

ab284616 – Human PDGF AA SimpleStep ELISA® Kit

For the quantitative measurement of PDGF AA in human serum, plasma (EDTA), plasma (citrate), cell culture supernatant.

For research use only - not intended for diagnostic use.

For overview, typical data and additional information please visit: www.abcam.com/ab284616

Storage and Stability: Store kit at 2-8°C immediately upon receipt. Refer to list of materials supplied for storage conditions of individual components. Observe the storage conditions for individual prepared components in the Standard Preparation and Reagent preparation sections.

Materials Supplied

| Item | Quantity | Storage Condition |
|---|----------|-------------------|
| Human PDGF AA Capture Antibody 10X | 600 µL | +4°C |
| Human PDGF AA Detector Antibody 10X | 600 µL | +4°C |
| Human PDGF AA Lyophilized Recombinant Protein | 2 Vials | +4°C |
| Antibody Diluent CPI2* | 6 mL | +4°C |
| Sample Diluent 50BP | 20 mL | +4°C |
| Sample Diluent NS** | 12 mL | +4°C |
| Wash Buffer PT 10X | 20 mL | +4°C |
| TMB Development Solution | 12 mL | +4°C |
| Stop Solution | 12 mL | +4°C |
| SimpleStep Pre-Coated 96-Well Microplate | 96 wells | +4°C |
| Plate Seal | 1 | +4°C |

*Note: Antibody Diluent CPI2- This buffer has been reformulated to enhance stability after freeze-thaw cycles while producing data equivalent to the original formulation of antibody diluent CPI previously used in this kit.

While we run stock down, you may receive kits containing antibody diluent CPI. This does not affect the way you should use the kit.

If you have any questions please contact Abcam Scientific Support.

**Sample Diluent NS is provided but not necessary for this product.

Materials Required, Not Supplied

These materials are not included in the kit, but will be required to successfully utilize this assay:

Microplate reader capable of measuring absorbance at 450 or 600 nm.

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).

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.

Sample Diluent 50BP may contain precipitate, this is normal. If precipitate is not dissolved by gentle mixing, the precipitate may be dissolved by gentle warming and mixing at 37°C for 10 minutes. If precipitate remains, gently spin down and avoid visible precipitates when pipetting.

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.

Antibody Cocktail: Prepare Antibody Cocktail by diluting the capture and detector antibodies in Antibody Diluent CPI2. 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 CPI2. Mix thoroughly and gently.

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).

IMPORTANT: If the protein standard vial has a volume identified on the label, reconstitute the PDGF AA standard by adding that volume of Sample Diluent 50BP indicated on the label. Alternatively, if the vial has a mass identified, reconstitute the PDGF AA standard by adding 500 µL Sample Diluent 50BP. Hold at room temperature for 10 minutes and mix thoroughly and gently. This is the 160,000 pg/mL **Stock Standard** Solution

1. Label eight tubes, Standards 1–8.
2. Add 377.5 µL of Sample Diluent 50BP into tube number 1 and 150 µL of Sample Diluent 50BP into numbers 2-8.
3. Use the **Stock Standard** to prepare the following dilution series. Standard #8 contains no protein and is the Blank control:

| Standard # | Dilution Sample | Volume to Dilute (µL) | Volume of Diluent (µL) | Starting Conc. (pg/mL) | Final Conc. (pg/mL) |
|------------|-----------------------|-----------------------|------------------------|------------------------|---------------------|
| 1 | Stock Standard | 22.5 | 377.5 | 160,000 | 9,000 |
| 2 | Standard#1 | 150 | 150 | 9,000 | 4,500 |
| 3 | Standard#2 | 150 | 150 | 4,500 | 2,250 |
| 4 | Standard#3 | 150 | 150 | 2,250 | 1,125 |
| 5 | Standard#4 | 150 | 150 | 1,125 | 562.5 |
| 6 | Standard#5 | 150 | 150 | 562.5 | 281.25 |
| 7 | Standard#6 | 150 | 150 | 281.25 | 140.625 |
| 8 | Blank Control | 0 | 150 | N/A | N/A |

Sample Preparation

| Typical Sample Dynamic Range | |
|----------------------------------|--------------|
| Sample Type | Range |
| Serum | 12.5% - 100% |
| Plasma - EDTA | 12.5% - 100% |
| Plasma - Citrate | 12.5% - 100% |
| 10F RPMI 1640 Cell Culture Media | ≤ 100% |

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. Assay or dilute samples into Sample Diluent 50BP and assay. Store un-diluted serum at -20°C or below. Avoid repeated freeze-thaw cycles.

Plasma Collect plasma using citrate or EDTA. Centrifuge samples at 2,000 x g for 10 minutes. Assay or dilute samples into Sample Diluent 50BP and assay. Store un-diluted plasma samples at -20°C or below for up to 3 months. Avoid repeated freeze-thaw cycles. Note: This kit is incompatible with plasma (heparin) samples.

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 Sample Diluent 50BP and assay. Store un-diluted samples at -20°C or below. Avoid repeated freeze-thaw cycles.

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.

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

1. Prepare all reagents, working standards, and samples as directed in the previous sections.
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.
3. Add 50 µL of all sample or standard to appropriate wells.
4. Add 50 µL of the Antibody Cocktail to each well.
5. Seal the plate and incubate for 1 hour at room temperature on a plate shaker set to 400 rpm.
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.

7. Add 100 µL of TMB Development Solution to each well and incubate for 10 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.

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.

9. Alternative to step 7 – 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 |

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.

Download our ELISA guide for technical hints, results, calculation, and troubleshooting tips:

www.abcam.com/protocols/the-complete-elisa-guide

For technical support contact information, visit: www.abcam.com/contactus

Copyright © 2024 Abcam, All Rights Reserved. All information / detail is correct at time of going to print.
Version 3a | 2024-05-09

ab284616 – Human PDGF AA SimpleStep ELISA® Kit

Additional information

ASSAY SPECIFICITY

This kit is designed for the quantification of human PDGF AA.

Native signal was detected in serum, plasma (EDTA), plasma (citrate).

Spiked protein experiments were used to validate cell culture supernatant.

Saliva, urine, milk, CSF, cell extract, tissue extract samples have not been tested with this kit.

This kit is incompatible with plasma (heparin) samples.

CROSS REACTIVITY

10,000 pg/mL of recombinant human PDGF BB, 10,000 pg/mL of recombinant human PDGF RA and 10,000 pg/mL of recombinant human PDGF RB were tested for cross reactivity. No cross reactivity was observed.

10,000 pg/mL of recombinant human PDGF AB was tested for cross reactivity. 30% cross reactivity was observed.

INTERFERENCE

200 ng/mL of recombinant human PDGF RA, 200 ng/mL of recombinant human PDGF RB and 5 ng/mL of recombinant human PDGF BB were tested for interference with 4 ng/mL of recombinant human PDGF AA. No interference was observed.

4 ng/mL of recombinant human PDGF AB decreased interpolated value of 4 ng/mL of recombinant human PDGF AA 1.14-fold (12%).

SPECIES REACTIVITY

5,000 pg/mL of recombinant mouse PDGF AA was tested for reactivity. 123% reactivity was observed.

Other species reactivity was determined by measuring 100% 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 the same dilution.

Reactivity 1275% was determined for the mouse species. Reactivity < 3% was determined for the following species: Rat, Cow, Monkey.

Other species reactivity not determined.

CALCULATION

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

△ 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.

- 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.
- 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.

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 | 0.0909 | 0.0914 | 0.091 |
| 140.625 | 0.162 | 0.154 | 0.158 |
| 281.25 | 0.231 | 0.223 | 0.227 |
| 562.5 | 0.340 | 0.334 | 0.337 |
| 1125 | 0.576 | 0.552 | 0.564 |
| 2250 | 1.040 | 0.999 | 1.020 |
| 4500 | 1.835 | 1.811 | 1.823 |
| 9000 | 3.229 | 3.156 | 3.192 |

Table 1. Example of human PDGF AA standard curve in Sample Diluent 50BP. The PDGF AA standard curve was prepared as described in the Standard Preparation section. The table shows raw data values.

TYPICAL SAMPLE VALUES

Sensitivity:

The calculated minimal detectable dose (MDD) is 18.6 pg/mL. The MDD was determined by calculating the mean of zero standard replicates (n=16) and adding 2 standard deviations then extrapolating the corresponding concentration.

Recovery

Three concentrations of PDGF AA 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 (%) |
|--------------------------|--------------------|-----------|
| 100% Serum | 121 | 110-126 |
| 50% Plasma-Citrate | 103 | 96-110 |
| 100% Plasma-EDTA | 81 | 78-84 |
| 100% Cell Culture Media* | 114 | 111-117 |

*Media is RPMI 1640 containing 10% fetal calf serum.

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 PDGF AA was measured in human serum and plasma samples in a 2-fold dilution series. Sample dilutions are made in Sample Diluent 50BP. Recombinant PDGF AA was spiked in cell culture media samples in a 2-fold dilution series. Sample dilutions are made in Sample Diluent 50BP.

| Dilution Factor | Interpolated value | 100% Human Serum (pooled) | 25% Human Serum (individual) | 100% Human Plasma (Citrate) | 100% Human Plasma (EDTA) | 100% Media |
|-----------------|--------------------|---------------------------|------------------------------|-----------------------------|--------------------------|------------|
| Undiluted | pg/mL | 1671 | 4971 | 1991 | 1429 | 8056 |
| | % Expected value | 100% | 100% | 100% | 100% | 100% |
| 2 | pg/mL | 817 | 2324 | 956 | 725 | 3374 |
| | % Expected value | 98% | 94% | 96% | 101% | 84% |
| 4 | pg/mL | 417.5 | 1147.0 | 490.4 | 361.3 | 1629.7 |
| | % Expected value | 100% | 92% | 99% | 101% | 81% |
| 8 | pg/mL | 180.6 | 566.5 | 206.5 | 156.7 | 816.4 |
| | % Expected value | 86% | 91% | 83% | 88% | 81% |
| 16 | pg/mL | ND | 273.7 | ND | ND | 401.4 |
| | % Expected value | ND | 88% | ND | ND | 80% |

ND – Not Detected – below product dynamic range

Precision

Mean coefficient of variations of interpolated values of PDGF AA from three concentrations of recombinant human PDGF AA spiked in cell culture media within the working range of the assay.

| | Intra-assay | Inter-assay |
|--------|-------------|-------------|
| N= | 8 | 3 |
| CV (%) | 3.6 | 2.2 |

Download our ELISA guide for technical hints, results, calculation, and troubleshooting tips:

www.abcam.com/protocols/the-complete-elisa-guide

For technical support contact information, visit: www.abcam.com/contactus

Copyright © 2024 Abcam, All Rights Reserved. All information / detail is correct at time of going to print.
Version 2a | 2024-05-09