

Human CD123 (IL-3R α) ELISA Kit

Sandwich ELISA

Catalog EL-213-34123

INTRODUCTION

IL3RA encodes the alpha chain of the interleukin-3 receptor, commonly known as CD123, a cell-surface protein expressed on hematopoietic progenitors, monocytes, basophils, mast cells, plasmacytoid dendritic cells, and a subset of B cells. On its own this subunit binds IL-3 but cannot transmit a signal; only after pairing with the common beta chain shared with the GM-CSF and IL-5 receptors does the complex become competent to activate JAK2 and downstream STAT5-mediated transcription, guiding the growth and lineage commitment of blood progenitor cells. The IL3RA gene sits within a pseudoautosomal region shared by the X and Y chromosomes, alongside the related CSF2RA gene. Because CD123 is markedly upregulated on the surface of leukemic blasts in acute myeloid leukemia and related hematologic malignancies, it is widely studied as both a diagnostic marker and a candidate target for antibody-based therapies.

PRINCIPLE OF THE ASSAY

This kit uses a sandwich enzyme immunoassay format in which the microtiter plate wells are pre-coated with a capture antibody specific to Human IL-3R α . During the assay, standards or samples are added to the appropriate wells together with a biotin-conjugated detection antibody also specific to Human IL-3R α . Avidin conjugated to horseradish peroxidase (HRP) is then added to each well and allowed to incubate. Upon addition of TMB substrate solution, only wells containing Human IL-3R α , the biotin-conjugated detection antibody, and the avidin-HRP conjugate produce a colorimetric signal. The enzymatic reaction is stopped by the addition of a sulphuric acid stop solution, and the resulting color is measured spectrophotometrically at 450 nm ($\pm$ 10 nm). Sample concentrations are then determined by comparing each well's optical density against the generated standard curve.

MATERIALS AND STORAGE

Store kit components at -20°C unless specified otherwise. DO NOT USE past kit expiration date. Some vials contain a small amount of reagents. Spin tubes on pulse setting prior to opening.

Each kit includes:	Units
Pre-Coated Microplate	12 strips x 8 wells
Standard (Lyophilized)	2 vials
Biotinylated Antibody (100 $\times$)	120 μ L
Streptavidin-HRP (100 $\times$)	120 μ L
Standard/Sample Diluent Buffer	20 mL
Biotinylated Antibody Diluent	12 mL
HRP Diluent	12 mL
Wash Buffer (25 $\times$)	20 mL
TMB Substrate Solution	10 mL
Stop Reagent	6 mL
Plate Covers	2 pieces

Do not mix or substitute reagents with those from other lots.

MATERIALS AND INSTRUMENTS REQUIRED BUT NOT SUPPLIED

- Precision pipettes calibrated to deliver 5-1000 μ L
- Multi-channel pipette calibrated to deliver 50-200 μ L
- Plate shaker
- Disposable tips
- Vortex-Mixer
- Distilled or de-ionized water
- Microplate reader capable of reading 450nm with background subtraction at 620nm

SAFETY PRECAUTIONS

- The test protocol must be followed strictly.
- All reagents containing human material should be handled as if potentially infectious. Operators

should wear gloves and protective clothing when handling any patient sera or serum based products.

- The kit reagents contain antimicrobial agents, acid and 3,3',5,5'-tetramethylbenzidine. Avoid contact with the skin and eyes. Rinse immediately with plenty of water if any contact occurs.
- Any liquid that has been brought into contact with potentially infectious material has to be discarded in a container with a disinfectant. Disposal must be performed in accordance with local regulations.
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- Only trained laboratory personnel should execute this test.

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PREPARATION OF REAGENTS

Prepare only the appropriate amount of required reagent on the day of use. Store all reagents as per instructions stated on the label.

- 1. Wash Buffer (1X) Preparation: Dilute the 25X wash buffer concentrate 1:25 with double-distilled Water.**
- 2. Detection Reagent (1X) Preparation: Dilute the biotinylated antibody and streptavidin-HRP concentrates 100-fold with Biotinylated Antibody Diluent and HRP Diluent, respectively, immediately before use.**
- 3. Preparation of Calibrators: Prepare calibrators by serial dilution from a 20 down to 0.32 (plus a 0 blank), per the source manual.**

Sol'n ID	Source	Source Vol (μ L)	Cal. Diluent (μ L)	Final Vol (μ L)	Final Conc. (ng/mL)
Std 1	Stock Standard	500	500	1000	20
Std 2	Std 1	500	500	1000	10
Std 3	Std 2	500	500	1000	5
Std 4	Std 3	500	500	1000	2.5
Std 5	Std 4	500	500	1000	1.25
Std 6	Std 5	500	500	1000	0.63
Std 7	Std 6	500	500	1000	0.32
Blank	Std 7	500	500	1000	0

SPECIMEN STORAGE

This kit is compatible with EDTA-plasma, heparin-plasma and serum samples. Samples can be stored at or below -20°C for up to 1 year.

ASSAY PROCEDURE

1. After the kit is equilibrated at room temperature, add 100 μ L of Standard Working Buffer (gradually diluted according to the instructions) or 100 μ L of sample to each well, and incubate at 37°C for 80 minutes.
2. Discard the liquid in the plate, add 200 μ L 1 $\times$ Wash Buffer to each well, and wash the plate 3 times. After pat it dry against clean absorbent paper, add 100 μ L Biotinylated Antibody Working Solution (1 $\times$) to each well, incubate at 37°C for 50 minutes.
3. Discard the liquid in the plate, add 200 μ L 1 $\times$ Wash Buffer to each well, and wash the plate 3 times. After pat it dry against clean absorbent paper, add 100 μ L 1 $\times$ Streptavidin-HRP Working Solution to each well, incubate at 37°C for 50 minutes.
4. Discard the liquid in the plate, add 200 μ L 1 $\times$ Wash Buffer to each well, and wash the plate 5 times. After pat it dry against clean absorbent paper, add 90 μ L TMB Substrate Solution to each well, incubate at 37°C for 20 minutes in the dark.
5. Add 50 μ L Stop Solution to each well, shake plate on a plate shaker for 1 minute to mix. Record the OD at 450 nm immediately, calculation of the results.

CALCULATIONS AND RESULTS

1. Construct a standard curve by plotting the absorbance obtained from each standard against concentration. Use a 4 or 5 parameter curve fit. Alternatively a log-log curve fit may be used.
2. The concentration of the unknowns can be read directly from this standard curve using the absorbance value for each

sample.

3. Any sample undiluted or diluted still reading greater than the highest standard should be diluted appropriately and retested. If the samples have been diluted, the concentration determined from the standard curve must be multiplied by the dilution factor.

PERFORMANCE CHARACTERISTICS

Precision: Intra-assay CV < 8%. Inter-assay CV < 10%.

Detection Limit: 0.134 ng/mL

Recovery: Serum (n = 5): 87-96% (avg 92%); EDTA plasma (n = 5): 83-92% (avg 85%); Heparin plasma (n = 5): 84-108% (avg 98%)

Specificity: This assay has high sensitivity and excellent specificity for detection of Human IL3Ra. No significant cross-reactivity or interference between Human IL3Ra and analogues was observed.



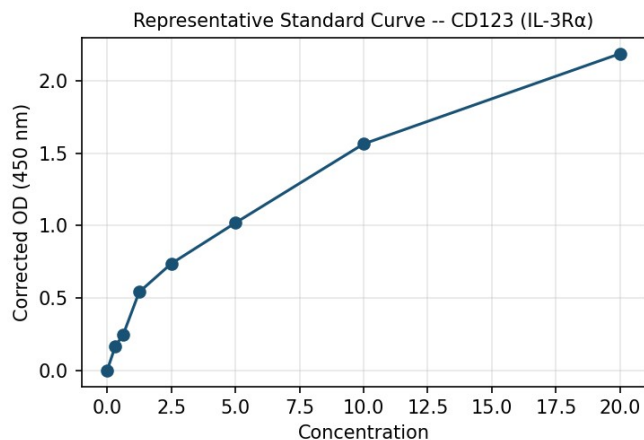
This kit employs a sandwich enzyme immunoassay technique to quantify Human CD123 (IL-3R α) in biological samples.

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SAMPLE STANDARD CURVE



Representative standard curve shown for illustration only. This curve should not be used to calculate unknown sample concentrations -- run a new standard curve with each assay.

ORDERING INFORMATION

Please visit www.affinityimmuno.com to order this product. Visa, Mastercard, AMEX and PayPal are accepted in our online store.

Your order will be processed immediately and you will be notified with a delivery timeframe.