

# Activin A (human) ELISA Kit

(Catalog # K4769-100, 100 assays; Store at -20°C)

rev 9/13

## I. Introduction:

BioVision's Human Activin A ELISA (Enzyme-Linked Immunosorbent Assay) kit is an in vitro enzyme-linked immunosorbent assay for the quantitative measurement of human Activin A. This assay employs an antibody specific for human Activin A coated on a 96-well plate. Standards and samples are pipetted into the wells and Activin A present in a sample is bound to the wells by the immobilized antibody. The wells are washed and biotinylated anti-human Activin A antibody is added. After washing away unbound biotinylated antibody, HRP-conjugated streptavidin is pipetted to the wells. The wells are again washed, a TMB substrate solution is added to the wells and color develops in proportion to the amount of Activin A bound. The Stop Solution changes the color from blue to yellow, and the intensity of the color is measured at 450 nm. This ELISA kit shows no cross-reactivity with the following cytokines tested: human Angiogenin, BDNF, BLC, CNTF, ENA-78, FGF-4, IL-1 $\alpha$ , IL-1 $\beta$ , IL-2, IL-3, IL-4, IL-5, IL-6, IL-7, IL-8, IL-9, IL-11, IL-12 p70, IL-12 p40, IL-13, IL-15, IL-309, IP-10, FGF-4, FGF-6, FGF-7, G-CSF, GDNF, GM-CSF, IFN- $\gamma$ , IGFBP-2, IGF-BP-3, IGF-BP-4, Leptin (OB), MCP-1, MCP-2, MCP-3, MDC, MIF, MIG, MIP-1 $\alpha$ , MIP-1  $\beta$ , MIP-1 $\delta$ , PARC, PDGF, RANTES, SCF, SDF-1 $\alpha$ , TARC, TGF- $\beta$ , TIMP-1, TIMP-2, TNF- $\alpha$ , TNF- $\beta$ , TPO, VEGF. The minimum detectable dose of Activin A is typically less than 15 pg/ml. Detection Range: 15 pg/ml - 5000 pg/ml. The intra-Assay reproducibility is CV<10% & inter-Assay is CV<12%.

## II. Application:

Quantitative protein detection, establishing normal range, validation of antibody array results.

## III. Specificity:

The antibody pair provided in this kit recognizes human Activin A.

## IV. Sample Type:

- Serum & plasma
- Cell culture supernatants
- Urine

## V. Kit Contents:

Components	K4769-100	Part No.
Activin A Microplate (Item A) coated with anti-human Activin A, 96 wells	12 stripsx8 wells	K4769-100-1
Wash Buffer Concentrate (20x) (Item B)	25 ml	K4769-100-2
Standards (Item C) (recombinant human Activin A)	2 vials	K4769-100-3
Assay Diluent A (Item D) for Standard/Sample (serum/plasma) diluent (0.09% sodium azide as preservative)	30 ml	K4769-100-4
Assay Diluent B (Item E) for Standard/Sample (cell culture medium/urine) diluent. (5x concentrated)	15 ml	K4769-100-5
Detection Antibody Activin A (Item F), biotinylated anti-human Activin A (each vial enough for half plate)	2 vial	K4769-100-6
HRP-Streptavidin Concentrate (Item G), 200x concentrated	200 $\mu$ l	K4769-100-7
TMB One-Step Substrate Reagent (Item H) 3,3',5,5'-tetramethylbenzidine (TMB) in buffer solution	12 ml	K4769-100-8
Stop Solution (Item I), 0.2 M sulfuric acid	8 ml	K4769-100-9

## VI. User Supplied Reagents and Equipment:

- Microplate reader capable of measuring absorbance at 450 nm.
- Absorbent paper.
- Distilled or deionized water.

## VII. Storage and Handling:

May be stored for up to 6 months at 2° to 8°C from the date of shipment. Standard (recombinant protein) should be stored at -20°C or -80°C (recommended at -80°C) after reconstitution. Opened Microplate Wells or reagents may be stored for up to 1 month at 2° to 8°C. Return unused wells to the pouch containing desiccant pack, reseal along entire edge. **Note:** the kit can be used within one year if the whole kit is stored at -20°C. Avoid repeated freeze-thaw cycles.

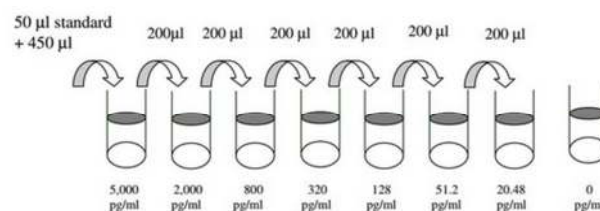
## VIII. Reagent Preparation:

- Bring all reagents and samples to room temperature (18 - 25°C) before use.
- Sample dilution: If your samples need to be diluted, Assay Diluent A (Item D) should be used for dilution of serum/plasma samples. 1x Assay Diluent B (Item E) should be used for dilution of culture supernatants and urine. Suggested dilution for normal serum/plasma: 2 fold\*.

\*Please note that levels of the target protein may vary between different specimens. Optimal dilution factors for each sample must be determined by the investigator.

- Assay Diluent B (Item E) should be diluted 5-fold with deionized or distilled water before use.

- Preparation of standard: Briefly spin the vial of Item C then add 400  $\mu$ l Assay Diluent A (for serum/plasma samples) or 1X Assay Diluent B (for cell culture supernates/urine) into Item C vial to prepare a 50 ng/ml standard. Dissolve the powder thoroughly by a gentle mix. Add 50  $\mu$ l Activin A standard from the vial of Item C, into a tube with 450  $\mu$ l Assay Diluent A or 1X Assay diluent B to prepare a 5,000 pg/ml standard solution. Pipette 300  $\mu$ l Assay Diluent A or 1X Assay diluent B into each tube. Use the stock standard solution to produce a dilution series (shown). Mix each tube thoroughly before the next transfer. Assay Diluent A or 1X Assay Diluent B serves as the zero standard (0 pg/ml).

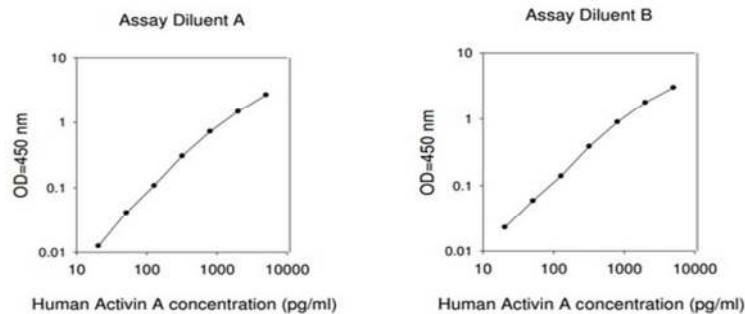


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- If the Wash Concentrate (20x) (Item B) contains visible crystals, warm to room temperature and mix gently until dissolved. Dilute 20 ml of Wash Buffer Concentrate into deionized or distilled water to yield 400 ml of 1x Wash Buffer.
- Briefly spin the Detection Antibody vial (Item F) before use. Add 100  $\mu$ l of 1x Assay Diluent B into the vial to prepare a detection antibody concentrate. Pipette up and down to mix gently (the concentrate can be stored at 4°C for 5 days). The detection antibody concentrate should be diluted 80-fold with 1x Assay Diluent B and used in step 4 of Assay Protocol.
- Briefly spin the HRP-Streptavidin concentrate vial (Item G) and pipette up and down to mix gently before use. HRP-Streptavidin concentrate should be diluted 200-fold with 1x Assay Diluent B.

#### IX. Assay Protocol:

1. Bring all reagents and samples to room temperature (18 - 25°C) before use. It is recommended that all standards and samples be run at least in duplicate.
2. Add 100  $\mu$ l of each standard and sample into appropriate wells. Cover well and incubate for 2.5 hours at room temperature or overnight at 4°C with gentle shaking.
3. Discard the solution and wash 4 times with 1x Wash Solution. Wash by filling each well with Wash Buffer (300  $\mu$ l) using a multi-channel Pipette or autowasher. Complete removal of liquid at each step is essential to good performance. After the last wash, remove any remaining Wash Buffer by aspirating or decanting. Invert the plate and blot it against clean paper towels.
4. Add 100  $\mu$ l of 1x prepared biotinylated antibody (see Reagent Preparation) to each well. Incubate for 1 hour at room temperature with gentle shaking. Discard the solution. Repeat the wash as in step 3.
5. Add 100  $\mu$ l of prepared Streptavidin solution (see Reagent Preparation) to each well. Incubate for 45 minutes at room temperature with gentle shaking. Discard the solution. Repeat the wash as in step 3.
6. Add 100  $\mu$ l of TMB One-Step Substrate Reagent (Item H) to each well. Incubate for 30 minutes at room temperature in the dark with gentle shaking.
7. Add 50  $\mu$ l of Stop Solution (Item I) to each well. Read at 450 nm immediately.
8. Calculation: Calculate the mean absorbance for each set of duplicate standards, controls and samples, and subtract the average zero standard optical density. Plot the standard curve on log-log graph paper or using Sigma plot software, with standard concentration on the x-axis and absorbance on the y-axis. Draw the best-fit straight line through the standard points.



**Figure 1:** Standard Curve: These standard curves are for demonstration only. A standard curve must be run with each assay.

Sample Type	Average % Recovery	Range (%)
Serum	77.89	68-83
Plasma	76.92	67-110
Cell culture media	94.73	82-111

**Table 1:** Recovery: Recovery was determined by spiking various levels of human Activin A into human serum, plasma and cell culture media.

Sample Type	Serum	Plasma	Cell Culture Media
1:2 Average % of Expected Range (%)	86.86 77-95	125.3 110-139	123.5 114-132
1:4 Average % of Expected Range (%)	117.1 106-125	110.3 67-118	132.3 121-140

**Table 2:** Linearity

#### X. RELATED PRODUCTS:

Activin A, human recombinant (4724)  
 Activin A, rat recombinant (4726)  
 Activin B, human recombinant (7112)

Activin A, mouse recombinant (4725)  
 Human Cell<sup>exp</sup> Human Recombinant Activin A (6442)

**FOR RESEARCH USE ONLY! Not to be used on humans.**