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# Sunlong Medical™ HEK293 Host Cell Proteins (HCP) ELISA Kit

**Catalog Number: ADA0420**

**Size: 14**

**Storage: 2 - 8 °C**

**Validity Period: 6 months**

**Sensitivity: 5 ng/mL**

**Assay range: 10.24 - 1,000 ng/mL**

Used for the quantitative determination of HEK293 HCP concentration in biological products derived from HEK 293 and HEK 293F cell lines.

**FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC PROCEDURES.**

**MATERIALS PROVIDED & STORAGE CONDITIONS**

| PART | FORMAT | DESCRIPTION | STORAGE CONDITIONS |
|---|---|---|---|
| Pre-coated Microplate | 1 plate | 96 well polystyrene microplate (12 strips of 8 wells) precoated with an antibody specific for HEK293 HCP. | Store at 2 - 8 ℃. |
| HEK 293 HCP Standard | 3 bottles | 800 ng/bottle of lyophilized recombinant HEK293 HCP. Reconstitute in 0.8 mL Assay Diluent before used. | Store at 2 - 8 ℃. |
| Detection A | 1 vial | 60 µL/vial of Biotin labeled antibody specific for HEK293 HCP (including preservative) , 1:100 diluted by Assay Diluent before used. | Store at 2 - 8 ℃. |
| Detection B | 1 vial | 120 µL/vial of streptavidin conjugated to HRP (including preservative), 1:100 diluted by Assay Diluent before used. | Store at 2 - 8 ℃. |
| Assay Diluent | 2 bottles | 25 mL/bottle diluent (including preservative) was used to dilute the Detection A and B. | Store at 2 - 8 ℃. |
| 20 × Wash Buffer | 1 bottle | 30 mL/bottle of a 20-fold concentrated solution of buffered surfactant with preservative, 1:20 diluted by deionized water before used. | Store at 2 - 8 ℃. |
| Color Reagent | 1 bottle | 12 mL/bottle of TMB (tetramethylbenzidine). | Store at 2 - 8 ℃. |
| Stop Solution | 1 bottle | 12 mL/bottle. | Store at 2 - 8 ℃. |
| Plate Sealers | 3 strips | Adhesive strips. | Store at RT. |

* Provided this is within the expiration date of the kit.

**INTENDED USE**

Used for the quantitative determination of HEK293 HCP concentration in biological products derived from HEK 293 and HEK 293F cell lines.

**PRINCIPLE OF THE ASSAY**

This assay employs the quantitative sandwich enzyme immunoassay technique. An antibody specific for HEK293 HCP has been pre-coated onto a microplate. Standards or samples and a biotin-labeled antibody specific for HEK293 HCP are pipetted into the wells, standards or HEK 293 HCP in the samples form immunocomplex with immobilized antibody and biotinylated anti-HEK 293 HCP antibody. After washing away any unbound substances, Streptavidin-HRP is added to the wells. Following a wash to remove any unbound enzyme reagent, a substrate solution is added to the wells and color develops in proportion to the amount of HEK293 HCP bound in the initial step. The color development is stopped and the intensity of the color is measured.

**OTHER SUPPLIES REQUIRED**

• Microplate reader capable of measuring absorbance at 450 nm, with the correction wavelength set at 630 nm or 620 nm.

• Microtiter plate rotator.

• Pipettes and pipette tips.

• Deionized or distilled water.

• 500 mL graduated cylinder.

• Squirt bottle, manifold dispenser, or automated microplate washer.

• Test tubes for dilution of standards.

**SAMPLE COLLECTION & STORAGE**

Samples should be clarified and any precipitate should be removed by centrifugation.

The sample should be diluted appropriately according to the pre-determined condition. (It is recommended

**REAGENT PREPARATION**

Bring all reagents to room temperature before use.

**20-fold Wash Buffer Concentrate** - If crystals have formed in the concentrate, warm to room temperature and mix gently until the crystals have completely dissolved. Add 25 mL of Wash Buffer Concentrate to 475 mL of deionized or distilled water to prepare 500 mL of **Wash Buffer**.

**Standard** - Reconstitute with 0.8 mL **Assay Diluent**, this reconstitution produces a **stock solution** of 1,000 ng/mL. Allow the standard to sit for a minimum of 15 minutes with gentle agitation prior to making dilutions. 1,000 ng/mL is the first standard point, and the concentration of the 6 standard sample were 1,000 ng/mL, 400 ng/mL, 160 ng/mL, 64 ng/mL, 25.6 ng/mL, 10.24 ng/mL respectively. The appropriate **Assay Diluent** serves as the zero standard (0 ng/mL).

**Note：Please use a new standard for each assay and discard after use. Avoid freeze-thaw cycle.**

**Detection A** (working solution) - Shake and mix before used. Centrifuge instantaneously with palm centrifuge to make the liquid at the bottom of the tube. Dilute the **Detection A** 1: 100 times to the working concentration with **Assay Diluent**.

**Detection B** (working solution) - Shake and mix before used. Centrifuge instantaneously with palm centrifuge to make the liquid at the bottom of the tube. Dilute the **Detection B** 1: 100 times to the working concentration with **Assay Diluent**.

**Note：Please perform simple centrifugation to collect Detection A and Detection B before use. Prepare Detection A and Detection B immediately before use and avoid diluting the entire stock at once.**

**ASSAY PROCEDURE**

**Bring all reagents and samples to room temperature before use. It is recommended that all standards and samples be assayed in duplicate.**

1. Prepare all reagents and working standards 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, and reseal.

3. Add 100 µL standard or samples to each well.

4. Add 50 µL of **Detection A** (working solution) to each well. Cover with the adhesive strip. Incubate for 1 hour at 25 ℃, using a microplate shaker (500 rpm).

5. Aspirate each well and wash, repeating the process five times. Wash by filling each well with Wash Buffer (300 µL) using a squirt bottle, manifold dispenser, 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.

6. Add 100 µL of **Detection B** (working solution) to each well. Cover with a new adhesive strip. Incubate for 1 hour at 25 ℃, using a microplate shaker (500 rpm).

7. Repeat the aspiration/wash as in step 5.

8. Add 100 µL of **Color Reagent** to each well. Incubate for 15 minutes at 25 ℃. Protect from light.

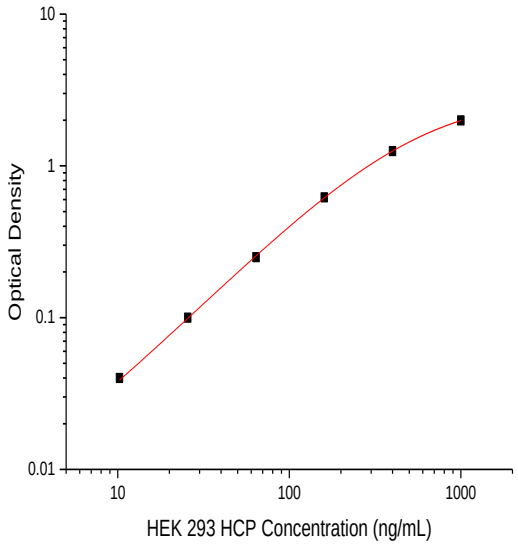
9. Add 100 µL of **Stop Solution** to each well. The color in the wells should change from blue to yellow. If the color in the wells is green or the color change does not appear uniform, gently tap the plate to ensure thorough mixing.

10. Determine the optical density of each well within 10 minutes, using a microplate reader set to 450 nm. If wavelength correction is available, set to 630 nm or 620 nm. If wavelength correction is not available, subtract readings at 630 nm or 620 nm from the readings at 450 nm. This subtraction will correct for optical imperfections in the plate. Readings made directly at 450 nm without correction may be higher and less accurate.

**CALCULATION OF RESULTS**

Average the duplicate readings for each standard and sample. Construct a standard curve by plotting the mean absorbance for each standard on the Y-axis against the concentration on the X-axis and draw a best fit curve through the points on the graph. The data may be linearized by plotting the log of the HEK 293 HCP concentrations versus the log of the O.D. and the best fit line can be determined by regression analysis. This procedure will produce an adequate but less precise fit of the data.

If samples have been diluted, the concentration read from the standard curve must be multiplied by the dilution factor.




| (ng/mL) | O.D. | Average | Corrected |
|---|---|---|---|
| 0 | 0.07 | 0.07 | - |
| | 0.06 | | |
| 10.24 | 0.10 | 0.10 | 0.04 |
| | 0.10 | | |
| 25.6 | 0.16 | 0.16 | 0.10 |
| | 0.16 | | |
| 64 | 0.31 | 0.32 | 0.25 |
| | 0.32 | | |
| 160 | 0.68 | 0.69 | 0.62 |
| | 0.69 | | |
| 400 | 1.27 | 1.31 | 1.25 |
| | 1.35 | | |
| 1000 | 2.05 | 2.06 | 1.99 |
| | 2.06 | | |

**ASSAY RANGE**

10.24 - 1,000 ng/mL

**SENSITIVITY**

The minimum detectable dose (MDD) of HEK 293 HCP is typically less than 5 ng/mL.

The MDD was determined by adding two standard deviations to the mean O.D. value of twenty zero standard replicates and calculating the corresponding concentration.

**PRECISION**

Intra-Assay Precision (Precision within an assay): <20%

Three samples of known concentration were tested sixteen times on one plate to assess intra-assay precision.

Inter-Assay Precision (Precision between assays): <20%

Three samples of known concentration were tested in twenty four separate assays to assess inter-assay precision.

**STABILITY**

When the kit was stored at the recommended temperature for 6 months, the signal intensity decreased by less than 20%.

**SPECIFICITY**

No cross-reactivity has been observed with CHO, Vero and E.coli whole cell lysates.

# TROUBLESHOOTING GUIDE

| Problem | Probable Cause | Solution |
|---|---|---|
| **Poor Precision** | Wells are not washed or aspirated properly | Make sure the wash apparatus works properly and wells are dry after aspiration |
| | Bubbles in the wells | Tap plate gently to disperse bubbles |
| | Wells are scratched with pipette tip or washing needles | Dispense and aspirate solution into and out of wells with caution |
| | Particulates are found in the samples | Remove any particulates by centrifugation prior to the assay |
| **High background** | Plate is not washed properly | Make sure the wash apparatus works properly |
| | Incorrect incubation times and/or temperatures | The OD value increased gradually along with the time. Reduce the color developing time properly |
| **Weak/No Signal** | Pipetting errors | Make sure the pipette is calibrated |
| | The working solution not be prepared immediately before use | The working solution should be prepared immediately before use and should not be stored |
| | Volumes errors | Repeat assay with the required volumes in manual |
| | The plate is not incubated for proper time or temperature | Follow the manual to repeat assay |
| | Detection A working solution is not completely mixed with the samples | After adding the Detection A into the wells, make sure the detection A and the samples are mixed thoroughly |