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ab216945
Human Agrin SimpleStep ELISA® Kit

For the quantitative measurement of Agrin in human serum, plasma, cerebrospinal fluid, urine, cell culture supernatants, and cell and tissue extracts.

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

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1. Overview

Agrin *in vitro* SimpleStep ELISA® (Enzyme-Linked Immunosorbent Assay) kit is designed for the quantitative measurement of Agrin protein in human serum, plasma, cerebrospinal fluid, urine, cell culture supernatants, and cell and tissue extracts.

The SimpleStep ELISA® employs an affinity tag labeled capture antibody and a reporter conjugated detector antibody which immunocapture the sample analyte in solution. This entire complex (capture antibody/analyte/detector antibody) is in turn immobilized via immunoaffinity of an anti-tag antibody coating the well. To perform the assay, samples or standards are added to the wells, followed by the antibody mix. After incubation, the wells are washed to remove unbound material. TMB Development Solution is added and during incubation is catalyzed by HRP, generating blue coloration. This reaction is then stopped by addition of Stop Solution completing any color change from blue to yellow. Signal is generated proportionally to the amount of bound analyte and the intensity is measured at 450 nm. Optionally, instead of the endpoint reading, development of TMB can be recorded kinetically at 600 nm.

Agrin is a heparan sulfate basal lamina glycoprotein that plays a central role in the formation and the maintenance of the neuromuscular junction (NMJ) and directs key events in postsynaptic differentiation. Agrin is a component of the AGRN-LRP4 receptor complex that induces the phosphorylation and activation of MUSK. The activation of MUSK in myotubes induces the formation of NMJ by regulating different processes including the transcription of specific genes and the clustering of AChR in the postsynaptic membrane. Calcium ions are required for maximal AChR clustering. Agrin function in neurons is highly regulated by alternative splicing, glycan binding and proteolytic processing. Agrin modulates calcium ion homeostasis in neurons, specifically by inducing an increase in cytoplasmic calcium ions. Agrin functions differentially in the central nervous system (CNS) by inhibiting the alpha(3)-subtype of Na+/K+-ATPase and evoking depolarization at CNS synapses.

2. Protocol Summary

Prepare all reagents, samples, and standards as instructed

Add 50 µL standard or sample to appropriate wells

Add 50 µL Antibody Cocktail to all wells

Incubate at room temperature for 1 hour

Aspirate and wash each well three times with 350 µL 1X Wash Buffer PT

Add 100 µL TMB Development Solution to each well and incubate for 8 minutes.

Add 100 µL Stop Solution and read OD at 450 nm

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.
- We understand that, occasionally, experimental protocols might need to be modified to meet unique experimental circumstances. However, we cannot guarantee the performance of the product outside the conditions detailed in this protocol booklet.
- Reagents should be treated as possible mutagens and should be handle with care and disposed of properly. Please review the Safety Datasheet (SDS) provided with the product for information on the specific components.
- Observe good laboratory practices. Gloves, lab coat, and protective eyewear should always be worn. Never pipet by mouth. Do not eat, drink or smoke in the laboratory areas.
- All biological materials should be treated as potentially hazardous and handled as such. They should be disposed of in accordance with established safety procedures.

4. Storage and Stability

Store kit at +4°C 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 Materials Supplied section.

5. Limitations

- Assay kit intended for research use only. Not for use in diagnostic procedures.
- Do not mix or substitute reagents or materials from other kit lots or vendors. Kits are QC tested as a set of components and performance cannot be guaranteed if utilized separately or substituted.

6. Materials Supplied

Item	Quantity	Storage Condition
Human Agrin Capture Antibody 10X	600 µL	+4°C
Human Agrin Detector Antibody 10X	600 µL	+4°C
Human Agrin Lyophilized Recombinant Protein	2 Vials	+4°C
Antibody Diluent 4BI	6 mL	+4°C
Wash Buffer PT 10X	20 mL	+4°C
Cell Extraction Buffer PTR 5X	10 mL	+4°C
Cell Extraction Enhancer Solution 50X	1 mL	+4°C
TMB Development Solution	12 mL	+4°C
Stop Solution	12 mL	+4°C
Sample Diluent NS	50 mL	+4°C
Anti-tag coated microplate (12 x 8 well strips)	96 Wells	+4°C
Plate Seal	1	+4°C

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 or 600 nm.
- Method for determining protein concentration (BCA assay recommended).
- Deionized water.
- Multi- and single-channel pipettes.
- Tubes for standard dilution.
- Plate shaker for all incubation steps.
- Optional: Phenylmethylsulfonyl Fluoride (PMSF) (or other protease inhibitors).

8. Technical Hints

- Samples generating values higher than the highest standard should be further diluted in the appropriate sample dilution buffers.
- 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.
- Complete removal of all solutions and buffers during wash steps is necessary to minimize background.
- As a guide, typical ranges of sample concentration for commonly used sample types are shown below in Sample Preparation (section 11).
- All samples should be mixed thoroughly and gently.
- Avoid multiple freeze/thaw of samples.
- Incubate ELISA plates on a plate shaker during all incubation steps.
- When generating positive control samples, it is advisable to change pipette tips after each step.

- The provided Cell Extraction Enhancer Solution 50X may precipitate when stored at + 4°C. To dissolve, warm briefly at + 37°C and mix gently. The Cell Extraction Enhancer Solution 50X can be stored at room temperature to avoid precipitation.
- To avoid high background always add samples or standards to the well before the addition of the antibody cocktail.
- 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 Technical 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. The sample volumes below are sufficient for 48 wells (6 x 8-well strips); adjust volumes as needed for the number of strips in your experiment.
- Prepare only as much reagent as is needed on the day of the experiment. Capture and Detector Antibodies have only been tested for stability in the provided 10X formulations.

9.1 1X Cell Extraction Buffer PTR (For cell and tissue extracts only):

Prepare 1X Cell Extraction Buffer PTR by diluting Cell Extraction Buffer PTR 5X and 50X Cell Extraction Enhancer Solution to 1X with deionized water. To make 10 mL 1X Cell Extraction Buffer PTR combine 7.8 mL deionized water, 2 mL Cell Extraction Buffer PTR 5X and 200 µL Cell Extraction Enhancer Solution 50X. Mix thoroughly and gently. If required protease inhibitors can be added.

Alternative – Enhancer may be added to 1X Cell Extraction Buffer PTR after extraction of cells or tissue. Refer to note in the Troubleshooting section.

9.2 1X Wash Buffer PT:

Prepare 1X Wash Buffer PT by diluting Wash Buffer PT 10X with deionized water. To make 50 mL 1X Wash Buffer PT combine 5 mL Wash Buffer PT 10X with 45 mL deionized water. Mix thoroughly and gently.

9.3 Antibody Cocktail:

Prepare Antibody Cocktail by diluting the capture and detector antibodies in Antibody Diluent 4BI. To make 3 mL of the Antibody Cocktail combine 300 µL 10X Capture Antibody and 300 µL 10X Detector Antibody with 2.4 mL Antibody Diluent 4BI. Mix thoroughly and gently.

10. Standard Preparation

- Always prepare a fresh set of standards for every use.
- Discard working standard dilutions after use as they do not store well.
- The following section describes the preparation of a standard curve for duplicate measurements (recommended).
- The standard of this kit corresponds in amino acids sequence to the C-terminal 22 kDa fragment of Agrin Isoform 3.

10.1 **IMPORTANT**: If the protein standard vial has a volume identified on the label, reconstitute the Agrin lyophilized protein standard by adding that volume of Diluent indicated on the label. Alternatively, if the vial has a mass identified, reconstitute the Agrin lyophilized protein standard by adding 500 µL Diluent.

For **serum, plasma, urine, and cerebrospinal fluid samples measurements**, reconstitute the Agrin lyophilized protein standard by adding Sample Diluent NS.

For **cell and tissue extract samples measurements**, reconstitute the Agrin lyophilized protein standard by adding 1X Cell Extraction Buffer PTR.

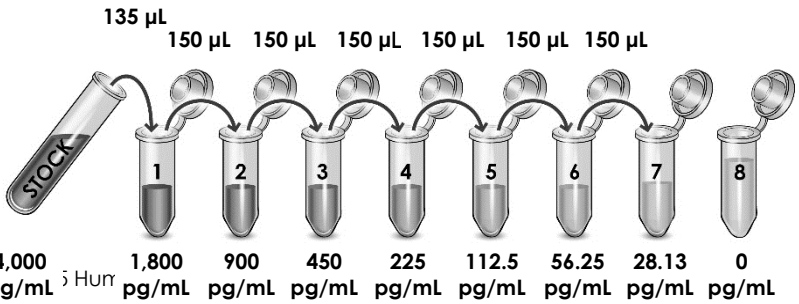
For **cell culture supernatant samples measurements**, reconstitute the Agrin lyophilized protein standard by the appropriate cell culture media.

Hold at room temperature for 10 minutes and mix thoroughly and gently. This is the 4,000 pg/mL **Stock Standard** Solution.

10.2 Label eight tubes, Standards 1– 8.

10.3 Add 165 µL of appropriate diluent (see step 10.1) into tube number 1 and 150 µL of appropriate diluent into numbers 2-8.

10.4 Use the Stock Standard to prepare the following dilution series. Standard #8 contains no protein and is the Blank control:



11. Sample Preparation

Typical Sample Dynamic Range	
Sample Type	**Range**
Human Serum	1.56 – 25%
Human Plasma - Heparin	1.56 – 25%
Human Plasma - EDTA	1.56 – 25%
Human Plasma - Citrate	1.56 – 25%
Human Cerebrospinal Fluid	1:256 – 1:16
Human Urine	1:256 – 1:8
Brain Tissue Extract	9.38 – 300 µg/mL
Liver Tissue Extract	62.5 – 1,000 µg/mL
SH-SY5Y Cell Extract	15.63 – 500 µg/mL
HepG2 Cell Extract	1.56 – 100 µg/mL
HepG2 Cell Culture Supernatant	1.56 – 100%
HeLa Cell Culture Supernatant	6.25 – 100%
MCF-7 Cell Culture Supernatant	1.56 – 100%
A-431 Cell Culture Supernatant	3.13 – 50%

11.1 Plasma:

Collect plasma using citrate, EDTA or heparin. Centrifuge samples at 2,000 x g for 10 minutes. Dilute samples into Sample Diluent NS at least 4-fold and assay. Store un-diluted plasma samples at -20°C or below for up to 3 months. Avoid repeated freeze-thaw cycles.

11.2 Serum:

Samples should be collected into a serum separator tube. After clot formation, centrifuge samples at 2,000 x g for 10 minutes and collect serum. Dilute samples into Sample Diluent NS at least 4-fold and assay. Store un-diluted serum at -20°C or below. Avoid repeated freeze-thaw cycles.

11.3 Cell Culture Supernatants:

Centrifuge cell culture media at 2,000 x g for 10 minutes to remove debris. Collect supernatants and assay. Or dilute samples into appropriate cell culture media containing 10% bovine serum and assay. Store un-diluted samples at -20°C or below. Avoid repeated freeze-thaw cycles.

11.4 Urine:

Centrifuge urine at 2,000 x g for 10 minutes to remove debris. Collect supernatants, dilute in Sample Diluent NS at least 8-fold and assay. Store un-diluted samples at -20°C or below. Avoid repeated freeze-thaw cycles.

11.5 Cerebrospinal Fluid:

Dilute cerebrospinal fluid in Sample Diluent NS at least 16-fold and assay. Store un-diluted samples at -20°C or below. Avoid repeated freeze-thaw cycles.

11.6 Preparation of extracts from cell pellets:

11.6.1 Collect non-adherent cells by centrifugation or scrape to collect adherent cells from the culture flask. Typical centrifugation conditions for cells are 500 x g for 5 minutes at 4°C.

11.6.2 Rinse cells twice with PBS.

11.6.3 Solubilize pellet at $2x10^7$ cell/mL in chilled 1X Cell Extraction Buffer PTR.

11.6.4 Incubate on ice for 20 minutes.

11.6.5 Centrifuge at 18,000 x g for 20 minutes at 4°C.

11.6.6 Transfer the supernatants into clean tubes and discard the pellets.

11.6.7 Assay samples immediately or aliquot and store at -80°C. The sample protein concentration in the extract may be quantified using a protein assay.

11.6.8 Dilute samples to desired concentration in 1X Cell Extraction Buffer PTR.

11.7 Preparation of extracts from adherent cells by direct lysis (alternative protocol):

11.7.1 Remove growth media and rinse adherent cells 2 times in PBS.

11.7.2 Solubilize the cells by addition of chilled 1X Cell Extraction Buffer PTR directly to the plate (use 750 µL - 1.5 mL 1X Cell Extraction Buffer PTR per confluent 15 cm diameter plate).

11.7.3 Scrape the cells into a microfuge tube and incubate the lysate on ice for 15 minutes.

11.7.4 Centrifuge at 18,000 x g for 20 minutes at 4°C.

11.7.5 Transfer the supernatants into clean tubes and discard the pellets.

11.7.6 Assay samples immediately or aliquot and store at -80°C. The sample protein concentration in the extract may be quantified using a protein assay.

11.7.7 Dilute samples to desired concentration in 1X Cell Extraction Buffer PTR.

11.8 Preparation of extracts from tissue homogenates:

11.8.1 Tissue lysates are typically prepared by homogenization of tissue that is first minced and thoroughly rinsed in PBS to remove blood (dounce homogenizer recommended).

11.8.2 Homogenize 100 to 200 mg of wet tissue in 500 µL – 1 mL of chilled 1X Cell Extraction Buffer PTR. For lower amounts of tissue adjust volumes accordingly.

11.8.3 Incubate on ice for 20 minutes.

11.8.4 Centrifuge at 18,000 x g for 20 minutes at 4°C.

11.8.5 Transfer the supernatants into clean tubes and discard the pellets.

11.8.6 Assay samples immediately or aliquot and store at -80°C. The sample protein concentration in the extract may be quantified using a protein assay.

11.8.7 Dilute samples to desired concentration in 1X Cell Extraction Buffer PTR.

12. Plate Preparation

- The 96 well plate strips included with this kit are supplied ready to use. It is not necessary to rinse the plate prior to adding reagents.
- Unused plate strips should be immediately returned to the foil pouch containing the desiccant pack, resealed and stored at 4°C.
- For each assay performed, a minimum of two wells must be used as the zero control.
- For statistical reasons, we recommend each sample should be assayed with a minimum of two replicates (duplicates).
- Differences in well absorbance or "edge effects" have not been observed with this assay.

13. Assay Procedure

- Equilibrate all materials and prepared reagents to room temperature prior to use.
- We recommend that you assay all standards, controls and samples in duplicate.

13.1 Prepare all reagents, working standards, and samples as directed in the previous sections.

13.2 Remove excess microplate strips from the plate frame, return them to the foil pouch containing the desiccant pack, reseal and return to 4°C storage.

13.3 Add 50 µL of all sample or standard to appropriate wells.

13.4 Add 50 µL of the Antibody Cocktail to each well.

13.5 Seal the plate and incubate for 1 hour at room temperature on a plate shaker set to 400 rpm.

13.6 Wash each well with 3 x 350 µL 1X Wash Buffer PT. Wash by aspirating or decanting from wells then dispensing 350 µL 1X Wash Buffer PT into each well. Wash Buffer PT should remain in wells for at least 10 seconds. Complete removal of liquid at each step is essential for good performance. After the last wash invert the plate and tap gently against clean paper towels to remove excess liquid.

13.7 Add 100 µL of TMB Development Solution to each well and incubate for 8 minutes in the dark on a plate shaker set to 400 rpm.
Given variability in laboratory environmental conditions, optimal incubation time may vary between 5 and 20 minutes.
Note: The addition of Stop Solution will change the color from blue to yellow and enhance the signal intensity about 3X. To avoid signal saturation, proceed to the next step before the high concentration of the standard reaches a blue color of O.D.600 equal to 1.0.

13.8 Add 100 µL of Stop Solution to each well. Shake plate on a plate shaker for 1 minute to mix. Record the OD at 450 nm. This is an endpoint reading.

13.9 Alternative to 13.7 – 13.8: Instead of the endpoint reading at 450 nm, record the development of TMB Substrate kinetically. Immediately after addition of TMB Development Solution begin recording the blue color development with elapsed

time in the microplate reader prepared with the following settings:

Mode	Kinetic
Wavelength:	600 nm
Time:	up to 20 min
Interval:	20 sec - 1 min
Shaking:	Shake between readings

Δ **Note**: that an endpoint reading can also be recorded at the completion of the kinetic read by adding 100 µL Stop Solution to each well and recording the OD at 450 nm.

13.10 Analyze the data as described below.

14. Calculations

14.1 Calculate the average absorbance value for the blank control (zero) standards. Subtract the average blank control standard absorbance value from all other absorbance values.

14.2 **Create a standard curve** by plotting the average blank control subtracted absorbance value for each standard concentration (y-axis) against the target protein concentration (x-axis) of the standard. Use graphing software to draw the best smooth curve through these points to construct the standard curve.

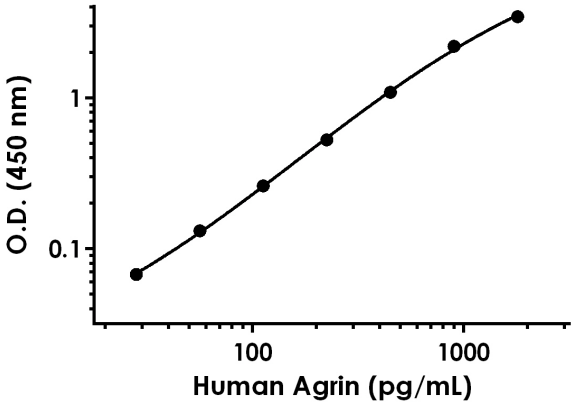
Δ **Note:** Most microplate reader software or graphing software will plot these values and fit a curve to the data. A four parameter curve fit (4PL) is often the best choice; however, other algorithms (e.g. linear, semi-log, log/log, 4 parameter logistic) can also be tested to determine if it provides a better curve fit to the standard values.

14.3 Determine the concentration of the target protein in the sample by interpolating the blank control subtracted **absorbance values against the standard curve**. Multiply the resulting value by the appropriate sample dilution factor, if used, to obtain the concentration of target protein in the sample.

14.4 Samples generating absorbance values greater than that of the highest standard should be further diluted and reanalyzed. Similarly, samples which measure at an absorbance values less than that of the lowest standard should be retested in a less dilute form.

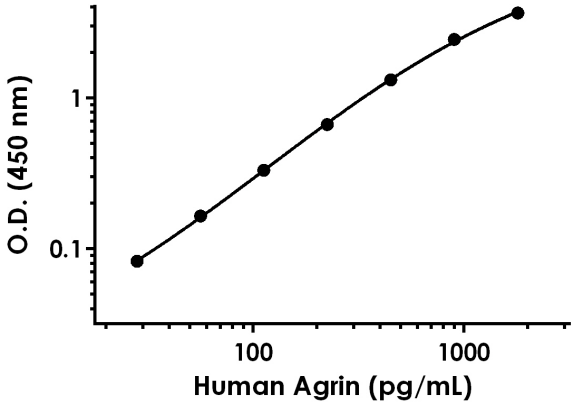
15. Typical Data

Typical standard curve – data provided **for demonstration purposes only**. A new standard curve must be generated for each assay performed.



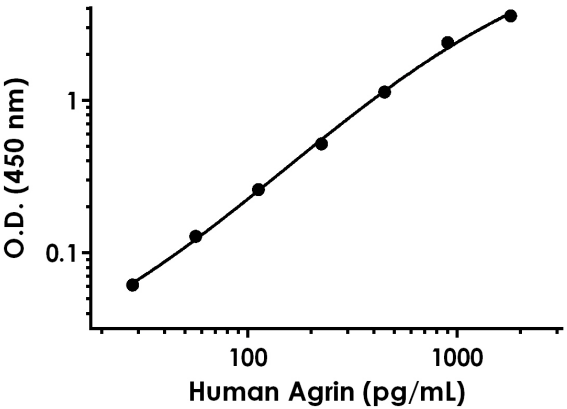
Standard Curve Measurements			
Concentration (pg/mL)	O.D 450 nm		Mean O.D
	1	2	
0	0.078	0.078	0.079
28.13	0.147	0.145	0.146
56.25	0.211	0.209	0.210
112.5	0.344	0.335	0.339
225	0.616	0.596	0.606
450	1.180	1.156	1.168
900	2.293	2.272	2.282
1,800	3.550	3.525	3.538

Figure 1. Example of human Agrin standard curve in Sample Diluent NS. The Agrin standard curve was prepared as described in Section 10. Raw data values are shown in the table. Background-subtracted data values (mean +/- SD) are graphed.



Standard Curve Measurements			
Concentration (pg/mL)	O.D 450 nm		Mean O.D
	1	2	
0	0.085	0.082	0.084
28.13	0.166	0.167	0.167
56.25	0.249	0.248	0.249
112.5	0.415	0.415	0.415
225	0.754	0.745	0.750
450	1.401	1.399	1.400
900	2.506	2.557	2.532
1,800	3.727	3.754	3.741

Figure 2. Example of human Agrin standard curve in 1X Cell Extraction Buffer PTR. The Agrin standard curve was prepared as described in Section 10. Raw data values are shown in the table. Background-subtracted data values (mean +/- SD) are graphed.



Standard Curve Measurements			
Concentration (pg/mL)	O.D 450 nm		Mean O.D
	1	2	
0	0.081	0.084	0.083
28.13	0.146	0.142	0.144
56.25	0.209	0.216	0.212
112.5	0.343	0.342	0.342
225	0.610	0.593	0.601
450	1.247	1.196	1.222
900	2.511	2.444	2.478
1,800	3.670	3.687	3.679

Figure 3. Example of human Agrin standard curve in HGDMEM + 10% FBS cell culture media. The Agrin standard curve was prepared as described in Section 10. Raw data values are shown in the table. Background-subtracted data values (mean +/- SD) are graphed.

16. Typical Sample Values

SENSITIVITY –

The MDD was determined by calculating the mean of zero standard replicates and adding 2 standard deviations then extrapolating the corresponding concentration.

Sample Diluent Buffer	n=	Minimal Detectable Dose
1X Cell Extraction Buffer PTR	8	4.6 pg/mL
Sample Diluent NS	25	4.6 pg/mL
Cell Culture Media	10	4.6 pg/mL

RECOVERY –

Three concentrations of recombinant human Agrin protein were spiked in duplicate to the indicated biological matrix to evaluate signal recovery in the working range of the assay.

Sample Type	Average % Recovery	Range (%)
10% Human Serum	97	87 - 113
10% Human Plasma Citrate	113	97 - 121
10% Human Plasma Heparin	108	101 - 112
10% Human Plasma EDTA	106	104 - 109
5% Human Urine	106	101 - 114
2% Cerebrospinal Fluid	106	86 - 126
25% HepG2 Cell Culture Supernatant	119	116 - 121
50% HeLa Cell Culture Supernatant	91	78 - 102
150 µg/ml Brain Tissue Extract	118	115 - 122
300 µg/ml Liver Tissue Extract	111	104 - 118
500 µg/ml SH-SY5Y Cell Extract	98	90 - 103
25 µg/ml HepG2 Cell Extract	93	84 - 100

Linearity of Dilution

Linearity of dilution is determined based on interpolated values from the standard curve. Linearity of dilution defines a sample concentration interval in which interpolated target concentrations are directly proportional to sample dilution.

Native Agrin was measured in the following biological samples in a 2-fold dilution series. Sample dilutions are made in Sample Diluent NS.

Dilution Factor	Interpolated value	25% Human Serum	25% Human Plasma (Citrate)	25% Human Plasma (EDTA)	25% Human Plasma (Heparin)
Undiluted	pg/mL	933.8	889.8	901.7	829.2
	% Expected value	100	100	100	100
2	pg/mL	459.1	453.7	425.1	422.9
	% Expected value	98	102	94	102
4	pg/mL	231.4	225.7	229.1	223.6
	% Expected value	99	101	102	108
8	pg/mL	114.2	108.1	109.1	109.6
	% Expected value	98	97	97	106
16	pg/mL	59.84	55.46	54.15	53.76
	% Expected value	103	100	96	104

Native Agrin was measured in the following biological samples in a 2-fold dilution series. Cerebrospinal fluid (CSF) and urine sample dilutions are made in Sample Diluent NS. Cell culture supernatant sample dilutions are made in HGDMEM + 10% FBS.

Dilution Factor	Interpolated value	6.25% Human CSF	12.5% Human Urine	100% HeLa SN	100% HepG2 SN
Undiluted	pg/mL	1,140	1,160	756.6	1377
	% Expected value	100	100	100	100
2	pg/mL	540.1	560.6	346.6	680.4
	% Expected value	95	97	92	99
4	pg/mL	267.6	277.9	173.2	339.0
	% Expected value	94	96	92	98
8	pg/mL	143.0	150.3	90.66	172.8
	% Expected value	100	104	96	100
16	pg/mL	85.53	69.90	43.16	84.39
	% Expected value	120	96	91	98

Native Agrin was measured in the following biological samples in a 2-fold dilution series. Sample dilutions are made in 1X Cell Extraction Buffer PTR.

Dilution Factor	Interpolated value	300 µg/mL Brain Tissue Extract	1000 µg/mL Liver Tissue Extract	500 µg/mL SH-SY5y Cell Extract	100 µg/mL HepG2 Cell Extract
Undiluted	pg/mL	555.2	855.6	230.9	741.9
	% Expected value	100	100	100	100
2	pg/mL	289.4	365.2	122.6	361.9
	% Expected value	104	85	106	98
4	pg/mL	132.4	177.5	62.46	195.7
	% Expected value	95	83	108	105
8	pg/mL	68.86	88.11	33.37	109.9
	% Expected value	99	82	116	118
16	pg/mL	30.35	43.65	16.70	53.27
	% Expected value	87	82	116	115

PRECISION –

Mean coefficient of variations of interpolated values from three concentrations of human serum within the working range of the assay.

	Intra-Assay	Inter-Assay
n =	3	5
CV(%)	4.2	5.7

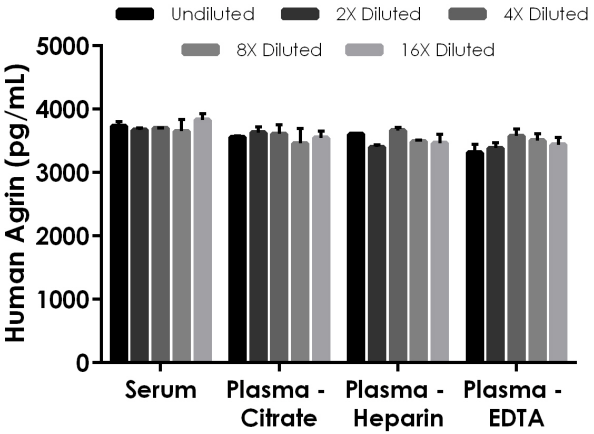


Figure 4. Interpolated concentrations of native Agrin in human serum and plasma samples. The concentrations of Agrin were measured in duplicates, interpolated from the Agrin standard curves and corrected for sample dilution. Undiluted samples are as follows: serum 25%, plasma (citrate) 25%, plasma (heparin) 25% and plasma (EDTA) 25%. The interpolated dilution factor corrected values are plotted (mean +/- SD, n=2). The mean Agrin concentration was determined to be 3,719 pg/mL in neat serum, 3,562 pg/mL in neat plasma (citrate), 3,526 pg/mL in neat plasma (heparin), and 3,445 pg/mL in neat plasma (EDTA).

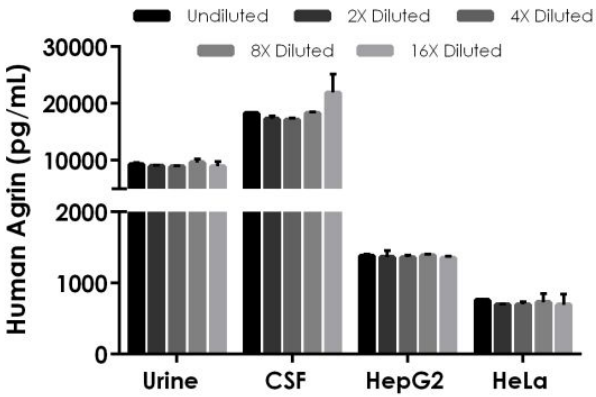


Figure 5. Interpolated concentrations of native Agrin in human urine, cerebrospinal fluid, and cell culture supernatant samples. The concentrations of Agrin were measured in duplicates, interpolated from the Agrin standard curves and corrected for sample dilution. Undiluted samples are as follows: Urine 12.5%, cerebrospinal fluid 6.25%, HepG2 cell culture supernatant 100% and HeLa cell culture supernatant 100%. The interpolated dilution factor corrected values are plotted (mean +/- SD, n=2). The mean Agrin concentration was determined to be 9,142 pg/mL in neat urine, 18,572 pg/mL in neat cerebrospinal fluid, 1,365 pg/mL in HepG2 cell culture supernatant, and 711.7 pg/mL in HeLa cell culture supernatant.

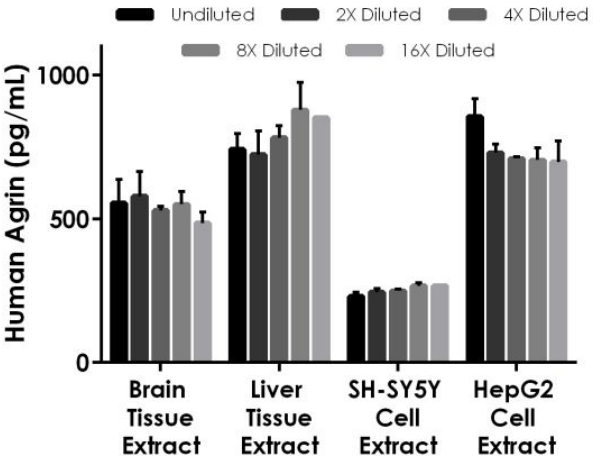


Figure 6. Interpolated concentrations of native Agrin in human brain tissue extract based on a 300 µg/mL extract load, human liver tissue extract based on a 1000 µg/mL extract load, SH-SY5Y cell extract based on a 500 µg/mL extract load, and HepG2 cell extract based on a 100 µg/mL extract load. The concentrations of Agrin were measured in duplicate and interpolated from the Agrin standard curve and corrected for sample dilution. The interpolated dilution factor corrected values are plotted (mean +/- SD, n=2). The mean Agrin concentration was determined to be 540 pg/mL in brain tissue extract, 740 pg/mL in liver tissue extract, 252 pg/mL in SH-SY5Y cell extract, and 796 pg/mL in HepG2 cell extract.

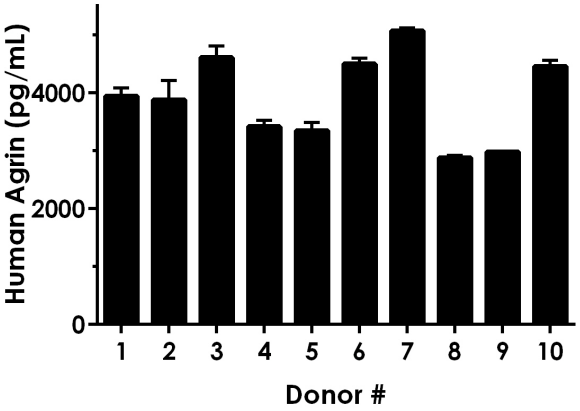


Figure 7. Serum from ten individual healthy human male donors was measured in duplicate. Interpolated dilution factor corrected values are plotted (mean +/- SD, n=2). The mean Agrin concentration in neat samples was determined to be 3909 pg/mL with a range of 2879 – 5073 pg/mL.

17. Assay Specificity

This kit recognizes both native and recombinant human Agrin protein in serum, plasma, urine, cerebrospinal fluid, cell culture supernatant, cell and tissue extract samples only.

Milk and saliva samples have not been tested with this kit.

This kit recognizes a fragment (amino acid 1260 – 2045) of human Agrin Isoform 1 and a fragment (amino acid 1868-2049) of human Agrin Isoform 3.

INTERFERENCE

Recombinant human alpha synuclein was prepared at 1.8 ng/mL and tested for interference. No interference with was observed.

18. Species Reactivity

This kit recognizes human Agrin protein.

Other species reactivity was determined by measuring neat serum samples of various species, interpolating the protein concentrations from the human standard curve, and expressing the interpolated concentrations as a percentage of the protein concentration in human serum assayed at 25% and correct for dilution.

Reactivity < 3% was determined for the following species:

- Mouse
- Rat
- Cow

Please contact our Technical Support team for more information.

19. Troubleshooting

Problem	Reason	Solution
Difficulty pipetting lysate; viscous lysate.	Genomic DNA solubilized	Prepare 1X Cell Extraction Buffer PTR (without enhancer). Add enhancer to lysate after extraction.
Poor standard curve	Inaccurate Pipetting	Check pipettes
	Improper standard dilution	Prior to opening, briefly spin the stock standard tube and dissolve the powder thoroughly by gentle mixing
Low Signal	Incubation times too brief	Ensure sufficient incubation times; increase to 2 or 3 hour standard/sample incubation
	Inadequate reagent volumes or improper dilution	Check pipettes and ensure correct preparation
	Incubation times with TMB too brief	Ensure sufficient incubation time until blue color develops prior addition of Stop solution
Large CV	Plate is insufficiently washed	Review manual for proper wash technique. If using a plate washer, check all ports for obstructions.
	Contaminated wash buffer	Prepare fresh wash buffer
Low sensitivity	Improper storage of the ELISA kit	Store your reconstituted standards at -80°C, all other assay components 4°C. Keep TMB Development Solution solution protected from light.
Precipitate in Diluent	Precipitation and/or coagulation of components within the Diluent.	Precipitate can be removed by gently warming the Diluent to 37°C.

20. 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)