachi, I., Machida, T., Nakajima, K., Young, S. G., Murakami, M., … Nakajima, K. An ELISA for quantifying GPIHBP1 autoantibodies and making a diagnosis of the GPIHBP1 autoantibody syndrome. Clinica Chimica Acta, 2018 Dec;487:174-178.

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