Fast Human IL-7 ELISA

For the quantitation of human IL-7 concentrations in cell culture supernatants, serum, and plasma.

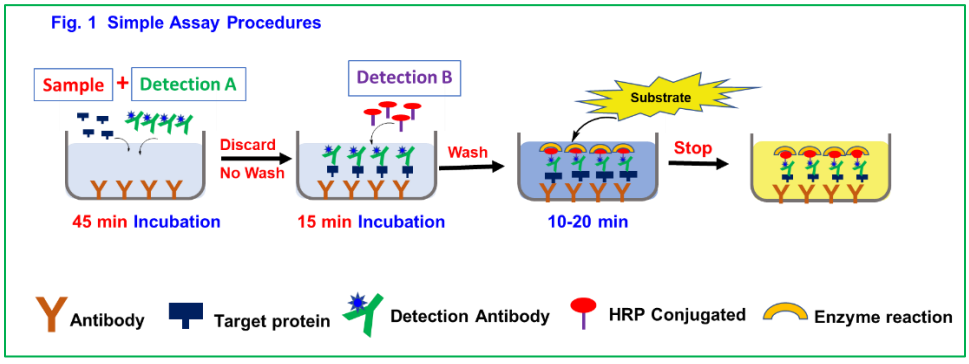
INTRODUCTION

Interleukin-7(IL-7), is a hematopoietic growth factor which belongs to the IL-7/IL-9 family. It is secreted by stromal cells in the bone marrow and thymus. IL7 stimulates the proliferation of lymphoid progenitors. It is important for proliferation during certain stages of B-cell maturation. IL7 and the hepatocyte growth factor (HGF) form a heterodimer that functions as a pre-pro-B cell growth-stimulating factor. It is found to be a cofactor for V(D)J rearrangement of the T cell receptor beta (TCRß) during early T cell development. IL7 can be produced locally by intestinal epithelial and epithelial goblet cells.

The Fast Human IL-7 ELISA is a solid phase ELISA designed to measure human IL-7 levels in cell culture supernatants, serum, and plasma. 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 5-6 hours (Fig. 1). The detection arrange is from 3.0 to 800pg/mL. The levels of human IL-7 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 IL-7 protein.

PRINCIPLE OF THE ASSAY

This assay employs our novel proprietary sandwich enzyme immunoassay techniques (See Fig. 1). A monoclonal antibody specific for human IL-7 was pre-coated onto a microplate. Standards and samples are pipetted into the wells, and then, incubated with Detection Antibody specific for human IL-7. Aspirate each well, then add Streptavidin-HRP, incubate 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 develops. The color intensity is in proportion to the amount of IL-7 bound in the initial step. The intensity of the color is measured by plate read at 450 nm.



KIT CONTENT AND STORAGE CONDITIONS

PART	PART#	DESCRIPTION	STORAGE OF OPENED/ RECONSTITUTED
Human IL-7 Microplate	TBS3224A	96 well microplate (12 strips of 8 wells) coated with a Capture Antibody specific for human IL-7.	The unused wells can be stored the sealed foil pouch containing the desiccant pack for up to 1 month at 2-8 °C.
Human IL-7 Standard	TBS3224B	100uL of Recombinant human IL-7 protein (100ng/mL).	Aliquot and store at -20 °C for up to 1 month in a manual defrost freezer. Avoid repeated freeze-thaw cycles.
Detection A	TBS3224C	2.2 ml of human IL-7 antibody.	May be stored for up to 3 months at 2-8 °C.*
Detection B	TBS3224D	12ml of Streptavidine-HRP	
Assay Diluent	TBS3224E	12 ml of a buffered protein base with preservatives.	
10x Wash Buffer	TBS3000W	12 ml of concentrated solution (10x).	
TMB Substrate	TBS3000T	12 ml of ultra-sensitive TMB substrate.	
Stop Solution	TBS3000S	6 ml 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

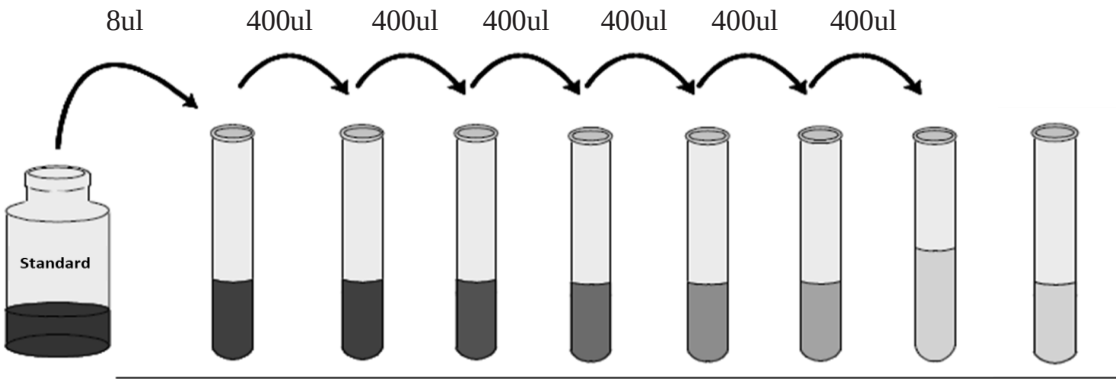
Bring all reagents to room temperature before use.

Wash Buffer: Add 10 mL of Wash Buffer Concentrate (10x) to 90 mL of deionized distilled water to prepare 100 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 IL-7 Standard Preparation:

1. Label test tubes as #1 through #8. Pipet 440 µL of 1x Assay Diluent into tube #1, and 300 µL into tubes #2 to #8 **as diagram below (Fig. 2).**
2. Add 10 µL of the Human IL-7 Standard stock solution (100ng/mL) by dilution of 45 times to tube #1 and mix.
3. Make 2.5x serial dilutions of the standard using the 800pg/mL standard solution from tube #2 through #7 with sequential transfer of 200 µL to the next concentration. Mix each tube thoroughly before the next transfer. The standard concentration in tube 1 through 7 will be 800,320,128,51.2,20.48,8.192 and 3.2768 pg/mL. Tube# 8 is Standard 0.

Fig. 2 Diagram for Human IL-7 standard preparation



	Std1	Std2	Std3	Std4	Std5	Std6	Std7	Std8
Assay Buffer (µL)	992	600	600	600	600	600	600	600
Stock (100ng/ml)	Stock	Std1	Std2	Std3	Std4	Std5	Std6	
Vol of Stock (µL)	8	400	400	400	400	400	400	0
Final Conc (pg/ml)	800	320	128	51.2	20.48	8.192	3.2768	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 45 mins.**
3. Aspirate each well (***no wash***). Invert the plate and blot it against clean paper towels.
4. Add 100 µL of **Detection B** to each well. Incubate at **RT for 15 min.**
5. Aspirate each well, and wash for 3 times by filling each well with 300 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.
6. Add 100 µL of **TMB Substrate** to each well. Incubate **at RT for 10-20min** (*Protect from light*). The color becomes blue. If the color is light, the incubation time can be longer.
7. 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).

8. Determine the optical density of each well within 5 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 IL-7 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(R2=0.9995) is provided for demonstration only. A standard curve should be generated for each set of samples assayed as Fig. 3.

SENSITIVITY

The minimum detectable dose (MOD) of human IL-7 is 3.2 pg/ml. The Intra-CV is 4.76% and the Inter-CV is 7.12 %.

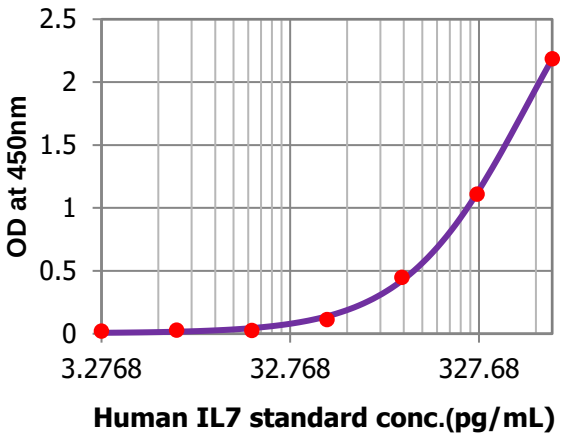
SPECIFICITY

This assay recognizes natural and recombinant human IL-7.
No cross-reactivity: Human IL-7 R; Mouse IL-7; Mouse IL-7 Rα.

RELATIVE PRODUCTS

Human IL-1ß ELISA (TBS3219)
Human IL-2 ELISA (TBS3220)
Human IL-4 ELISA (TBS3221)
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 TNF-α ELISA (TBS3235)
Human IFN-gamma ELISA (TBS3230)
Human TGF- ß1 ELISA (TBS3232)
Human GM-CSF ELISA (TBS3233)
Human MIP-1α ELISA (TBS3234)

Fig. 3 Human IL7 Standard Curve



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