

For the quantitative determination of human HE4 concentrations in cell culture supernates, serum, and plasma.

**INTRODUCTION**

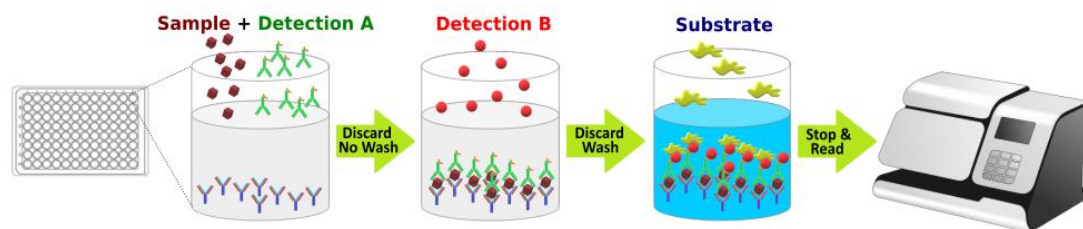
Human Epididymal Protein 4 (HE4) is a secreted 25 kDa glycosylated protein. HE4 is expressed in the human genital tract, upper respiratory tract, salivary glands, and ductal linings of the breast, distal tubules of the kidney, colon, and endometrium. In pathological studies, elevated tissue and serum levels of HE4 may be associated with type I and type II endometrial cancers, and elevated serum HE4 increases with the progression of endometrial tumors. In breast cancer, tissue expression of HE4 is associated with lymph node involvement. In addition, elevated levels of HE4 are associated with migratory cell carcinoma and early and advanced ovarian cancer. Therefore, HE4 is an important biomarker for ovarian and endometrial cancer progression.

The Tribio™ Fast Human HE4 ELISA is designed to quantitatively detect Human HE4 levels in different tissues including skin, muscle, neural, serum, and other biological samples. The main feature is that the kit uses our novel proprietary approaches to combine samples and detections into a one-step instead of the complicated traditional methods. It makes the assay simple, easy, accurate and fast. The measurement can be finished in 3 hours, not needing 4-5 hours (Fig. 1). The detection range is from 7 to 500 pg/mL. The levels of human HE4 samples are parallel to the standard curves obtained using the kit standards linearly. These results indicate that this kit can be used to determine relative mass values for natural human HE4 protein.

**PRINCIPLE OF THE ASSAY**

This assay employs the quantitative sandwich enzyme immunoassay technique (See Fig. 1). A monoclonal antibody specific for human HE4 was pre-coated onto a microplate. Standards or samples and a biotin-conjugated detection antibody are pipetted into the wells and concurrently incubated to form a sandwich complex in one step. Simply aspirate each well without washing and directly add Streptavidin-HRP into the complex. Following a wash to remove any unbound antibody and samples, an **ultra-sensitive TMB substrate solution** is added to the wells for color development. The color intensity is in proportion to the amount of HE4 bound in the initial step. The intensity of the color is measured by plate read at 450 nm.

**Fig. 1: Assay Principle:**



**KIT CONTENT AND STORAGE CONDITIONS**

PART	PART#	DESCRIPTION	STORAGE OF OPENED/ RECONSTITUTED
Human HE4 Microplate	TBS3213A	96 well polystyrene microplate (12 strips of 8 wells) coated with a polyclonal antibody specific for human HE4.	Return unused wells to the foil pouch. Reseal along the entire edge of the zip-seal. May be stored for up to 1 month at 2-8 °C.
Human HE4 Standard	TBS3213B	30 µl of Recombinant human HE4 protein (25ng/mL).	Aliquot and store at -20 °C for up to 1 month in a manual defrost the freezer. Avoid repeated freeze-thaw cycles.
Detection A	TBS3213C	2.1 ml of Biotin-Human HE4 antibody.	May be stored for up to 3 months at 2-8 °C.*
Detection B	TBS3213D	300 µl of Streptavidin-HRP.	
Assay Diluent	TBS3213E	25 ml of a buffered protein base with preservatives.	
Wash Buffer	TBS3000W	12 ml of concentrated solution (10x).	
TMB Substrate	TBS3000T	12 ml of ultra-sensitive TMB substrate.	
Stop Solution	TBS3000S	6ml of 2 N sulfuric acid.	

Store the unopened kit at 2-8 °C. Do not use past kit expiration date.

~~The kit contains sufficient materials to run an ELISA on one 96 well plate.~~

**PRECAUTIONS**

Wear protective gloves, clothing, eye, and face protection. Wash hands thoroughly after handling.

**REAGENT PREPARATION**

**Bring all reagents to room temperature before use.**

**Wash Buffer:** Add 12 mL of Wash Buffer Concentrate (10x) to 108 mL of deionized distilled water to prepare 120 mL of Wash Buffer (*If crystals have formed in the concentrate, warm to room temperature and mix gently until the crystals have completely dissolved.*).

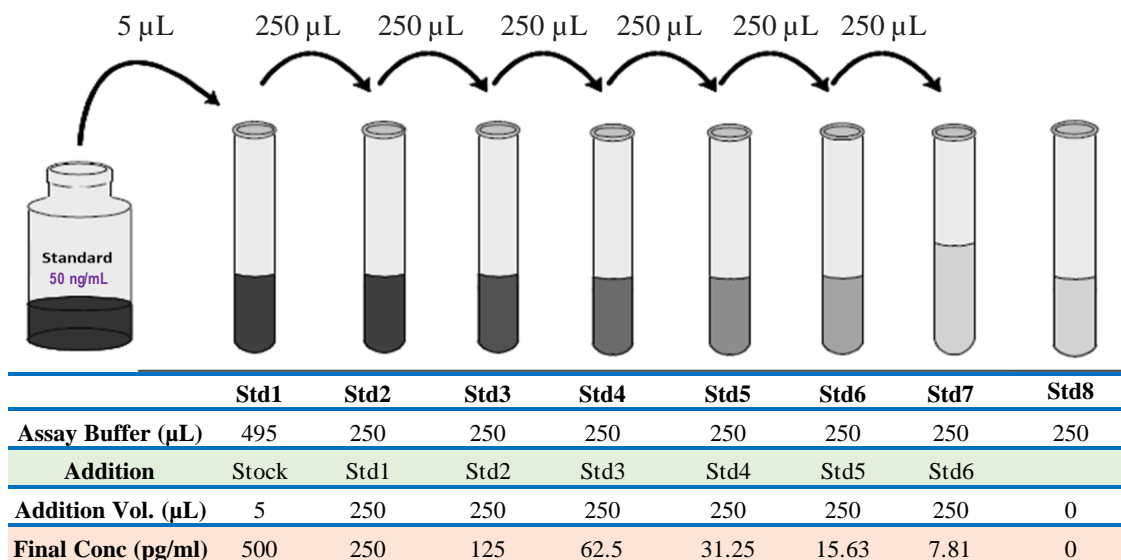
**Detection B working solution preparation:** Add 240  $\mu\text{L}$  of **Detection B** streptavidin-HRP to 12 mL Assay Diluent to prepare Detection B working solution.

**Human HE4 Standard Preparation:**

Label test tubes as #1 through #8. Pipet 495  $\mu\text{L}$  of 1x Assay Diluent into tube #1, and 250  $\mu\text{L}$  into tubes #2 to #7 as **diagram below (Fig.2)**.

1. Add 5  $\mu\text{L}$  of the Human HE4 Standard stock solution (50 ng/mL) by dilution of 100X to tube #1 (500pg/mL), and mix.
2. Make 2x serial dilutions of the standard using the 250pg/mL standard solution (tube #1) from tube #2 through #7 with sequential transfer of 250  $\mu\text{L}$  to the next concentration. Mix each tube thoroughly before the next transfer. The standard concentration in tube 1 through 7 will be 500, 250, 125, 62.5, 31.25, 15.63, and 7.81 pg/mL. Tube# 8 is Standard 0.

**Fig.2 Diagram for Human HE4 standard preparation**



**ASSAY PROCEDURE**

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

1. Add 80  $\mu\text{L}$  of standard, sample, or control per well.
2. Add 20  $\mu\text{L}$  of **Detection A** to the above standard and sample of each well, thoroughly mix. Cover with the adhesive sealer. Incubate at **RT for 2 hours**.
3. Aspirate each well (no wash). Invert the plate and blot it against clean paper towels.
4. Add 100  $\mu\text{L}$  of **Detection B** to each well. Incubate at **RT for 1 hour**.
5. Aspirate each well, and wash for 3 times by filling each well with 300  $\mu\text{L}$  Wash Buffer (*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  $\mu\text{L}$  of **TMB Substrate** to each well. Incubate **at RT for 10-20 min** (*Protect from light*). The color becomes blue.

7. Add 50µL of **Stop Solution** to each well. The color in the well should change from blue to yellow (gently tap the plate to ensure thorough mixing).
8. Determine the optical density of each well within 20 minutes, using a microplate reader at 450nm. If wavelength correction is available, set to 540 nm or 570 nm. If wavelength correction is not available, subtract readings at 540 nm or 570 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, control, and sample subtract the average zero standard optical density (O.D.).

Create a standard curve using computer software capable of generating a four parameter logistic (4-PL) curve-fit. As an alternative, 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 human HE4 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.

**TYPICAL DATA**

This standard curve(R<sup>2</sup>=0.9995) is provided for demonstration only. A standard curve should be generated for each set of samples assayed. Fig. 3 is an example of typical Data.

**SENSITIVITY**

The minimum detectable dose (MOD) of human HE4 is typically 5 pg/ml.

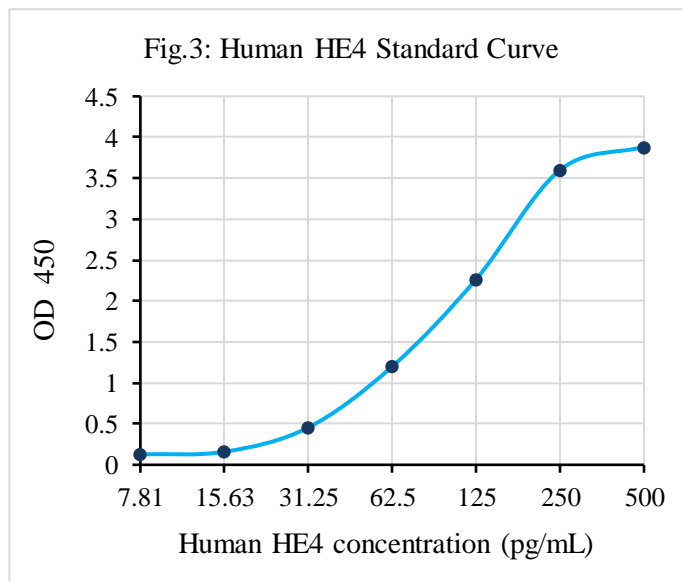
The Intra-assay CV is 3.79% the Inter-assay CV is <10%.

**SPECIFICITY**

This assay recognizes natural and recombinant human HE4.

**RELATIVE PRODUCTS**

- Human CEA ELISA (TBS3210)
- Human AFP ELISA (TBS3212)
- Human IL-1β ELISA (TBS3219)
- Human IL-2 ELISA (TBS3220)
- Human IL-4 ELISA (TBS3221)
- Human IL-6 ELISA (TBS3223)
- Human IL-7 ELISA (TBS3224)
- Human IL-8 ELISA (TBS3225)
- Human IL-10 ELISA (TBS3226)
- Human IL-13 ELISA (TBS3227)
- Human IL-17 ELISA (TBS3228)
- Human IL-22 ELISA (TBS3229)
- Human IFN-gamma ELISA (TBS3230)
- Human TGF- β1 ELISA (TBS3232)
- Human GM-CSF ELISA (TBS3233)
- Human MIP-1α ELISA (TBS3234)



**For research use only.**