Human IL-12 GENLISA™ ELISA

REF: KP_KB1075

Ver 1.0

IVD

ELISA for Accurate Quantitation of Human IL-12 from Serum and Plasma

IVD	**For In-vitro Diagnostic Use**	**REF**	**Catalog Number**
	**Store At**	**LOT**	**Batch Code**
	**Manufactured By**		**Biological Risk**
	**Expiry Date**		**Consult Operating Instructions**

For *In-vitro Diagnostic use only. Purchase does not include or carry the right to resell or transfer this product either as a stand-alone product or as a component of another product. Any use of this product other than the permitted use without the express written authorization of KRISHGEN Pudgala LLP is strictly prohibited.*

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EC REP **KinesisDx, Lyoner Strasse 14, Frankfurt, Germany**

Introduction:

Interleukin-12, abbreviated IL-12, is a cytokine that induces differentiation of naive helper T cells (Th0 cells) to Th2 cells. Upon activation by IL-12, Th2 cells subsequently produce additional IL-12. It has many biological roles, including the stimulation of activated B-cell and T-cell proliferation, and the differentiation of CD4+ T-cells into Th2 cells. It is a key regulator in humeral and adaptive immunity. IL-12 induces B-cell class switching to Ice, and up-regulates MHC class II production. Overproduction of IL-12 is associated with allergies.

Intended Use:

Human IL-12 ELISA is specifically designed for the accurate quantitation of human IL-12 from serum and plasma. It is ready-to-use, accurate, and sensitive.

Principle:

Human IL-12 GENLISA™ ELISA method employs sandwich enzyme linked immunosorbent assay (ELISA) technique. Human Interleukin 12(IL-12) monoclonal antibody are pre-coated onto microwells. Samples and standards are pipetted into microwells and IL-12 present in the sample are bound by the antibodies. Biotin labelled Human IL-12 antibody is pipetted and followed by Streptavidin-HRP is pipetted and incubated to form a complex. After washing microwells in order to remove any non-specific binding, the substrate solution (TMB) is added to microwells and color develops proportionally to the amount of IL-12 in the sample. Color development is then stopped by addition of stop solution. Absorbance is measured at 450 nm.

Materials Provided:

1. Microtiter Coated Plate (12X8wells) – 1 no.
2. Recombinant Human IL-12 Standard (lyophilized; 1 ug/ml) – 1 vial
3. Human IL-12 Biotin Conjugated Detection Antibody – 1 vial
4. Concentrated Streptavidin Horseradish Peroxidase - 1 vial
5. Streptavidin HRP diluent – 12 ml
6. (20X) Wash Buffer– 25 ml
7. Assay Diluent – 25 ml
8. TMB Substrate – 12 ml
9. Stop Solution – 12 ml
10. Instruction Manual

Materials to be provided by the End-User:

1. Microplate Reader able to measure absorbance at 450nm.
2. Adjustable pipettes to measure volumes ranging from 50µl to 1000µl.
3. Deionized (DI) water.
4. Wash bottle or automated microplate washer.
5. Semi-Log graph paper or software for data analysis.
6. Tubes to prepare standard/sample dilutions.
7. Timer.
8. Absorbent paper.

Storage Information:

1. Store main kit components at 2-8°C.
2. Store recombinant **Standard** at 2-8°C. Upon reconstitution, aliquot recombinant protein into polypropylene vials and store at -20°C as per assay requirements. Do not freeze thaw for more than two times.

3. Before using, bring all components to room temperature (18-25°C). Upon assay completion return all components to appropriate storage conditions.

Health Hazard Warnings:

1. Reagents that contain preservatives may be harmful if ingested, inhaled or absorbed through the skin. Refer to the MSDS online for details.

2. To reduce the likelihood of blood-borne transmission of infectious agents, handle all serum and/or plasma in accordance with NCCLS regulations.

Specimen Collection and Handling:

Specimens should be clear and non-hemolyzed. Samples should be run at a number of dilutions to ensure accurate quantitation.

Serum: Use a serum separator tube and allow clotting for 30 minutes, then centrifuge for 10 minutes at 1000 x *g*. Remove serum layer and assay immediately or store serum samples at temperature < -20°C. Avoid repeated freeze/thaw cycles.

Plasma: Collect blood sample in a citrate, heparin or EDTA containing tube. Centrifuge for 10 minutes at 1000 x *g* within 30 minutes of collection. Assay immediately or store plasma samples at temperature < -20°C. Avoid repeated freeze/thaw cycles.

Reagent Preparation:

1. Wash Buffer (1X) Dilution: To make Wash Buffer (1X), add 2.5ml of Wash Buffer (20X) to 97.5ml of DI water. This is the working solution.
2. Allow all components to reach RT (Room Temperature) prior to use in the assay.

Assay Procedure:

1. Bring all reagents to room temperature prior to use. It is strongly recommended that all standards and samples be run in duplicate or triplicate. A standard curve is required for each assay.

2. **Standards Preparation:** Reconstitute the lyophilized standard in 20ul of Distilled water to get a concentration of 1 ug/ml. Dilute 5 µl of reconstituted Standard (1 ug/ml) with 495 ul of Assay diluent to generate a 10 ng/ml middle stock solution. Keep the standard for 15 mins with gentle agitation before making further dilutions. Prepare the Standards stock by diluting the middle stock solution as per the below table. Thus, the Human IL-12 standard concentrations are 2000pg/ml, 1000pg/ml, 500pg/ml, 250pg/ml, 125pg/ml, 62.5pg/ml, and 31.3pg/ml. Diluent serves as the zero standard (0 pg/ml).

Standard Concentration	Standard No	Dilution Particulars
1 ug/ml	Standard, lyophilized	Original Standard provided in the Kit +20ul of Distilled Water
10 ng/ml	Middle stock	5 ul Original Standard + 495 ul Assay diluent
2000 pg/ml	Standard No.7	200 ul Middle stock + 800 ul Assay diluent
1000 pg/ml	Standard No.6	500 ul Standard No.7 + 500 ul Assay diluent
500 pg/ml	Standard No.5	500 ul Standard No.6 + 500 ul Assay diluent
250 pg/ml	Standard No.4	500 ul Standard No.5 + 500 ul Assay diluent
125 pg/ml	Standard No.3	500 ul Standard No.4 + 500 ul Assay diluent
62.5 pg/ml	Standard No.2	500 ul Standard No.3 + 500 ul Assay diluent
31.3 pg/ml	Standard No.1	500 ul Standard No.2 + 500 ul Assay diluent

3. Add 100µl/well of **Standards** and **Samples** to the plate, than add 50µl/well of diluted **Detection Antibody**. Seal plate and incubate for 2 hours at 37°C.

4. Aspirate and wash plate 4 times with **Wash Buffer (1X)** and blot residual buffer by firmly tapping plate upside down on absorbent paper. Wipe of any liquid from the bottom outside of the microtiter wells as any residue can interfere in the reading step. All the washes should be performed similarly.

5. Add 100µl of diluted **Streptavidin-HRP** solution to each well, seal plate and incubate for 30 minutes at 37°C.

6. Wash plate 4 times with **Wash Buffer (1X)** as in step 4.

7. Add 100µl of **TMB Substrate** solution and incubate in the dark for 30 minutes at 37°C. Positive wells should turn bluish in color. It is not necessary to seal the plate during this step.

8. Stop reaction by adding 100µl of **Stop Solution** to each well. Positive wells should turn from blue to yellow.

9. Read absorbance at 450 nm within 30 minutes of stopping reaction.

Calculation of Results:

Determine the mean absorbance for each set of duplicate or triplicate standards and samples. Subtract the mean absorbance of the zero standards (background) from each well. Plot the standard curve on standard graph paper, with cytokine concentration on the x-axis and absorbance on the y-axis. Draw the best fit straight line through the standard points. To determine the unknown cytokine concentrations, find the unknowns mean absorbance value on the y-axis and draw a horizontal line to the standard curve. At the point of intersection, draw a vertical line to the x-axis and read the cytokine concentration. If samples were diluted, multiply by the appropriate dilution factor.

Computer based curve-fitting software may be preferred. Software which is able to generate a cubic spline curve-fit or a polynomial regression to the 2nd order is best recommended for automated results.

Performance Characteristics:
Please note that this validation is performed in our laboratory and will not necessarily be duplicated in your laboratory. This data has been generated to enable the user to get a preview of the assay and the characteristics of the kit and is generic in nature. We recommend that the user performs at the minimum; the spike and recovery assay and the dilutional linearity assay to assure quality results. For a more comprehensive validation, the user may run the protocols as suggested by us herein below to develop the parameters for quality control to be used with the kit.

Sensitivity:
Limit Of Detection: It is defined as the lowest detectable concentration corresponding to a signal of Mean of '0' standard plus 2* SD. 10 replicates of '0' standards were evaluated and the LOD was found to 31.3 pg/ml.

Specificity:
The antibodies used in the kit for capture and detection are monoclonal antibodies specific for human IL-12.

Assay Range:
31.3 pg/ml to 2000 pg/ml.

Precision:
Intra-Assay: CV<10%
Inter-Assay: CV<12%

Linearity:
The linearity of the kit was assayed by testing samples spiked with appropriate concentration of Human IL-12 and their serial dilutions. The results were demonstrated by the percentage of calculated concentration to the expected.

Sample	1:2	1:4	1:8
serum (n=5)	84-107%	87-108%	82-112%
EDTA plasma (n=5)	83-102%	83-115%	83-118%
heparin plasma (n=5)	83-99%	80-95%	82-93%

Safety Precautions:

- **This kit is For Invitro Diagnostic Use only**. Follow the working instructions carefully.
- The expiration dates stated on the kit are to be observed. The same relates to the stability stated for reagents
- Do not use or mix reagents from different lots.
- Do not use reagents from other manufacturers.
- Avoid time shift during pipetting of reagents.
- All reagents should be kept in the original shipping container.
- Some of the reagents contain small amount of sodium azide (< 0.1 % w/w) as preservative. They must not be swallowed or allowed to come into contact with skin or mucosa.
- Source materials maybe derived from human body fluids or organs used in the preparation of this kit were tested and found negative for HBsAg and HIV as well as for HCV antibodies. However, no known test guarantees the absence of such viral agents. Therefore, handle all components and all patient samples as if potentially hazardous.
- Since the kit contains potentially hazardous materials, the following precautions should be observed
- Do not smoke, eat or drink while handling kit material
- Always use protective gloves
- Never pipette material by mouth
- Wipe up spills promptly, washing the affected surface thoroughly with a decontaminant.
- In any case GLP should be applied with all general and individual regulations to the use of this kit.

LIMITED WARRANTY

Krishgen Pudgala LLP does not warrant against damages or defects arising in shipping or handling, or out of accident or improper or abnormal use of the product; against defects in products or components not manufactured by Krishgen Pudgala LLP, or against damages resulting from such non-Krishgen Pudgala LLP made products or components. Krishgen Pudgala LLP passes on to customer the warranty it received (if any) from the maker thereof of such non-Krishgen made products or components. This warranty also does not apply to product to which changes or modifications have been made or attempted by persons other than pursuant to written authorization by Krishgen Pudgala LLP.

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Krishgen Pudgala LLP, 2022.

THANK YOU FOR USING KRISHGEN PRODUCT!

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EC REP **KinesisDx, Lyoner Strasse 14, Frankfurt, Germany**

Regulatory Status:

CE Marked	Europe
FDA registered	USA
CDSCO registered	India

SCHEMATIC ASSAY PROCEDURE

1	All reagents should be allowed to reach room temperature before use.
2	Add **100 ul Standard working Solution and Sample** to each well
3	Add **50 ul Diluted Biotin Conjugate Antibody** to each well, seal plate and incubate at 37^0C for 2 hours
4	Aspirate and **wash plate 4 times** with **(1X) Wash Buffer** and blot residual buffer by firmly tapping plate upside down on absorbent paper. Wipe of any liquid from the bottom outside of the microtiter wells as any residue can interfere in the reading step. All the washes should be performed similarly.
5	Add **100 ul Diluted Streptavidin-HRP** to each well, seal plate and incubate at 37^0C for 30 minutes.
6	Wash plate 4 times with **Wash Buffer (1X)** as in step 4.
7	Add **100 ul** of **TMB Substrate** into each well except blank well.
8	**Incubate** at **37ºC** for **30 minutes** in dark
9	Add **100 ul** of **Stop Solution**. Read result with an ELISA reader at 450 nm within 30 minutes stopping the reaction.

SYMBOLS KEY

MTP	Human IL-12 Microtiter Plate (12X8 wells)
STD	Human IL-12 Standard lyophilized
BIO | CONJ	Biotin Conjugated Detection Antibody
STRP | HRP	Streptavidin Horseradish Peroxidase
STRP | HRP | DIL	Streptavidin HRP Diluent
ASY | DIL	Assay Diluent
20X | WASH | BUF	(20X) Wash Buffer
SUB | TMB	TMB Substrate
SOLN | STOP	Stop Solution
	Consult Instructions for Use
REF	Catalogue Number
	Expiration Date
	Storage Temperature