HUMAN IFN-γ ELISA KIT

FOR THE QUANTITATIVE DETERMINATION OF HUMAN IFN-γ CONCENTRATIONS IN CELL CULTURE SUPERNATES, PLASMA AND SERUM

PURCHASE INFORMATION:

ELISA Name	Human IFN-γ ELISA
Catalog No.	SK00749-01
Lot No.	
Formulation	96 T
Standard Range	4.7 – 300 pg/mL
Sensitivity	2 pg/mL
Sample Volume	100 µL
Sample Type	Serum, EDTA Plasma, Cell Culture
Dilution Factor	Optimal dilutions should be determined by each laboratory for each application
Specificity	Human IFN-γ only
Intra-assay Precision	4-6%
Inter-assay Precision	8-10%
Storage	2°C - 8°C

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

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INTRODUCTION

Human IFN-γ immunoassay is a 3.5 - 4.5 hour solid phase ELISA designed to measure human IFN-γ in cell culture supernates, serum and plasma. It contains recombinant human IFN-γ and antibodies raised against this protein. It has been shown to accurately quantify recombinant human IFN-γ. Results obtained with naturally occurring IFN-γ samples show linear curves that were parallel to the standard curves obtained using the kit standards. These results indicate that the immunoassay kit can be used to determine relative mass values for natural human IFN-γ.

PRINCIPLE OF THE ASSAY

This assay employs the quantitative sandwich enzyme immunoassay technique. A monoclonal antibody specific for IFN-γ has been pre-coated onto a microplate. Standards and samples are pipetted into the wells and any IFN-γ present is bound by the immobilized antibody. After washing away any unbound substances, a biotinylated monoclonal antibody specific for IFN-γ is added to the wells. Following a wash to remove any unbound antibody-biotin reagent, Avidin-HRP is added to the wells. After washing away any unbound enzyme, a substrate solution is added to the wells and color develops in proportion to the amount of IFN-γ bound in the initial step. The color development is stopped and the intensity of the color is measured.

LIMITATIONS OF THE PROCEDURE

_ FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC PROCEDURES.
_ The kit should not be used beyond the expiration date on the kit label.
_ Do not mix or substitute reagents with those from other lots or sources.
_ It is important that the dilution buffer selected for the standard curve be consistent with the samples being assayed.
_ If samples generate values higher than the highest standard, dilute the samples with Dilution Buffer and repeat the assay.
_ Any variation in standard diluent, operator, pipetting technique, washing technique, incubation time or temperature, and kit age can cause variation in binding.
_ This assay is designed to eliminate interference by soluble receptors, binding proteins, and other factors present in biological samples. Until all factors have been tested in the immunoassay, the possibility of interference cannot be excluded.

MATERIALS PROVIDED

Description	Code	Quantity
Microplate - 96 well polystyrene microplate (12 strips of 8 wells) coated with a monoclonal antibody against IFN-γ.	749-02-01	1 plate
IFN-γ Standard – 300 pg/vial of recombinant human IFN-γ in a buffered protein base with preservatives; lyophilized.	749-02-02	1 vial
Detection Antibody Concentrate– 110 µL/vial, 100-fold concentrated of Biotinylated monoclonal antibody against IFN-γ with preservatives; lyophilized.	749-02-03	1 vial
Positive Control- one vial of recombinant human IFN-γ, lyophilized	749-01-04	1 vial
Streptavidin-HRP Conjugate - 120 uL/vial, 100-fold concentrated solution of Avidin conjugated to HRP	SAHRP	1 vial
Dilution Buffer- 60mL/vial of buffered protein based solution with preservatives	DB01	1 vial
Wash Buffer - 50 mL/vial, 10-fold concentrated buffered surfactant, with preservative.	WB01	1 vial
TMB Substrate Solution - 11mL/vial of TMB substrate solution	TMB01	1 vial
Stop Solution - 11mL/vial of 0.5M HCl	S-STOP	1 vial
Plate Sealer	EAPS	1 piece

STORAGE

Unopened Kit: Store at 2 - 8°C for up to 6 months. For longer storage, unopened Standard, Positive Control and Detection Antibody Concentrate as well as Dilution Buffer (DB07) should be stored at -20°C or -70°C. Do not use kit past expiration date. Streptavidin-HRP Conjugate 100-fold concentrate and other components may be stored at 2 - 8°C for up to 6 months.

Microplate Wells: Return unused wells to the plastic bag containing the desiccant pack, reseal along entire edge of zip-seal. May be stored for up to 6 months at 2 - 8°C.

OTHER SUPPLIES REQUIRED

- Microplate reader capable of measuring absorbance at 450 nm, with the correction wavelength set at 540 nm or 570 nm.
- Microplate shaker (250-300rpm).
- Pipettes and pipette tips.
- Deionized or distilled water.
- Squirt bottle, manifold dispenser, or automated microplate washer.
- 100 mL and 500 mL graduated cylinders.

PRECAUTIONS FOR USE

All reagents should be considered as potentially hazardous. The stop solution contains diluted Hydrochloric acid. Appropriate care should be taken while handling this solution. We recommend that this product be handled by persons who have been trained in laboratory techniques and that it is used in accordance with the principles of good laboratory practice. Wear suitable protective clothing such as laboratory overalls, safety glasses and gloves. Care should be taken to avoid contact with skin or eyes. In the case of contact with skin or eyes wash immediately with water.

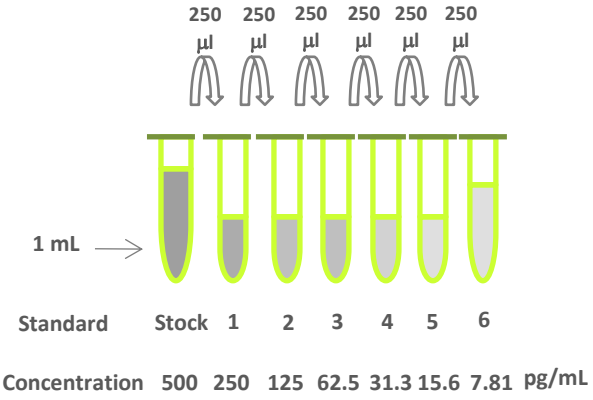
REAGENT PREPARATION

Bring all reagents to room temperature before use.

Wash Buffer - If crystals have formed in the concentrate, warm to room temperature and mix gently until the crystals have completely dissolved. Dilute 50 mL of Wash Buffer Concentrate into deionized or distilled water (450 mL) to prepare 500 mL of Wash Buffer.

IFN-γ Standard - Refer to vial label for reconstitution volume. Reconstitute the **IFN-γ** Standard with 1 mL of Dilution Buffer. This reconstitution produces a stock solution of 300 pg/mL. Allow the standard to sit for a minimum of 15 minutes with gentle agitation prior to making dilutions. Pipette 250µL of Dilution Buffer into tube #1-#6. Use the high standard solution to produce a dilution series (see below). Mix each tube thoroughly before the next transfer. The 300 pg/mL standard serves as the high standard. The Dilution Buffer serves as the zero standard (0 pg/mL).

Tube	Standard	Dilution Buffer	Concentration
Stock	Powder	1000 µL	300 pg/mL
# 1	250 µL of stock	250 µL	150 pg/mL
# 2	250 µL of 1	250 µL	75 pg/mL
# 3	250 µL of 2	250 µL	37.5 pg/mL
# 4	250 µL of 3	250 µL	18.75 pg/mL
# 5	250 µL of 4	250 µL	9.375 pg/mL
# 6	250 µL of 5	250 µL	4.7 pg/mL



Positive Control - Reconstitute the **Positive Control** with 1.0 mL Dilution Buffer. *Positive Control should be prepared and used immediately*.

Detection Antibody - Reconstitute the **Detection Antibody Concentrate** with 110 µL of Dilution Buffer to produce a 100-fold concentrated stock solution.

Detection Working Solution- Preparation of One-step incubation of Biotinylated Antibody /Streptavidin HRP solution. Add 110 µL of 100-fold concentrated detection antibody stock solution and 110 µl of 100-fold concentrated Streptavidin HRP stock solution into 11.780 ml of Dilution Buffer.

Within 15 minutes prior to use, vortex or mix well. For a full 96-well plate, prepare 11 mL of Working Detector. Discard any remaining Working Detector after use.

ASSAY PROCEDURE

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

1. Prepare all reagents and working standards as directed in the previous sections.
2. Remove excess micro-plate strips from the plate frame, return them to the plastic bag containing the desiccant pack, reseal.
3. Add 100 µL of Dilution Buffer to Blank wells (A2,A3).
4. Add 100 µL of Standard (from B2,B3 to G2,G3 and G4,G5), sample, or control (F4,F5) per well. Cover with plate sealer. Incubate for 2 hours on micro-plate shaker at room temperature. A plate layout is provided to record standards and samples assayed.
5. Aspirate each well and wash, repeating the process three times for a total of four washes. 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 working solution to each well. Cover with plate sealer. Incubate for 1 hour on micro-plate shaker at room temperature. **Protect from light.**
7. Repeat the aspiration/wash as in step 5.
8. Add 100 µL of Substrate Solution to each well. Incubate for 5-15 minutes at room temperature. **Protect from light.**
11. 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 if the color change does not appear uniform, gently tap the plate to ensure thorough mixing.
12. Determine the optical density of each well within 15 minutes, using a micro-plate reader set to 450 nm.

CALCULATION OF RESULTS

Average the duplicate readings for each standard, control, and sample and subtract the average zero standard optical density. Create a standard curve by reducing the data using computer software capable of generating a log-log 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 IFN-γ 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.

TYPICAL DATA

This standard curve* is provided for demonstration only. A standard curve should be generated for each set of samples assayed.

IFN-γ (pg/mL)	Average OD450 (Corrected)*
4.7	0.085
9.375	0.168
18.75	0.311
37.5	0.627
75	1.107
150	1.986
300	2.751

CALIBRATION

This immunoassay is calibrated against a highly purified E. Coli-expressed recombinant human IFN-γ.

SENSITIVITY

Twenty-five assays were evaluated and the minimum detectable dose (MDD) of IFN-γ was 2 pg/mL.

SPECIFICITY

This assay recognizes both natural and recombinant human IFN-γ. The factors listed below were prepared at 10 ng/mL in Dilution Buffer, and assayed for cross reactivity. No significant cross-reactivity or interference was observed.

Human Cytokines:

IL-1a, IL-1b, IL-2, IL-3, IL-4, IL-5, IL-6, IL-7, IL-8, IL-9, IL-10, IL-11, IL- 12 (p40), IL-12 (p70), IL-13, IL-15, G-CSF, GM-CSF, CD23, MIP-1a, MIP-1b, MCP-1, MCP-2, NT-3, PDGF-AA, SCF, TNF, LT-a(TNFb) VEGF

SUMMARY OF ASSAY PROCEDURE

PREPARE REAGENTS, SAMPLES AND STANDARDS
↓
Add 100µL of standard, samples, positive control to each well. Incubate 2 hours on the plate shaker at RT.
↓
Aspirate and wash 4 times.
↓
Add 100 µL Detection Working Solution to each well. Incubate 1 hour on the plate shaker at RT.
↓
Aspirate and wash 4 times.
↓
Add 100 µL Substrate to each well. Incubate 5-15 min on the bench top. Protect from light.
↓
Add 100 µL Stop Solution to each well. Read 450nm within 15 min