Code No. 27782

soluble (Pro)renin Receptor Assay Kit - IBL

INTRODUCTION

(Pro)renin receptor/(P)RR is a common receptor protein between renin and prorenin. When prorenin binds to (P)RR, it achieves a binding ability to angiotensinogen and gains a catalytic activity for conversion from angiotensinogen to ansiotensin I in comparable level with renin. Additionally, when the (P)RR is stimulated by binding to prorenin, its intracellular signaling progresses.
Through this, (P)RR research is believed to have an important implication in building of new strategy for suppressing of overactivated tissue RAA (Renin-Angiotensin-Aldosterone) system.
(P)RR is a 39 kDa, single transmembrane receptor protein and it is reported that 29 kDa soluble form is generated by cleavage of (P)RR with furin. Thus the quantitative assay of soluble (P)RR in blood or urine samples is expected to provide new knowledges to clarification of disease mechanisms and development of new tools for diseases.
This ELISA kit can measure concentration of soluble (pro)renin receptor in blood or urein samples.
＊This ELISA kit can also measure full-length (P)RR as well. Therefore, in the case of samples like tissue extract or lysate, this ELISA would measure total (P)RR.

PRINCIPLE

This kit is a solid phase sandwich ELISA using 2 kinds of highly specific antibodies. Tetra Methyl Benzidine (TMB) is used as a coloring agent (Chromogen). The strength of coloring is proportional to the quantities of (Pro)renin Receptor.

MEASUREMENT RANGE

125 - 8,000 pg/mL

INTENDED USE

For research use only, not for use in diagnostic procedures.

- This IBL's assay kit is capable for the quantitative determination soluble (Pro)renin receptor in serum, EDTA-plasma, urine of human.
- Urine samples have to be diluted by 10-fold with "4, EIA buffer" soon after collection. For storage, please refer to "SPECIAL ATTENTION" - 1).
- This IBL's assay kit is capable for the quantitative determination soluble (Pro)renin receptor in serum, EDTA-plasma of mouse and rat.
- This IBL's assay kit is capable for the quantitative determination soluble (Pro)renin receptor in cell culture supernatant. ＊As this ELISA cross-reacts with (P)RR in bovine serum, we recommend to set a control sample when you measure culture medium containing FBS.

KIT COMPONENT

1	Precoated plate	: Anti- (Pro)renin receptor Rabbit IgG Affinity Purify	96Well x 1
2	Labeled antibody Conc.	: (30X) HRP conjugated Anti- (P)RR (93A1B) Mouse IgG Fab' Affinity Purify	0.4mL x 1
3	Standard	: Recombinant human soluble (Pro)renin receptor	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

OPERATION MANUAL

1. Materials needed but not supplied

- Plate reader (450nm)
- Micropipette and tip
- Graduated cylinder and beaker
- Deionized water
- Refrigerator (as 4°C)
- Graph paper (log/log)
- Paper towel
- Tube for dilution of Standard
- Washing bottle for precoated plate
- Disposable test tube for "2, Labeled antibody Conc." and "6, Chromogen"

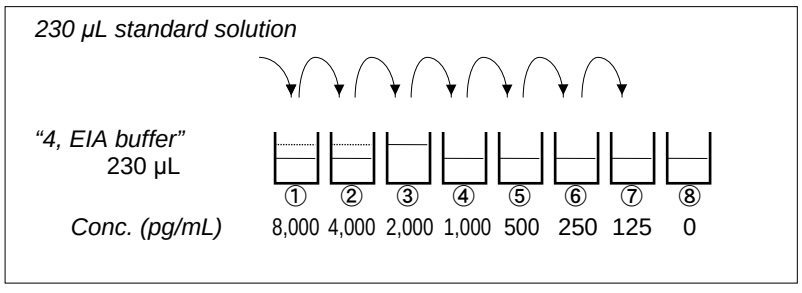
2. Preparation

1) Preparation of wash buffer
"8, Wash buffer Conc." is a concentrated (40X) buffer. Adjust the temperature of "8, Washing buffer Conc." to room temperature and then, mix it gently and completely before use. Dilute 50 mL of "8, Wash buffer Conc." with 1,950 mL of deionized water and mix it. This is the wash buffer for use. This prepared wash buffer shall be stored in refrigerator and used within 2 weeks after dilution.
2) Preparation of Labeled antibody
"2, Labeled antibody Conc." is a concentrated (30X). Dilute "2, Labeled antibody Conc." with "5, Solution for Labeled antibody" in 30 times according to required quantity into a disposable test tube. Use this resulting solution as Labeled antibody.
Example)
In case you use one strip (8 well), 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 the resulting solution by 100 µL in each well.)
This operation should be done just before the applying of Labeled antibody.
The remaining "2, Labeled antibody Conc." should be stored at 4°C in firmly sealed vial.
3) Preparation of Standard
Put just 0.5 mL of deionized water into the vial of "3, Standard" and mix it gently and completely. This solution is 16,000 pg/mL Human (Pro)renin Receptor standard. The standards enclosed in this kit can be frozen and stored after reconstitution. However the freeze-thaw shall not be repeated.
4) Dilution of Standard
Prepare 8 tubes for dilution of "3, Standard". Put 230 µL each of "4, EIA buffer" into the tube.
Specify the following concentration of each tube."

Tube-1	8,000 pg/mL
Tube-2	4,000 pg/mL
Tube-3	2,000 pg/mL
Tube-4	1,000 pg/mL
Tube-5	500 pg/mL
Tube-6	250 pg/mL
Tube-7	125 pg/mL
Tube-8	0 pg/mL (Test Sample Blank)

Put 230 µL of Standard solution into tube-1 and mix it gently. Then, put 230 µL of tube-1 mixture into tube-2. Dilute two times standard solution in series to set up 7 points of diluted standard between 8,000 pg/mL and 125 pg/mL. Tube-8 is the test sample blank as 0 pg/mL.

See following picture.



5) Dilution of test sample
Test samples should be diluted with "4, EIA buffer" suitably.
The pre-assay with several different dilutions will be recommended to determine the proper dilution of samples.
*Urine samples have to be diluted by 10-fold with "4, EIA buffer" soon after collection.

3. Measurement procedure

All reagents shall be brought to room temperature approximately 30 minutes before use. Then mix it gently and completely before use. Make sure of no change in quality of the reagents. Standard curve shall be prepared simultaneously with the measurement of test samples.

Reagents	Test Sample	Standard	Test Sample Blank	Reagent Blank
	Test sample 100 µL	Diluted standard (Tube 1-7) 100 µL	EIA buffer (Tube-8) 100 µL	EIA buffer 100 µL
Incubation overnight at 4°C with plate lid				
4 times (wash buffer more than 350 µL) *				
Labeled Antibody	100 µL	100 µL	100 µL	-
Incubation for 60 minutes at 4°C with plate lid				
5 times (wash buffer more than 350 µL) *				
Chromogen	100 µL	100 µL	100 µL	100 µL
Incubation for 30 minutes at room temperature (shielded)				
Stop solution	100 µL	100 µL	100 µL	100 µL
Read the plate at 450nm against a Reagent Blank within 30 minutes after addition of Stop solution.				

1) Determine wells for reagent blank. Put 100 µL each of "4, EIA buffer" into the wells.
2) Determine wells for test sample blank, test sample and diluted standard. Then, put 100 µL each of test sample blank (tube-8), test sample and dilutions of standard (tube-1-7) into the appropriate wells.
3) Incubate the precoated plate overnight at 4°C after covering it with plate lid.
4) Wash the plate with the prepared wash buffer and remove all liquid. *
5) Pipette 100 µL of labeled antibody solution into the wells of test samples, diluted standard and test sample blank.
6) Incubate the precoated plate for 60 minutes at 4°C after covering it with plate lid.
7) Wash the plate with the prepared wash buffer and remove all liquid. *
8) Take the required quantity of "6, Chromogen" into a disposable test tube. Then, pipette 100 µL from the test tube into every well. Please do not return the rest of used chromogen in the test tube into "6, Chromogen" bottle in order to avoid contamination.
9) Incubate the precoated plate for 30 minutes at room temperature in the dark. The solution of Chromogen will turn blue.
10) Add 100 µL of "7, Stop solution" to all wells. Mix the solution by tapping the side of precoated plate. The solution will turn yellow by addition of "7, Stop solution".
11) Remove any dirt or drop of water on the bottom of the precoated plate and confirm there is no bubble on the surface of the solution. Then, run the plate reader and conduct measurement at 450 nm against a reagent blank.
The measurement shall be done within 30 minutes after addition of "7, Stop solution".

SPECIAL ATTENTION

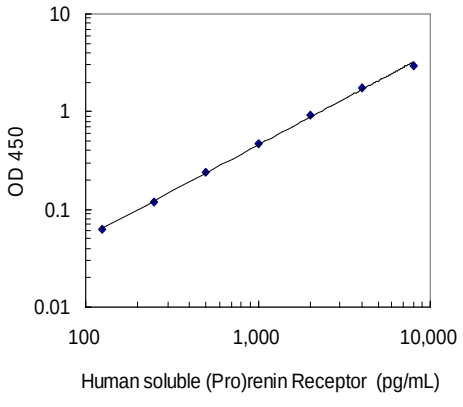
1) Test samples should be measured soon after collection. For the storage of test samples, store them frozen and do not repeat freeze/thaw cycles. Thaw the test samples at a low temperature and mix them completely before measurement.
*In the case of urine samples, dilute them by 10-fold with "4, EIA buffer" soon after collection and store them in frozen condition.
2) Test samples should be diluted with "4, EIA buffer", as the need arises.
3) Duplicate measurement of test samples and standard is recommended.
4) Use test samples in neutral pH range. The contaminations of organic solvent may affect the measurement.
5) Use only wash buffer contained in this kit for washing the precoated plate. Insufficient washing may lead to the failure in measurement.
6) Remove the wash buffer completely by tapping the precoated plate on paper towel. Do not wipe wells with paper towel.
7) "6, Chromogen" should be stored in the dark due to its sensitivity against light. Avoid contact of Chromogen with metals.
8) Measurement should be done within 30 minutes after addition of "7, Stop solution".

CALCULATION OF TEST RESULT

Subtract the absorbance of test sample blank from all data, including standards and unknown samples before plotting. Plot the subtracted absorbance of the standards against the standard concentration on log-log graph paper. Draw the best smooth curve through these points to construct the standard curve. Read the concentration for unknown samples from the standard curve.

Example of standard curve

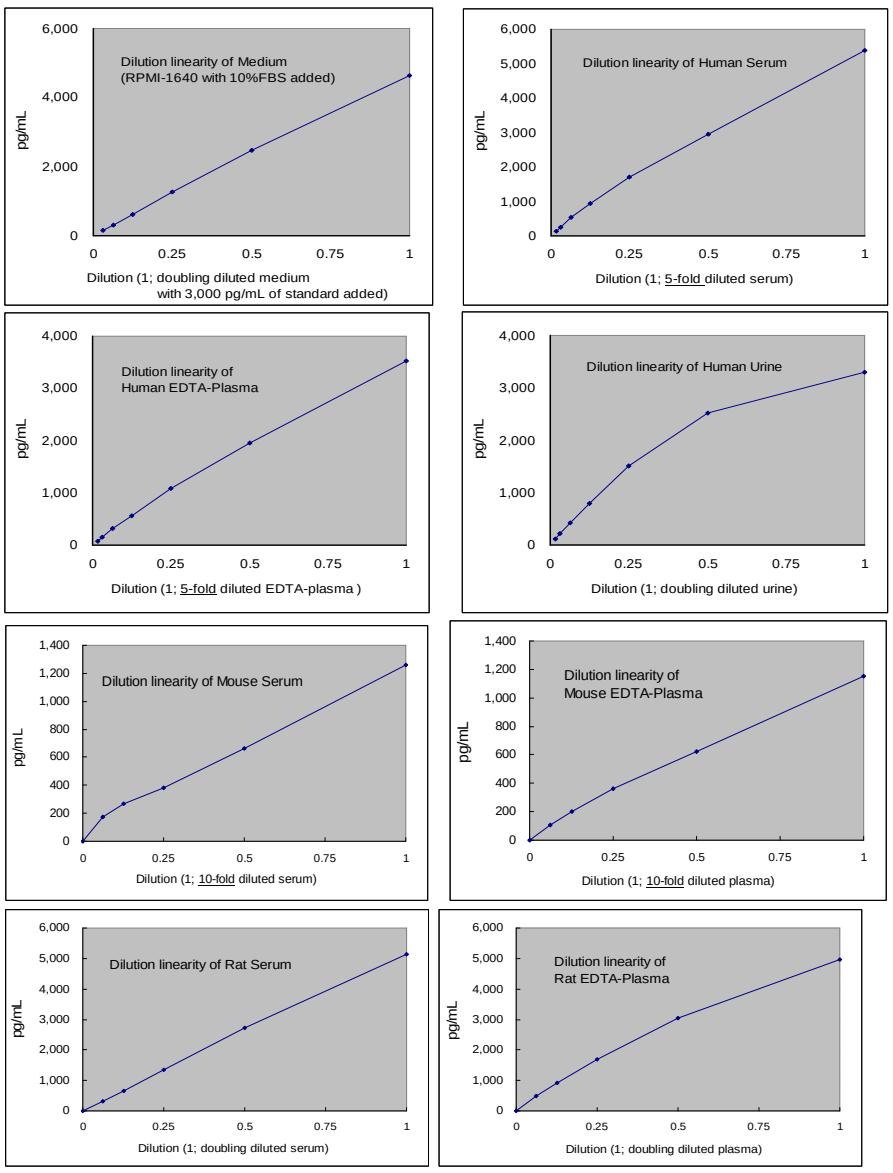
Conc. (pg/mL)	Absorbance (450nm)
8,000	3.004
4,000	1.775
2,000	0.951
1,000	0.501
500	0.267
250	0.146
125	0.091
0 (Test Sample Blank)	0.028



The typical standard curve is shown above. This curve can not be used to derive test results. Please run a standard curve for each assay.

PERFORMANCE CHARACTERISTICS

1. Dilution linearity



2. Added Recovery Assay

Specimen	Additive Amount (pg/mL)	Theoretical Value (pg/mL)	Measured Value (pg/mL)	%
10%FBS added Medium (x4)	1,500	2,489	2,496	100.3
	750	1,739	1,667	95.9
	375	1,364	1,331	97.6
Human Serum (x50)	4,000	4,495	4,143	92.2
	2,000	2,495	2,342	93.9
	1,000	1,495	1,364	91.2
Human Plasma (EDTA) (x50)	4,000	4,462	3,957	88.7
	2,000	2,462	2,136	86.8
	1,000	1,462	1,286	88.0
Human Urine (x10)	1,500	2,576	2,345	91.0
	750	1,826	1,702	93.2
	375	1,451	1,351	93.1
Mouse Serum (BALB/c) (x50)	750	1,107	855	77.2
	188	544	469	86.2
	23	380	379	99.7
Mouse Plasma (BALB/c) (EDTA) (x50)	750	1,107	855	77.2
	188	544	469	86.2
	23	380	379	99.7
Rat Serum (x50)	750	924	780	84.4
	188	362	304	84.0
	23	198	169	85.4
Rat Plasma (EDTA) (x50)	750	924	780	84.4
	188	362	304	84.0
	23	198	169	85.4

3. Intra - Assay

Mean Value (pg/mL)	SD (pg/mL)	CV (%)	n
3,418	106	3.1	21
880	48	5.5	21
253	14	5.5	21

4. Inter - Assay

Mean Value (pg/mL)	SD (pg/mL)	CV (%)	n
3,418	106	3.1	21
880	48	5.5	21
253	14	5.5	21

6. Sensitivity

24 pg/mL
The sensitivity for this kit was determined using the guidelines under the National Committee for Clinical Laboratory Standards (NCCLS) Evaluation Protocols. (National Committee for Clinical Laboratory Standards Evaluation Protocols, SC1, (1989) Villanova, PA: NCCLS.)

PRECAUTION FOR INTENDED USE AND/OR HANDLING

1. All reagents should be stored at 2 - 8°C. All reagents shall be brought to room temperature approximately 30 minutes before use.
2. “3, Standard” is lyophilized products. Be careful to open this vial.
3. “7, Stop solution” is a strong acid substance. Therefore, be careful not to have your skin and clothes contact “7, Stop solution” and pay attention to the disposal of “7, Stop solution”.
4. Dispose used materials after rinsing them with large quantity of water.
5. Precipitation may occur in “2, Labeled antibody Conc.”, “4, EIA buffer” or “8, Wash buffer Conc.”, however, there is no problem in the performance.
6. Wash hands after handling reagents.
7. Do not mix the reagents with the reagents from a different lot or kit.
8. Do not use expired reagents.
9. This kit is for research purpose only. Do not use for clinical diagnosis.

STORAGE AND THE TERM OF VALIDITY

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

REFERENCE

1. Nguyen G, Delarue F, Burcklé C, Bouzhir L, Giller T, Sraer JD. Pivotal role of the renin/prorenin receptor in angiotensin II production and cellular responses to renin. J Clin Invest. 2002 Jun;109(11):1417-27.
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4. Cruciat CM, Ohkawara B, Acebron SP, Karaulanov E, Reinhard C, Ingelfinger D, Boutros M, Niehrs C. Requirement of prorenin receptor and vacuolar H+-ATPase-mediated acidification for Wnt signaling. Science. 2010 Jan 22;327(5964):459-63.
5. Kinouchi K, Ichihara A, Sano M, Sun-Wada GH, Wada Y, Kurauchi-Mito A, Bokuda K, Narita T, Oshima Y, Sakoda M, Tamai Y, Sato H, Fukuda K, Itoh H. The (pro)renin receptor/ATP6AP2 is essential for vacuolar H+-ATPase assembly in murine cardiomyocytes. Circ Res. 2010 Jul 9;107(1):30-4.

Version 3. September 2016*

Made in Japan.

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