INTRODUCTION

Human Chorionic Gonadotropin (hCG) is a glycoprotein hormone produced by human embryos shortly after fertilization and later by the placental syncytiotrophoblast cells. It facilitates embryo implantation and placentation by modulating the maternal immune response and promoting angiogenesis. In assisted reproduction protocols, hCG mimics the luteinizing hormone (LH) surge, inducing final follicle and oocyte maturation as well as ovulation. Clinically, hCG is used in fertility treatments, pregnancy detection, and potentially as an anti-rejection agent in organ transplantation.

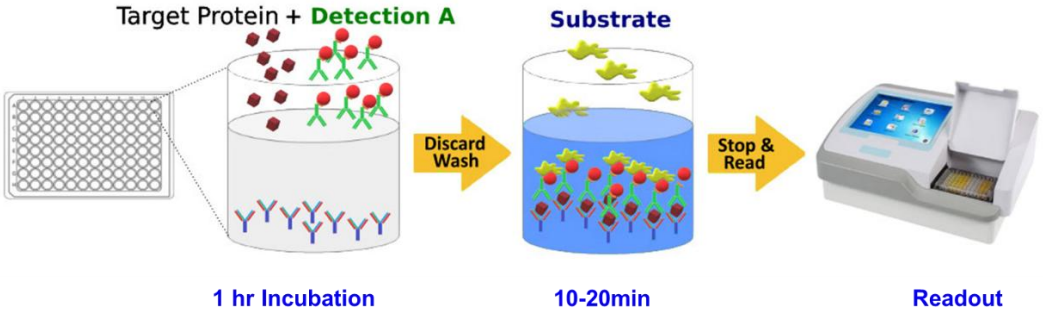
Tribioscience's Fast Human HCG ELISA is designed to quantitatively detect human HCG levels in serum, plasma, and other biological samples. The main feature is that the kit uses our novel proprietary approaches to combine samples and detections into a one-step instead of the complicated traditional methods. It makes the assay simple, easy, accurate and fast. The measurement can be finished in 2 hours, not need 4-5 hours (Fig. 1). The detection range is from 3 to 250 pg/mL. The levels of human HCG 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 human HCG protein.

Alternative name: CG; Chorionic Gonadotropin

PRINCIPLE OF THE ASSAY

This assay employs our novel quantitative sandwich enzyme immunoassay technique (See Fig. 1). A monoclonal antibody specific to human HCG was pre-coated onto a microplate. Standards or samples, and an HRP-conjugated detection antibody are pipetted into the wells and concurrently incubated to form a sandwich complex in one step. Following a simple wash, an **ultra-sensitive TMB substrate solution** is added to the wells for color development. The color intensity is proportional to the amount of HCG bound in the initial step. The intensity of the color is measured by plate reading at 450 nm.

Fig. 1. Simple Procedures



KIT CONTENT AND STORAGE CONDITIONS

PART	PART#	DESCRIPTION	STORAGE OF OPENED/ RECONSTITUTED
Human HCG Microplate	TBS32126A	96 well polystyrene microplate (12 strips of 8 wells) coated with a human HCG monoclonal antibody.	Return unused wells to the foil pouch containing the desiccant pack. Reseal along the entire edge of the zip-seal. May be stored for up to 1 month at 2-8 °C.
Human HCG Standard	TBS32126B	50 µl of Recombinant human HCG (12.5 ng/mL).	Aliquot and store at -20 °C for up to 1 month in a manual defrost freezer. Avoid repeated freeze-thaw cycles.
Detection A	TBS32126C	2.2 ml of HRP- human HCG antibody.	May be stored for up to 3 months at 2-8 °C.
Assay Diluent	TBS32126E	15 ml of a buffered protein base with preservatives.	
WashBuffer	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

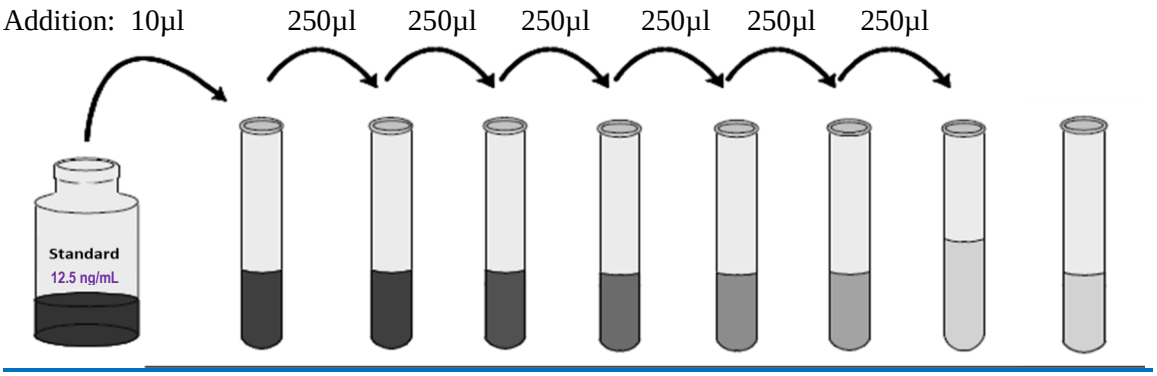
Bring all the reagents to room temperature before use.

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).*

Human HCG Standard Preparation: Label test tubes as #1 through #8. Pipet 490 µL of 1x Assay Diluent into tube #1, and 250 µL into tubes #2 to #7 **as diagram below.**

1. Add 10 µL of the Human HCG Standard stock solution (12.5 ng/mL) to tube #1 and mix.
2. Make 2x serial dilutions of the standard using the 12.5 ng/m standard solution (tube#1) from tube #2 through #7 with sequential transfer of 250 µL to the next concentration. Mix each tube thoroughly before the next transfer. The standard concentration in tube 1 through 7 will be 250, 125, 62.5, 31.25, 15.83, 7.81, and 3.91 pg/mL. Tube# 8 is Standard 0.

Fig.2 Diagram for Human HCG standard preparation



	Std1	Std2	Std3	Std4	Std5	Std6	Std7	Std8
Assay Buffer (µL)	490	250	250	250	250	250	250	250
Addition	Stock	Std1	Std2	Std3	Std4	Std5	Std6	
Addition Vol. (µL)	10	250	250	250	250	250	250	0
Final Conc (pg/mL)	250	125	62.5	31.25	15.63	7.81	3.91	0

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 µL of standard, sample, or control per well.
2. Add 20 µL 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 with shaking.**
3. Aspirate each well, and wash for 3 times by filling each well with 200 µL 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.
4. Add 100 µL of **TMB Substrate** to each well. Incubate **at RT for 10-20 minutes** (*Protect from light*). The color becomes blue**.**
5. Add 50 µL 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).
6. Determine the optical density of each well within 20 minutes, using a microplate reader at 450 nm. 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 HCG 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^2=0.9987) 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 (MDD) of human HCG is typically 3.91 ng/ml.
The Intra-assay CV and the Inter-assay CV are <10%.

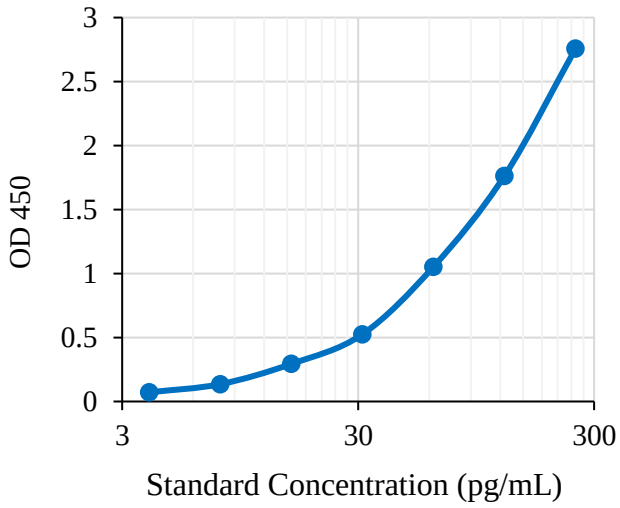
SPECIFICITY

This assay recognizes natural and recombinant human HCG.
No cross-reactivity with others.

RELATIVE PRODUCTS

Human IL-1ß 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 IL-33 ELISA (TBS4245)
Human VASN ELISA (TBS4246)
Human IFN-gamma ELISA (TBS3230)
Human TGF- ß1 ELISA (TBS3232)
Human GM-CSF ELISA (TBS3233)
Human MIP-1α ELISA (TBS3234)
Protein Cell Lysis Buffer (TBS5001)
Protein Assay Kit (TBS2005)
TMB Substrate System (TBS5021)

Fig. 3: Fast Mouse HCG ELISA



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